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THE POLITICAL ECONOMY OF E-LEARNING EDUCATIONAL DEVELOPMENT: STRATEGIES, STANDARDISATION AND SCALABILITY.

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Government facilitation to develop e-learning through policy, funding allocations, research-based collaborative projects and alliances has increased recently in both developed and under-developed nations. Higher levels of strategic alliance formation are evidenced, particularly among complex information and communication technologies (ICTs) companies, in order to close capability gaps by industry leaders in a global market[1]. A diverse proliferation in multiple modes and fields of research enquiry related to e-learning exist – including culture, delivery, content, usage, pedagogy, user-preferences, technology, infrastructure partner availability and suitability, scalability and platform options – by stakeholder individuals and groups, which are all available in the world's largest library, the internet as suggested by Morrison (2003:367). Finally, revenue levels of the five major players in education were approximately US$10.6 billion[2] in a market estimated to be valued at in excess of US$20 billion[3].

A significant and growing element of this is the elearning sector, and the maturation of the e-learning market is reported in the vital growth statistics representing both supply and demand factors. These statistics are reassuring organisations involved in e-learning, such as educational, e-learning and technology providers, as government projections for

[1] Harbison & Pekar, Booz-Allen & Hamilton (1998), p 32
[2] From McGraw-Hill, Pearson, Reed Elsevier, Thomson and Wolters Kluwer annual reports
[3] Estimated at over $20 billion in March 2004 and over $25 billion in December 2003, The Thomson Corporation

continued growth in education and marked increases in virtual learning enrolments suggest there is a huge business potential in elearning, despite some disappointed over-ambitious expectations in the last few years.

Government, industry and corporate users are increasingly focusing on standardisation issues and the scalability of technology platforms to meet demand. Following rapid growth and industry momentum in the late 1990s the e-learning market growth slowed in 2001-02. Indicators now suggest that e-learning is poised for continued growth which is likely to be accompanied by market consolidation preceding the development and penetration of potential and large previously unready world markets.

The Growing Demand for Educational Services

With recovering economic growth in the highly developed markets of the US and Europe indications of further developments in open and distance learning and education and, in particular e-learning. Indicators of growth, to date and projected, are summarised in numerous reports. In Europe, pure e-learning and blended learning take up over a quarter of European vocational and continuing professional development user's time in training (Biz Media, 2002). This report identifies an increase from 25 per cent to over 30 per cent and from 10 per cent to 23 per cent for e-learning as a share in current expenditure in European training, respectively for capital equipment and content and services between 2000 and 2002 training.

The US shows an increase in adult education participation rates over 12 months at 40 per cent, increased levels of enrolment in distance education and planned offerings over 3

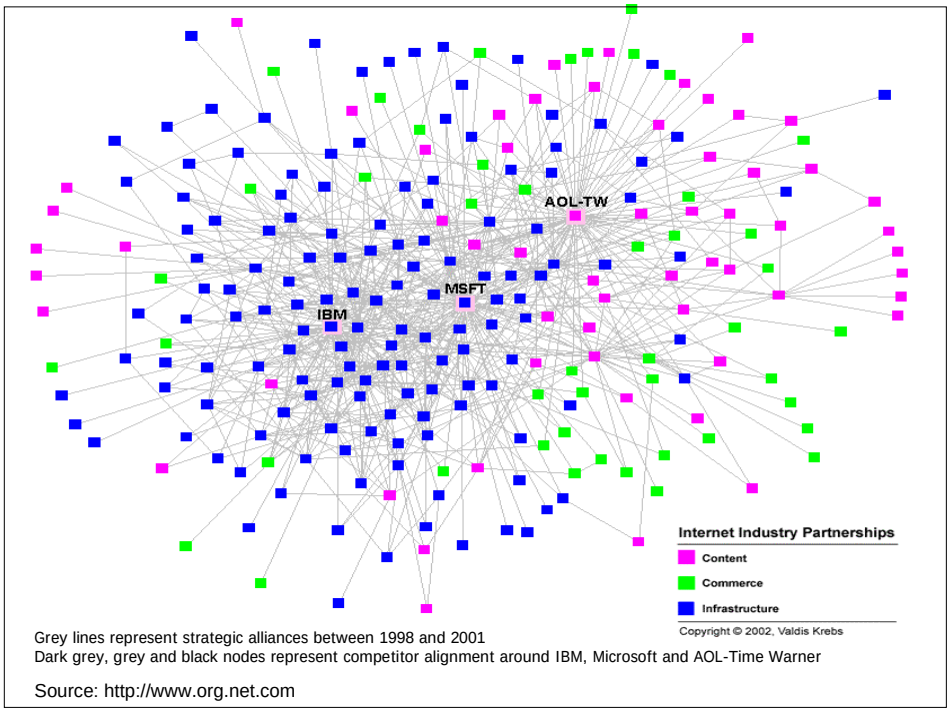
years – from public and private 2-year and 4-year postsecondary institutions – and continues to spend more per capita on education than other OECD countries (U.S. Department of Education, 2004). An estimated 1.6 million online students took courses in Fall 2002 with over 578,000 taking all their courses on line in higher education institutions in the United States (Sloan Consortium, 2003). Undergraduate and graduate enrolment levels grew from 1.7 million to 3.1 million between 1997-98 and 2000 and degree and certificate courses offered for completion solely by distance grew from 22 to 30 per cent and 7 to 16 per cent respectively (U.S. Department of Education, 2004).

With reference to elearning from a user perspective over 93 per cent of surveyed employees from Europe, the Middle East and Asia enjoyed the technology involved in e-learning courses undertaken (Skillsoft, 2004). The top ten on-line business degree majors reported by GetEducated, an online degree clearing house were: business administration; management; leadership; project management; information systems management; finance; technology management; entrepreneurship; human resources; and international/global business. The most popular online graduate degree was a Masters of Business Administration (2004).

Multiple Networks for eLearning Development

The complexity and number of partnerships among three large hardware, software and provider firms IBM, Microsoft, and AOL-Time Warner with 250 firms in the internet industry is indicative of the reliance on and necessity of collaboration for e-learning development (Figure 1). Multiple networks exist between these organisations linking individual content, commercial and infrastructure providers graphically demonstrating the collaborative nature of development in this complex industry (Kreb, 2002)

Figure 1 Internet Industry Partnerships among 250 US Firms, 1998 to 2001



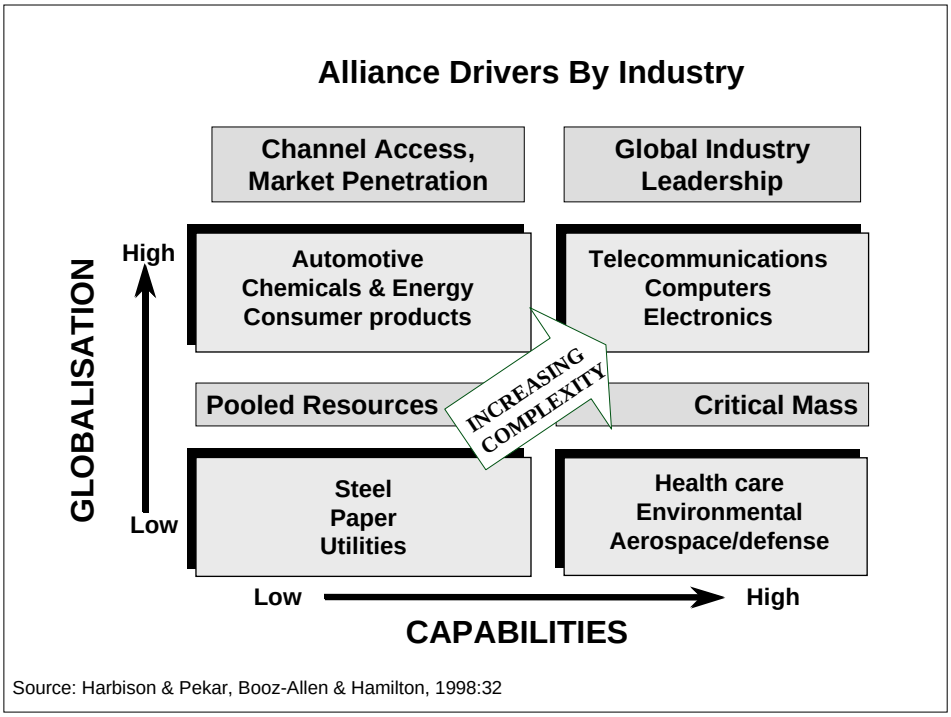
Grey lines represent strategic alliances between 1998 and 2001
Dark grey, grey and black nodes represent competitor alignment around IBM, Microsoft and AOL-Time Warner

Source: http://www.org.net.com

Research conducted by Harbison and Pekar (1998) identifies increased complexity in the telecommunications, computing and micro-electronics industries as the driver for strategic alliances to close capability gaps in global markets (Figure 2). High research and development costs, estimated to have grown three times faster than capital asset expenditure, necessitate alliances in ICT. From a slightly different perspective, Cravens and Piercy's analysis of strategic alliance drivers nominate environmental turbulence and diversity as a key driver, highlighting IBM's 100,000 alliances and the presence of some 60 alliances for each of the top 500 global businesses (2003). Strategic alliances earn on an average 26 per cent of Fortune 500 revenue, account for 6 to 15 per cent of company market values and are expected to grow between 16 to 25 per cent within 5 years (Accenture Consulting, 1999). Strategic partners bring individual expertise that is competency based, therefore maximising efficiencies and

reducing constituent costs in the value chain for delivering complex e-learning requirements.

Figure 2 Globalisation needs and Capability Gaps



Source: Harbison & Pekar, Booz-Allen & Hamilton, 1998:32

Push and Pull in the E-Learning Market

However as the elearning market grows and responds to changes in both demand and supply, the appreciation of what elearning is and what it can achieve remains contested, and typologies of distance education are continually being reformulated. Learning expert Michael Moore sums up the state of play for distance learning in terms of what it is and is not 'People are just confused about what distance education is … it has the potential of delivering more educational opportunities to more people than ever before, to do so at lower average cost, and what is more important, to be of higher quality than most people can get in other ways, but we aren't doing it, partly because people don't understand what is needed and don't know what distance education really is. Most of what is happening in the name of distance education is simply traditional pedagogy and

traditional structures of higher education with the addition of new technology. And people are producing new names for this old wine in new bottles, such as e-learning, asynchronous learning, distributed learning, flexible learning, open learning and so on. All this is part of distance education, and none of it alone is distance education. But so many people describing distance education are like those trying to describe the proverbial elephant from their contact with one bit of it, and they are all describing different parts.' (Editorial, The American Journal of Distance Education, 2003).

Distance education continually presents new typologies of institutions and delivery methods. Given the diverse delivery methods of individual instructors, a helpful prototypical course description was developed by Sloan Consortium (Figure 2). At a course level, online learning is characterised by having at least 80 per cent of the course content delivered online. Blended education has between 30 and 80 per cent and web facilitated courses between 1 and 29 per cent of course content on line (The Sloan Consortium, 2003).

Table 1 Prototypical Online Learning Definitions

Proportion of content delivered online	Type of Course	Typical Description
0%	Traditional	Course with no online technology used - content is delivered in writing or orally.
1 to 29%	Web facilitated	Course which uses web-based technology to facilitate what is essentially a face-to-face course. Might use Blackboard or WebCT to post the syllabus and assignments, for example.
30 to 79%	Blended/Hybrid	Course that is a blend of the online and face-to-face course. Substantial proportion of the content is delivered online, typically uses online discussions, typically has some face-to-face meetings.
80+%	Online	A course where the vast bulk of the content is delivered online. Typically has no face-to-face meetings.

Source: The Sloan Consortium, 2003:6

The public, private and higher education sectors in the US show a remarkable similarity in their identification of business requirements and drivers for growth. E-Learning Magazine conducted research to identify the most common drivers for e-learning (2001).

Table 2 E-Learning Business Driver Rankings (E-Learning Magazine)

Driver	Corporate %	Government & Military %	Higher Education %
Available anytime, anywhere	80	75	80
Cost savings	65	57	65
Allows for self-paced learning	57	75	57
Provides just-in-time learning	52	52	52
Ease-of-use	44	44	44
Content can be altered easily	42	42	42
Fast distribution	32	32	32
Improves instructor availability	25	25	25

Source: E-Learning Magazine (2001) in Morrison, 2003:101

Some 99 per cent of the respondent group, reported in Morrison (2003:100-101), had already implemented e-learning in the organisation. A summary of respondent data reveals uniform responses, within the three groups of corporate, government and military and higher education users with the exception of the value of self-paced learning to the US Government and Military. The breakdown of respondents was 53 per cent corporations, 19 per cent government and military and 12 per cent higher education (Table 2).

In another study conducted by The Masie Center E-Learning Consortium, a collaboration of major corporations, government agencies and e-learning providers, consortium members were asked why they were considering e-learning. The results

show that a similar set of drivers were identified yet given a different prioritisation by respondents. It is suggested that these differences, such as the prioritisation of self-paced learning and the expenditure minimisation may be ascribed to differences in sample population characteristics (Table 3).

Table 3 E-Learning Business Driver Rankings (Masie Centre)

Driver	Responses %
Geography To reach people that we could not otherwise access	76
Time To shift time, accommodate schedules, save time	66
Frequency To train people more frequently, just-in-time	60
Expense Management To decrease our training budget, development time	46
Revenue Growth To increase sales	24
Instructional Design Accommodate varied learning styles, personalize training	23

Source: E-Learning Magazine (2001) in Morrison, 2003:101

Initiating Collaboration: Globalised E-Learning Delivery

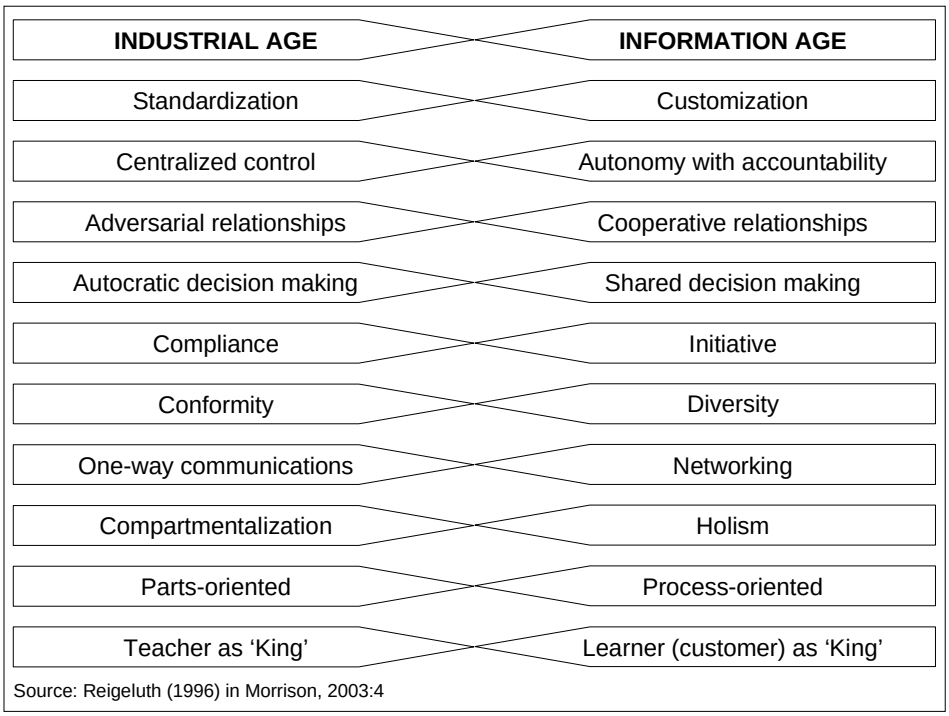
At an institutional level the internet and related technologies pressure traditional distance education institutions and their markets towards those in a broader national or international distance education marketplace and therein foster innovations in inter-institutional relationships (NCES, 1998). A government sponsored UK e-learning strategy document identifies the value of increased higher education opportunities that exist through a combination of global delivery, new higher education markets and private sector partnerships and is committed to preparing a 10-year strategy for e-learning. The UK Government's White Paper *The Future of Higher Education'* (2003) charges the HEFCE

to work with partners to write an e-learning strategy that embeds e-learning in a full and sustainable way within 10 years.

Three aspects of e-learning that provide a context for a 10-year educational e-strategy are detailed and broadly include new technologies, new approaches to learning and teaching and increased higher education opportunities (Appendix B, HEFCE, 2003). The report identifies that the operation of higher education is made vastly different by the internet and new technologies impacting communications, the creation and use of databases and digital resources. In particular, technologies bring new approaches to research, libraries and resources and administration. These are pervasive impacts on higher education functions that are aside from the explicit focus of changes to teaching and learning resulting from technologies. Student expectations and experiences have changed due to e-literacy and employers are increasing their exploration of e-based workplace training and e-commerce: there is a push and pull stimulating the demand for e-learning.

This scenario, identified by HEFCE, emanates from a transition from the industrial to the information age. New approaches to learning and teaching result from the use of new technologies (push) and demand from new and diverse students and employers (pull). Morrison (2003) describes the need to turn centralised training push into distributed learning model (pull) akin to the difference between Reigeluth's key markers for the industrial age and the constant change of the information age (2003:26). Dr Charles Reigeluth, Professor of Education at Indiana University and an authority on learning theory, characterises the information age as typified by autonomy, diversity and networking, and e-learning can be interpreted as a direct response to these changes (Figure 3).

Figure 3 Key Markers of the Information Age Paradigm



Source: Reigeluth (1996) in Morrison, 2003:4

In another approach Shon (2004) discusses four main applications of IT on the information society in South Korea: lifelong learning; just-in-time learning; retraining to overcome unemployment; and conventional education. Eva Kaplan-Leiserson at the American Society for Training and Development (2003) suggests that the age of information – and software designed for knowledge management as opposed to the people who are using it – will be replaced by the Age of Connection and social software that removes obstacles to interaction, communication and collaboration, a view shared with futurist Stowe Boyd.

Applying eLearning Strategies

The UK strategy envisages that immediate blending of new approaches, including e-learning and workplace learning with campus-based learning and/or distance learning is

possible, with a future potential to include mobile learning. Specific considerations for writing the 10-year plan include:

- Enhancing competencies and codes of practice for partnership working (such as advice on intellectual property rights in e-learning nationally and internationally and Quality Assurance Agency code of practice for quality and standards in e-learning);
- Curriculum design, development and pedagogy, and human resources extending to the competencies of managing team-based learning teams and explicit actions to close anticipated human resource supply gaps such as learning technologists;
- Delivering foundation degrees through collaboration with DfES, UkeU, NHSU and Ufi Learndirect that incorporate credits to build on customised learning programmes for corporate and global customers;
- Underpinning teaching and learning objectives with inter-operable infrastructure development through the use of common standards for materials and working.

The University for Industry (Ufi), UK reaches more than 830,000 students through a multi-modal program called 'learndirect' which offers 75 per cent of programs online and more than 2,000 learning centre facilities in libraries, football clubs and college and university campuses (Sun Microsystems, 2003). Ufi has two target user groups, lifelong learners of basic skills and small to medium enterprises. The latter accounts for more than 73,000 enrolments, which is in addition to the student users. In ongoing research and feedback, 85 per cent of users report satisfactory or very satisfactory usage experience. Sun Microsystems identifies Ufi as 'the most impressive demonstration of scalability in terms of raw numbers' (2003:13).

A survey report based on 430 responses to a consultation document by DfES seeking input into the development of e-learning strategy standards (UK DfES, 2004), secured feedback emphasising the need for a focus on leadership, funding and common technical and quality standards. Overall, 76 per cent of respondents were supportive of the expressed e-learning vision and supported the need for education and industry collaboration as vital to strategic success. Stakeholders in the consultation process agreed that correct partners had been identified but suggested a greater focus be given for e-learning in the workplace as opposed to an educational focus. The need for prioritised leader education was identified as necessary to future success to combat a lack of e-awareness and e-skills at senior levels and ensure that the benefits of and strategies for e-learning by educational and industry leaders would be driven forward.

Bridging the Digital Divide

Stakeholder individuals and groups expressed concern about the digital divide, broadband access and prohibitive hardware and connectivity costs. Disadvantaged groups included individuals and groups that are financially limited in accessing broadband, computers and in some cases buildings and facilities that house IT, the disabled, minority ethnic communities, special education needs users, the elderly, those fearing technology generally and rural communities. In recognition of increased market acceptance and penetration of elearning generally, an increased amount of attention is being given to the specific requirements and characteristics of special needs users. The American Journal of Distance Learning (Volume 18, Number 1, 2004) published three articles relating to disability and e-learning and in the UK, DfeS (2004) research revealed concerns at multiple levels for the future development of e-learning and access by special needs individuals and groups.

In numerous solicited and unsolicited response categories, respondents sought government expenditure to:

- fund the project's hardware expenses (50 per cent);
- promote the strategy (29 per cent);
- to facilitate the proposed action areas and realise the vision (24 per cent).

Barriers to e-learning identified in the survey included:

- limited available teaching time to develop IT skill (20 per cent),
- the need for support and training for teaching staff (23 per cent),
- the importance of including e-learning in continuous professional development for teaching staff (29 per cent).

Overall, respondents confirmed the success of prior initiatives acknowledging:

- flexible learning as the most significant achievement of e-learning (49 per cent)
- and the benefits of collaboration amongst learners (30 per cent);

There have been many contributions to the progress and development of e-learning, and efforts to assist in the development of e-learning strategies and implementation, but experts often question the degree to which any depth of understanding of elearning actually exists. In February 2003, Michael Moore, the editor of the *Handbook of Distance Education*, (1990 and 2003), stated that 'the current exuberance for practicing distance education is in the dark, uninformed by theory and research, is tragic, particularly from the point of view of students who are being served up with programs that fall far short of what informed people should be able to deliver, but also for administrators and policymakers who have put far too much faith in new communications technologies and missed the point that good-quality distance education requires changes in organisational

structures and pedagogical methods.' (Editorial, *The American Journal of Distance Education*, 2003).

In the case of the UK, the e-learning strategy process is consultative, seeking input from multiple stakeholders and expert groups including partners from representative groups at DfES, the Joint Information Systems Committee for providing the technological base, UK eUniversities Worldwide, Higher Education Academy and funding bodies and other partners in further and adult education, schools sectors and employers. The Department for Education and Skills (DfES) e-learning Strategy Unit will release a 5-year strategy in July 2004, including a technology perspective. The overall UK e-learning strategy seeks to: encourage proactive institutional risk – with technology and expenditure – for the promotion of sustainable business models; support leadership in global and international partnerships and strategic alliances; and endorses closer global collaboration given the use of expensive materials, cost effectiveness and the implications for standards (technical, pedagogic and quality).

Jin Shon, from the Korea National Open University, identifies six requirements of eLearning standards development: accessibility; interoperability; durability; reusability; adaptability; and affordability. Interoperability standards are defined as: political; jurisdictional; semantic; cultural; syntatic; and technical (Mason, 2004). Adaptability is a longer-term goal as it requires learning content to configure itself based on learning progress or preferences (Shon, 2004). Two organisations providing international standards resources are The European Quality Observatory offering different quality approaches under currently development and the eLearning Quality Improvement Programme for Certifying e-Learning Programmes, a join initiative between the Swiss

Centre for Innovations in Learning – at the University of St Gallen – and the European Foundation for Management in Brussels.

The Future of eLearning Development: National Readiness

The future for the e-learning market developments is described in a report by The Economist Intelligence Unit and IBM (2003) which identifies underpinning characteristics and assesses the e-learning readiness of 60 countries based on these. The country readiness ranking was constructed from 150 qualitative and quantitative criteria divided into four categories (education, industry, government and society). Readiness to take advantage of internet-based learning programmes was based on existing use of and access to the internet in general and attitudes towards new technology. The overall country score is a weighted average of the four category codes. Data for this research was obtained from the multiple public and private sources including Economist Intelligence Unit, the World Bank, UNESCO and individual country experts.

The most highly rated countries share the characteristic that are related to economic development however it is notable that the world's three largest economies – the US, Japan and Germany – were rated 3rd, 17th and 23rd respectively. Common characteristics that are correlated with e-learning readiness are: high degrees of IT penetration; strong education systems; free markets that encourage competition and reward promising internet ventures; and governments, citizens and businesses that embrace technology at a cultural level. Regionally, the highest country ratings are North America, the United States and Canada, ranked 2nd and 3rd and Scandinavia – Sweden, Finland, Denmark and Norway – rated 1st, 4th, 7th and 9th respectively (Table 4).

This research identifies that bases for an e-learning capability vary at a country level. The presence of multinational corporations, with high consumption rates for e-learning, and highly regulated or technology-driven industries necessitate accessible, updateable training and learning, and are therefore drivers for developing necessary capability bases. Highly scoring countries were likely to have a high degree of collaboration between corporations, industry associations and government agencies. In Sweden, the government's creative efforts to increase the relatively low rate of PC penetration in 1998 to the world's highest rate in 2003 and their determination to harness technology for common good through on-line services at national and local levels were significant strengths.

In North America embedded national education traditions for life-long learning and open access to education, combined with internet culture, underpin the highest country ratings for online university degrees and courses. This is related to the development and accessibility of courses and the internet for e-learning programmes and high enrolment rates generally for tertiary education in community colleges and universities. South Korea – rated 5th – achieves the position despite being the only top-ranked country in which English is not commonly spoken in business settings. In December 2001, e-learning in South Korea was characterised by: 53 per cent of the population using the internet; 54 per cent of total households had broadband connections; the e-learning market was valued at 2 times larger than the game industry and 5 times the value of the movie industry; and growing at an annual average rate of 32.5 per cent – 48 per cent for content business, 37 per cent for solutions and 11 per cent for learning services (Shon, 2004). Currently, South Korea seeks to concentrate energy in a united authority for

mediating stakeholder involvement in development and standards to avoid the duplication of financial investment.

The governments of both South Korea and Singapore aggressively pursue internet and e-learning use in education starting as young as kindergarten, and in industry. Industry assessments in this research equally ranked South Korea with the United States given active content development and the establishment of standards. Other regional leaders identified in this research were Israel in the Middle East and Africa group (ranked 26th), Chile, Mexico and Brazil in Latin America (ranked 28th, 31st and 34th respectively) and the Czech Republic and Hungary in Eastern Europe (ranked 29th and 30th respectively).

Table 4 Economist Intelligence Unit e-learning readiness rankings 2003

	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	8.4	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 Rep.	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: The Economist Intelligence Unit Limited & IBM Corporation, 2003:7

Measures for a country's education system incorporate multiple dimensions within the sphere of organised education. These include: infrastructure; ICT access and usage; the status, image and pay rates of teachers; by internet access and usage among teachers and students within a countries education system, such as equal accessibility in country and rural areas and among wealthy and poor communities; the extent to which internet-based courses are commonly offered by universities; and educational policy issues including years of compulsory schooling; and educational funding as a percentage of GDP.

Industry measures are constructed from each country's primary (agriculture and mining), secondary (manufacturing), tertiary (services) and government sector usage and access of the internet, small and large organisational regard for online degrees during recruitment and the enthusiasm of employees towards internet-based training programmes. Lastly, the industry category readiness for e-learning assessed the e-learning industry with respect to the ease of provider establishment given the country's regulatory environment.

Ascertaining government support for e-learning advancement was derived from agency usage, provision and attitudes towards online services and training and its availability within public education and society. In particular e-learning readiness rankings for government considered the support and development by government and the education ministry for e-learning programmes in public schools and universities. A society rating for e-learning readiness examined access to and use of the internet by the country's population and the penetration rates of ICT's such as PCs, mobile telephones, low-cost fixed-line and broadband connections. The category also considers national education levels, international qualification equivalence ratings and the extent to which the internet

is used for courses for work, education or personal interest particularly when the course might not otherwise have been undertaken.

Within each of these four categories an additional set of components was assessed. The components are: 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 a country).

The Challenges Ahead

In conclusion though it appears that the development of elearning towards a comprehensive national and international accessibility will progress at a more definite pace in the coming years, there remain challenges if this progress is to be as extensive and beneficial as it has the potential to become. Among the challenges for elearning recognised recently by the World Bank (2004) include:

- Access to appropriate technology remain uneven and unpredictable.
- Scalability: there is a need to increase the rate of delivery and access to activities.
- Shareability: there is a need for standards that promote the sharing and scaling up elearning assets.
- Measurement: there is a need for an improved system of measurement to assess the impacts both in terms of learning and return on investment.
- Changed governance structures: the development of a franchise model for promoting long term, sustainable growth is required.

- Standards that ensure quality and sustainability of elearning are critical.
- Bridging the knowledge divide poses challenges that need collaboration among all stakeholders.

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