The Impact of E-Learning

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1 Introduction

The impact of the telecom boom on education and training is inevitable. The unprecedented developments in information and communication technologies (ICTs) are closely linked to several other significant changes in our economy and society. This also results in a higher demand for education and training in response to the challenges of our emerging "knowledge economy" and "knowledge society". A digitally literate citizen will be able to learn and take responsibility for continuous personal learning development and employability (eLearning Summit Task Force 2001).

Historically, distance education can be traced back to the 18th century, to the beginning of print-based correspondence study in the United States. In the mid-19th century correspondence education started to develop and spread in Europe (Great Britain, France, and Germany) and the United States. Isaac Pitman, the English inventor of shorthand, is generally recognised as the first person to use correspondence courses.

By the late 1960s and early 1970s significant changes in distance learning occurred due to the development of new media technologies and delivery systems. The Open University (OU) in Great Britain became the first autonomous institution to offer college degrees through distance education.[1] The OU now uses all possible forms of technology to deliver learning opportunities to students. As technology developed, the possibility for shifting from traditional one-way communication methods to two-way interactive distance learning programmes became more feasible.

ICT supported education quickly became the hot topic in the 1990s due to spreading use of the World Wide Web and its fast developing applications. These new technologies have opened up new opportunities for the non-traditional learner as well as for the traditional training institutions.

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[1] See http://www.open.ac.uk

Nowadays, almost all available ICT developments are being used for distance education, or – with today's more popular term – for E-Learning.

2 What is E-Learning?

E-Learning means a lot of different things, and it is understood differently by players with very different roles. The term E-Learning covers a wide set of applications and processes.

E-Learning is an umbrella term describing any type of learning that depends on or is enhanced by online communication using the latest information and communication technologies. The scope of such learning is very broad. The globally available definitions may, however, create confusion. Not only that the topic is equally new to course producers, to technology providers, and to the end-users (i.e. the learners), it also has not found its common ground and market position yet.

In the past few years, E-Learning has been emphasised too much, especially by leading technology providers, and thus has been made a rather abused term. However, as technology and business evolve, so does terminology. While other equally valid terms are likely to persist, E-Learning seems to have finally captured the field.

2.1 Characteristics of E-Learning

The promise of E-Learning is that it brings powerful new tools for improving competency and capability, speed, and performance whether an organisation operates at one geographical location or at many. Just as the rise of ICTs fundamentally changed the nature of how work and communication gets done, the emergence of E-Learning technologies is fundamentally changing the nature of how people learn. People are more and more encouraged to learn by themselves and to only learn what they really need to know to perform their task optimally.

The major part of the effective E-Learning is interactive. Because one should also possess a good portion of self regulation skills, in most cases a coach is also provided to support the learners throughout their learning path. In terms of greater flexibility and timeliness, E-Learning can suit training needs 24 hours-a-day, 7 days-a-week, where traditional classroom-based training initiatives are quite disruptive. Rather than having to wait due to making up a class of students, E-Learning allows training to be conducted for individuals at their own convenience.

E-Learning, however, cannot happen without a supporting technology. Enabling applications and their related technologies play a very important role. However, they should never be in the front-line for the end users. E-Learning can successfully eliminate some of the major disadvantages of earlier distance learning solutions. These are typically the content update cycle, the lack of feedback mechanisms during the learning process, and the response time of the student support tutoring systems.

Some of the benefits of E-Learning include:

- Self paced learning process, flexibility, accessibility, convenience

- Savings on travel cost and time

- Highly customisable individual learning style

- Interactive and rich multimedia learning content

- Learner focused learning through more active participation

- Easier content management, simpler data management, ease of update

- Possibility of linking the content with other learning resources

- Use of distributed libraries, inexpensive worldwide delivery

- Integrated assessment and testing facilities

- Variety of measuring methods of the learning success

- Measuring return on investment (ROI) by monitoring and evaluating the learning progress

The aspects of E-Learning make a difference in comparison to the traditional instructor-led training by identifying different benchmarks for measuring the quality and the success of the learning process. These can be:

- The reliability of technology, tools, and enablers

- Course development guidelines for setting up standards

- Defining the right course structure in the view of course objectives

- Online tutoring, learner interaction, feedback, self test

- Learning process follow-up, evaluation, tracking,

- Measuring and analysing the learning progress for return on investment

Setting up success criteria helps to measure the progress and level of achievement of the goals. E-Learning should always deliver content which is current and relevant. Learning through E-Learning therefore must provide the learners with access to available experts, to the best sources, promptly responding tutors, and fast solutions providers.

Successful learning also requires effective and engaging learning content. Intensive collaboration is needed to share relevant information and the knowledge of colleagues, experts, and professional peers. The task of E-Learning is to bring a wide range of resources together. Also, the power of the latest technologies can lead to increased personalised services and an individualised approach for the learner. The learners should be able to select the various activities from a customised interface.

Various implementation projects have shown that E-Learners usually mention effective personal skills development through which they can raise their value on the labour market. One of the most surprising revelations is the appreciation of the "non-threatening" atmosphere of the learning process.[2]

> Originally called distance learning, E-Learning has evolved into an interactive activity which fully exploits the assets of today's information technology.

3 Is There a Market for E-Learning?

The demand for E-Learning is rising: business cycles are getting shorter, and there is an increasing time pressure on companies. E-Learning in this context can mean less time away from work and lower costs for the employer. At the same time companies are expanding globally, which increases the need to learn more about non-domestic markets.

The continuing growth of mergers and acquisitions often involving large organisations is accompanied by the need to train many employees at once on particular subjects. Also, broadband internet access is more and more enabling people to learn online from their homes.

The real market size is still unknown. Many analysts have produced data on the training market, at national and at global levels. In the United States it is fairly easy to get an overview of market developments, and a growing number of investment companies compile data on market size and growth expectations.

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[2] Based on the experiences of the author of this report.

Gathering and analysing data on the European learning market is still more difficult compared to the US market as it appears to be much more fragmented. The heterogeneity of information and data sources, and the often imprecise terminology compounds the problem. However, the picture is already clearer than it has been even two years ago. One of the most relevant and most quoted market studies was published in 2003 by the European Centre for the Development of Vocational Training (Cedefop 2003).

IDC (2004) has also published a European Corporate E-Learning Market Forecast and Analysis, 2003–2008. According to IDC estimates, the UK market for IT training was about € 900 million in 2002, which in fact is less than a year earlier, when it amounted to about € 1,075 million. It was expected to be even less in 2003, mainly due to the dramatic reduction of corporate IT budgets and to the lower demand for IT professionals. At the same time, the E-Learning sector of the IT training market has been steadily growing in recent years as it has developed into more stability and sophistication. However, it is also becoming a bit more difficult to distinguish between regular training methods and their E-Learning counterpart, as a result of the growing trend towards blended learning solutions, i.e. training that combines both instructor-led and E-Learning elements. The study notes, "Although the corporate E-Learning market has been affected by the economic downturn in Western Europe, the market is still enjoying growth rates that are becoming increasingly rare in technology markets" (IDC 2004).

E-Learning has thus become a stable industry that seems to be experiencing a healthy growth rate. It may, however, be a bit slower than the expectations expressed by previous forecasts. But it still remains more or less steady even in spite of the recent economic slowdown. There are minor fluctuations that are occurring, especially for the technology providers, but nothing so far that suggests a decline in the industry.

The wide adoption is occurring across all sectors, with corporate and government sectors still leading the adoption trend. The academic sectors are experiencing the fastest growth rates, with the other sectors following closely behind.

Convergence is perhaps the most significant trend occurring in industry. Convergence of technology, characterised by integration, automation, and personalisation, is enabling industry to glimpse the early outline of next-generation products. Also, industry is entering a consolidation and maturation phase. The early market creation phase is turning into a value creation phase characterised by a wider spectrum of adoption. Consolidation is occurring as vendors race to gain market share and brand recognition. Prominent mergers receive press attention, but consolidation in the greater

industry has been gradual, with relatively small increments of capital redis-
tribution. There has not been a dramatic drop in the number of E-Learning
companies. The mergers and acquisitions activity is relatively steady, and
most companies are doing well.

There are clear signs of commoditisation in industry, with products be-
coming less differentiated. Prices are falling, and acceptable quality prod-
ucts are widely available. New features are still more important than the
actual price to the corporate buyer, but there are patterns that indicate that
these products are being sold as commodities in the general market.

This is good for customers. Features and quality are top priority when
prices are high. As competition develops and basic quality-level features
become common, the prices will drop. At that stage, customers will shop
for price since they can acquire the basic quality from a range of vendors.

Customers are still confused about the proliferation of companies and
products in the market. There are serious concerns as they have witnessed
bad experiences of other customers on poor but expensive implementa-
tions, and low usage rates that characterised the early E-Learning deploy-
ments. From the customers' point of view today's market needs to have:

- clearly defined implementation timelines (the shorter the better)

- cheaper and clearly defined pricing

- functionality that meets the expectations set by vendors (faster, cheaper,
  better)

- measurable, significant, and rapid ROI

- products that will not be obsolete in less than a year

- freedom to choose from a variety of vendors

3.1 The US Market

The US training market size is significantly ahead of the rest of the world.
Companies spend US$ 66 billion annually on corporate education, and this
is only a subset of the gigantic educational market in the United States. In
the US, the total training market was about US$ 735 billion in 2000. The
online component is expected to grow by early estimates from US$ 9.4 bil-
lion in 1999 to US$ 53.3 billion by 2003 world wide (Merrill Lynch 2000;
OECD 2001). Brandon-Hall forecasts the US E-Learning market to grow
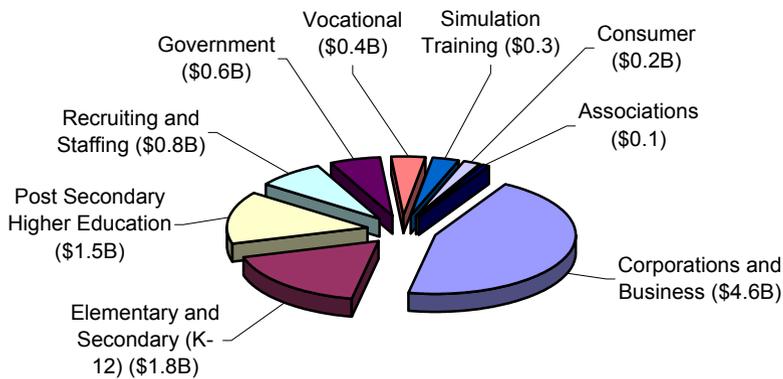exponentially in the forthcoming year (Adkins 2001).

Fig. 1. 2002 US Conventional E-Learning Market (Total US E-Learning market US$ 10.3 billion) (Source: Adkins 2001)

Table 1. E-Learning Forecasts (in US$ billion) (Source: based on Adkins 2001).

Sector	2002	2006	2011
K-12 Academic	1.8	11.0	18.0
Higher Education	1.5	23.0	44.0
Recruiting and Staffing	0.8	4.6	11.7
Corporations and Business	4.6	16.4	42.6
Government	0.6	2.7	13.4
E-Learning Simulation	0.3	6.1	37.0
Vocational	0.4	8.6	19.2
Consumer	0.2	7.3	16.0
Associations	0.1	3.4	11.0
Totals	10.3	83.1	212.9

Almost half of the academic institutions in the US already offer online learning as part of their curriculum. Merrill Lynch also refers to the multiplication of corporate universities from 400 in 1988 to 1600 in 2000.

There are distinct emerging patterns that are taking shape in the industry. There are signs of wide adoption, convergence, consolidation, and commoditisation. Although there are some minor shakeouts that are occurring, nothing so far suggests a decline in the industry.

3.2 The European Market

In 2002, the European E-Learning market produced a surplus of one third over the requirements that in some areas, like in non-IT technical training, nearly doubled.

The only area where a close alignment was registered between the need and supply of E-Learning were ICT training. This clearly indicates that a fairly mature market is delivering ICT training. It already encompasses about 20% of the ICT training market.

In language training, the supply is a little ahead of the use, however, it seems to be more popular in the new EU member countries. This can create opportunities for the longer established E-Learning vendors providing high quality popular language courses.

The content industry is fast moving towards developing highly interactive and enriched multimedia learning content. There are a few global, mainly US based market players in the European content market (Skill-Soft, NETg, HBS). However, they are still not gaining a dominant market share due to notable differences in learning culture and of course and languages. There is a great number of SME content developers and vendors providing goods for the local market in local languages.

So far, pure E-Learning solutions have not been very successful. E-Learning is such a broad concept that its essence has caused some confusion. Low adoption rates and consequent lack of familiarity with the technology are one of the most important factors. Also, not handling carefully the dramatic change in the way how learning takes place often created tangible resistance especially towards early implementations. Thus, the market shows a significant shift from the "early implementations" towards blended solutions, where traditional training is mixed with E-Learning features. Organisations that respond the slowest to changes are mainly large enterprises and public institutes, where ITC support for training is usually less provided. The lack of good content, however, still remains a significant barrier to market growth, and the lack of effective online learning materials and resources is one of the main reasons for early market failures.

The E-Learning market is the most developed in Finland, Sweden, and in Denmark. It is followed closely by the UK, the Netherlands, and Belgium. Germany and France line up in some segments, whereas they both show serious shortfall in other areas of E-Learning market developments. Spain, Italy, and Greece can not in the least represent a well developed and operating E-Learning market (Massy et al. 2002).

3.3 There is a Business Opportunity

E-Learning represents a strong business opportunity for the development of technology and learning content. IDC predicts E-Learning in the world-wide corporate environment to grow at 37% compounded yearly until 2006.

However, blended solutions seem to be more favourable in both real and virtual classrooms. The growth of blended approaches to deliver learning also makes the "off-the-shelf" content vendors move quickly to blended models (Barron 2001).

Accessible E-Learning will be a competitive edge during the current economic slowdown. The industry is evolving rapidly to meet the real needs of the customers. New customers and new vendors are entering the market previously dominated by "early adopters" and E-Learning is now becoming a mainstream. There are signs of wider adoption, convergence, and early signs of developing commodity products and services.

> The world-wide E-Learning market size is roughly estimated to account for some US$ 53 billion in 2003. The size of the US market lies far beyond that of Europe so far. The market shows a healthy growth rate. The industry is currently in a convergence phase. While very technology driven, the lack of good content is still a major issue in e-learning. Nordic countries have the most developed e-learning market. Corporate e-learning is the biggest growth market.

4 The Promise of E-Learning

The promise of ICTs in education can be described in brief as an opportunity to provide better education cost-effectively to more people. The question which is going to be addressed in the following is which parts of the teaching and learning processes can be most successfully supported by technology and digital media.

In order to build a successful E-Learning business scenario the cost for an E-Learning programme should be lower than an alternative classroom-based, instructor-led training. However, there is always the biggest stumbling block, i.e. the start-up cost for investment in the supporting technology. But the costs associated with delivery of the programme to the end-users are already much lower than for traditional methods.

Knowing about learning styles can help us determine if E-Learning is an asset. The interaction and delivery methods used in E-Learning courses are fundamentally different from traditional classroom-based methods. In an

online course, there is a lot of passive learning done through reading text, looking at graphics, listening to audio, watching video clips, animations. Also, the active, or responsive mode is no longer oral, it is done very much through writing (like email messages, forum discussions, blogs and chatting). Online learners are usually self-directed. For these reasons, most of them would then learn more effectively in terms of having better retention. Typical domains of the use of E-Learning are ICT related subjects, general business and financial studies, languages, fast and frequently changing content at the work place.

4.1 Drivers of Partnership

New categories of partnerships in E-Learning are shaping, which especially concern corporate education and knowledge management. These areas have been the most affected by the trend towards globalisation and the increasing close relationships between a wide range of educational and business organisations (ACTeN 2003b).

There is a visible convergence in the educational market driven by the emergence and rapid development of new learning and content publishing technologies. Also, clearly distinct even some years ago, the markets for entertainment, customer care, employee and adult learning are rapidly converging. The work-flow in a modern learning content publishing process provides brand new opportunities to form new strategic alliances and partnerships including different types of business and educational units.

- *Media-media alliances*
  The main driving forces are digitisation and the Internet. The media industry is showing a constant merger and acquisition process including new and old media company types, challenging the predominant role of publishers as intermediaries between content makers and consumers.

- *Education-education alliances*
  Especially European training and educational institutions show a clear trend in forming international networks and various interest groups. Most of the recent alliances have been established during the past few years under the influence of both new learning technologies and internationalisation.

- *Education-corporate universities alliances*
  It is reported that there is now a trend for corporate universities to establish links with even more reputable and more academically rigorous business schools.

- *Education- media alliances*
  It is now becoming a common practise that large media conglomerates are entering into alliances with institutions for higher education and business schools to develop strategic alliances and use technology effectively while protecting each of their intellectual property.

Most of the new market players at present are seeking to work with universities. Particularly in higher education, there are four reasons why media, education institutions and corporations are entering into alliances and develop closer partnerships. These are:

- *Convergence*
  There is a convergence in learning markets as a consequence of the development of new learning and publishing technologies. The domain of traditional education may historically have been most important, but the fields of employee learning and edutainment have grown much more during the last decade. These markets, clearly distinct even a few years ago, are now rapidly converging.

- *Structural gaps*
  The historical barriers between content makers and network providers are broken down; a "structural gap" has emerged waiting for a whole range of brokers to fill it in. It is an entrepreneurial driving force to establish a direct link between content providers and the end users, the learners.

- *Branding*
  Increased activity in this area is mainly due to the emergence of new technological possibilities usually provided by major IT firms, whereas the traditional academic educational institutions are associated with the quality of the training. This brings a growing need for "branding" of learning products and the supporting technology that follows along with the broadening of the customer base. Branding of major media corporations links up with top-ranked education institutions.

- *Globalisation*
  It is of great interest to focus on the emergence of new kinds of cross-national networks not only in business education. Globalisation of student flows and programmes leads to the establishment of transnational governance structures.

The key drivers for partnerships can be categorised in terms of investment, competence, and opportunity. With this, the key drivers for partnership are just like in any business alliance.

Outsourcing is now becoming a popular option. Companies increasingly focus on their core competences and partner with other companies where it is more appropriate to accomplish business objectives through the involvement of external expertise. More than 95% of the multinationals are outsourcing parts of their business. Figure 2 illustrates the areas which are usually outsourced.

Commercial organisations may provide managed services to support E-Learning targeted at the provision of ICT equipment or content or both. The measure of the effectiveness of such arrangements will be the quality of learning provision and support, which will remain the prime concern of learning providers themselves rather than of third-party suppliers.
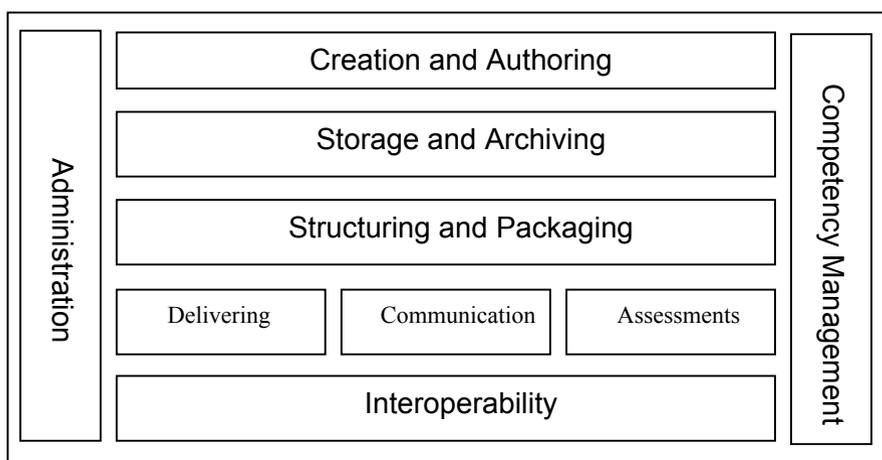

Fig. 2. Distinct areas of E-Learning business activities which are usually outsourced to third parties and to strategic partners.[3]

Considering public-private partnership developments, there are many ways in which costs and risks associated with E-Learning developments can be distributed between commercial and public sector organisations. Such arrangements have the potential to help maximise the use of public funds and enhance the quality of both learning opportunity and learner support. They can also ensure that public intervention is effectively directed to the support of minority needs that would not normally be met through commercial activity.

> E-Learning partnerships show an increasing globalisation and closer links between educational and business organisations, thus creating new services and models.

4.2 Major Technological Developments

Developments in Internet technologies are the basic enabler of E-Learning. Content, technology, and services are the three key segments of the E-Learning industry, where content still seems to receive the main attention.

Content in the media industry has three categories: entertainment, infotainment, and edutainment. The first one is consumed by users just to spend their spare time. The second contains some valuable information, but the communication is typically one-directional. The third is the most challenging, where the aim is to create interactive material for active support of the learning process, an exciting blend of classical game design and educational content.

As the market matures the demand for sophisticated simulations and edutainment will increase, it will be one of the most important aspects of E-Learning. Educators disagree on the educational value of most "edutainment" software. Consequently, media managers have a responsibility to maintain a fine balance between education and entertainment, whether it is in the form of educational programmes aiming to entertain as well, or of pure entertainment carrying a particular message.

As E-Learning is becoming more mainstream, learning practitioners are more and more positioning themselves for the next significant movement in the use of technology in learning, namely simulations. The four main industries competing for the E-Learning simulation market are the simulation industry, the E-Learning industry, the edutainment segment of the gaming media industry, and the educational publishing industry. Each industry brings its own core of expertise, competitive strengths, and customer relationships to the market.

Also, wireless networking may be expected to continue to grow in significance for learners. Thus, mobile E-Learning is a natural development in the product evolution of conventional E-Learning. In many ways it is recapitulating the evolutionary process that E-Learning experienced as it emerged from traditional classroom training. The progression towards mobile E-Learning is part of a general trend toward ubiquitous and pervasive computing.

Technology

This sector is dominated by Learning Management System (LMS) vendors. This is the most tangible and also one of the high cost elements associated with any E-Learning implementation. There is an endless number of choices, and it is especially valid for the "early industry" that E-Learning used to be identified as the purchasing and employment of an LMS.Major market players include Centra, Click2learn, Docent, IBM, Saba, and WBT Systems.

Content

Usually, the largest E-Learning content providers are generic publishing companies. Some content developers broaden their set of products and extend their business to related services, like curriculum and instructional design (ACTeN 2003a). Major market players include Harvard Business School, NETg, SkillSoft, and Smartforce.

Services

This segment is typical for Application Service Provider (ASP) companies. ASP is a third-party entity that manages and distributes software-based services and solutions to customers across a wide area network from a central data centre. There are many advantages in using third party hosted solutions, and it is often described as outsourcing. It is the least developed market segment and there are no global market players yet.

Simulation and edutainment as well as wireless, ubiquitous and pervasive computing are major technological trends affecting E-Learning.

5 Outlook

ICT brings rapid changes and continuous advancements to our everyday life which creates new opportunities for a next generation of widely shared applications.[4]

Practically non-existent in the past, ICT driven training opportunities are now at the centre of every domain of training and education. The Internet is empowering a new wave of training methods that custom fit work schedules, budget, and training preferences through innovative technologies, flexible delivery methods, and engaging multimedia content.

The process of learning is being transformed by the digitalisation of our society. Although E-Learning is in fact not more and not less than "actually learning", it still takes advantage of the multi-channel communication of multimedia contents. This makes technology the major driver of E-Learning developments. Technological and communication advances hold the promise for a new generation of network applications that can provide qualitative leaps beyond what is possible using today's Internet technology. The December 2000 Report of the Web-Based Education Commission in the US (Kerrey 2000) highlights a number of the more important trends in ICT, that all have a particular relevance for the education sector:

1. Consumer access to broadband Internet connections is showing an exponential growth and a dramatic drop in price, allowing for the transmission of large amounts of data, whether through wired or mobile channels, making a richer delivery of content other than simple text possible;

2. Pervasive computing is becoming common, where computing, connectivity, and communications technologies connect small, multi-purpose devices, linking them by wireless technologies. These solutions may enable underdeveloped and remote areas quickly to take advantage of the Web;

3. Digital convergence is progressing by merging capabilities of the ubiquitous infrastructure of telephone, radio, television, and other electronic devices. The ubiquitous infrastructure of television will be significantly enhanced by conversion to digital transmission. Stations will be able to

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[4]   The given outlook is based on the experience of the author in ICT supported training both in academic and in corporate environments in various countries throughout Europe. It also integrates the most relevant and up-to-date studies and reports, market and business analyses of the global market as well as of US and of European specific publications.

offer dramatically enhanced programming by "data casting", a wealth of supplementary information to accompany the regular broadcast. This may include course materials delivered via text, video, or audio formats;

4. Agreements are reached on technical standards for content development and sharing, which are expected to advance the development of web-based learning environments;

5. Adaptive technologies, that combine speech recognition, gesture recognition, text-to-speech conversion, language translation, and sensory immersion will change the very substance of network-enhanced human communication;

6. Equitably available and affordable technology brings down the barriers of social, economical, and geographical inequality.

With these trends in mind, it is also not surprising that the E-Learning sector is still a promising market. Although the table below shows some inconsistency in the way E-Learning business is projected by various consulting firms, these figures all demonstrate that the E-Learning industry is indeed experiencing a significant growth rate and that it remains steady even in the midst of the current economic slowdown.

Table 4. Comparative Estimates: Worldwide Corporate E-Learning Revenues, 2000–2010 (in US$ billions) (Source: Emarketer 2003)

	2000	2001	2002	2005	2006	2010
Cortona Consulting 2002	–	5.0	–	–	–	50.0
Gartner 2001	2.1	–	–	33.6	–	–
International Data Corporation (IDC) 2003	–	–	6.6	–	23.7	–

Note: * US and Europe only

The ultimate vision of lifelong learning and the knowledge society would in fact replace teaching with learning, enabling life-long, self-directed, and flexible learning. There has been a shift among providers of education and educational technologies towards a greater emphasis on life-long learning and entertainment/consumer learning. The largest potential demand for E-Learning is likely to lie in the consumption and entertainment sector, with employee learning as a good second, and students as the third largest markets. The opportunity for customer E-Learning is now estimated to be much greater than employee E-Learning.

The lead question is what would be the dominant business model for selling E-Learning in the coming years? This brings us to a rather slippery ground to say anything about the future of E-Learning. It highly depends on – referring to the basic problem of – defining what E-Learning is. Seeing it as a facilitator for producing and delivering rich multimedia up-to-date information, high interaction as well as opportunities for effective collaboration, then it is, with all the recent obstacles and the earlier mentioned drawbacks, a worthy business.

E-Learning somewhat does not seem to be just one of the many casualties of the big Internet "bubble". Instead, it is quickly emerging and increasingly becoming a mission-critical component of an enterprise's business infrastructure. Knowledge is now considered as a highly competitive advantage and companies' most important asset. It is now already making Wall Street and the investment community take a closer look.

It is hard to tell what exactly E-Learning can and will offer in the near future. However, it is very likely that today's major corporate market players will be shaping the future of E-Learning. They would work in alliance with mainstream academic institutions and public organisations involving local partners as argued before.

According to research from IDC (2004), E-Learning is set to take off in Europe. IDC predicts that the European E-Learning market will be worth nearly US$ 6 billion by 2005, and will account for 25% of the European IT training market.

> Trends in e-learning, being very technology driven, heavily depend on ICT developments, including extended broadband access, wireless computing, and the convergence of digital devices. Ultimately, teaching could well be replaced by life-long, self-directed e-learning for the consumer market.

References

ACTeN – Anticipating Content Technology Needs (2003a) Mastering Multimedia, or How to Create Good Digital Learning Content. Workshop Report. Available at: http://www.acten.net/cgi-bin/WebGUI/www/index.pl/SW_report9

ACTeN – Anticipating Content Technology Needs (2003b) BBC and Microsoft sign Deal for Digital Curriculum. Available at: http://www.acten.net/cgi-bin/WebGUI/www/index.pl/newsletter10

Adkins S (2001) Market Analysis of the 2002-2010 U.S. E-Learning Industry: Convergence, Consolidation and Commoditization. Available at: http://www.brandonhall.com/public/publications/market-us/index.htm

Barron T (2001). An E-Learning Industry Update. In: Learning Circuits, vol 2 n7. Available at: http://www.learningcircuits.org/2001/jul2001/barron.html

Byrkeflot H (2000) The Role of Media in Alliances in E-Learning. Paper presented at the CEMP Conference The Role of Media in the Consumption of Management Ideas, Barcelona, December1st and 2nd, 2000

CEDEFOP – European Centre for the Development of Vocational Training (2003) Perspectives for European E-Learning Businesses. Markets, Technologies and strategies. Thessaloniki: Cedefop

eLearning Summit Task Force(2001) European eLearning Summit – A Digital Future for European Learning. Summit Declaration, May 2001. Availabe at: http://www.ibmweblectureservices.ihost.com/eu/elearningsummit/ppps/downloads/declaration.pdf

Emarketer (2003) Comparative Estimates: Worldwide Corporate E-Learning Revenues, 2000–2010. June 1st, 2003. Available at: http://www.emarketer.com/Chart.aspx?31068

IDC – International Data Corp. (2004) Western European Corporate eLearning Market 2003-2008 Forecast and Analysis. Availabe at: http://www.idc.com

Kerrey B (2000) The Power of the Internet for Learning. Final Report of the Web-based Education Commission to the President and the Congress of the United States, Available at: http://www.ed.gov/offices/AC/WBEC/FinalReport

Massy J, Ward T, Harrison T (2002) The European E-Learning Market Report. Reading: Bizmedia. Available at: http://www.elearningage.co.uk

Merrill Lynch (2000) The Knowledge Web. New York: Merrill Lynch. Available at: http://www.internettime.com/itimegroup/MOE1.PDF

OECD (2001) E-Learning: The Partnership Challenge. Paris: OECD.