

The eLearning industry and market in Europe

Lot 1

Appendix to Synthesis Report

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Austria

National policy and economic conditions

The aim of the ICT strategy of the Ministry of Education is that e-Learning and the Internet should become natural learning resources. These aims are reflected in eight priority projects:¹

1. Establishment of e-Learning academies.
2. Extending opportunities for training in ICT.
3. Developing on-line teaching content/educational gateways.
4. Setting up ICT scientific centres.
5. Enriching adult education and training.
6. Promoting the Austrian cultural heritage over the Internet.
7. Launching “e-Government” in education.
8. Adapting the infrastructure.

These objectives have resulted in two major Austrian platforms enhancing the e-learning sector: bildung.at and eFit Austria. www.bildung.at – as designed by experts – is the first level of the programme platform of the Ministry for Education, bm:bwk. It comprises all educational services and institutions of the Austrian federal states. The interactive eLearning Portal@Austria connects and unites all Austrian educational institutions and experts, teachers as well as pupils and students. Implementation of communities, interaction, discussion, feedback zones and newsletter services.

The next step will be personalised access for all Austrian users to eLearning services and programmes. Thus, www.bildung.at will be the Austrian one-stop-shop for eLearning. Bildung.at. It has a dynamic structure with four components “multi media technology, interactive learning and teaching, individual services, electronic data and communication network”. With its project focus eLearning, eFit Austria, intends to support teachers and students in the application and conveyance of the new technologies. This also is in line with the EU-objective of making all teachers competent in “Internet technologies” before 2002

Furthermore, Austria has joined the international project eSchola 2003 having also a specific national component.

ICT profile of Austria

Demographics and Network Readiness Status

Austria, has a population of 8.2 million, 68% of whom are aged between 16 and 65. The country ranks ninth in the Centre for International Development’s Networked Readiness Index.¹ This places Austria between southern Europe and Scandinavia in terms of the extent of its ICT diffusion.

Austria’s mobile telephone market is huge with a very high level of penetration, partly as a result of fierce competition among providers. Surprisingly, PC and Internet penetration is relatively low. Although e-commerce still has a lot of scope for further development in Austria, the ICT industry is steadily overtaking tourism as a real force in the Austrian economy. High telephone costs and concern over security remain the two most limiting factors in the

¹ http://www.elearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=26&doclng=1&p1=1&p4=1

rate of growth in e-commerce. Although the Austrian government has developed some e-government initiatives, the implementation of these has been slowed by the decentralised nature of the system and the diversity of national agencies.

Year	2001-2002
Main telephone lines per 100	47.36
No. of cell phone subscribers per 100	78.55
No. of personal computers per 100	27.65
No. of personal computers connected to the Internet	21.29%
Internet Hosts per 1000	59

Figure from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

With an adult literacy rate of 99%, Austria spends 6,3% of its GDP on education and has 50% of the relevant age group involved in tertiary education. Austria launched a programme called 'E-FIT' as a result of the Spring 2000 'e-Austria in e-Europe' initiative, incorporating eight fields of activity related to IT and Internet training at all levels of education. This included equipping all Austrian schools with internet access by the end of 2001, encouraging universities to collaborate in the development of e-research and providing internet training to 120,000 teachers by the end of 2002.

Despite having 100% of secondary schools connected to the internet, Austria's figures for the number of pupils per PC (13 for primary schools and 10 for secondary schools) is judged too low to qualify as constituting an integral part of the learning process. The percentage of teachers who were skilled in the use of IT was 54% in January 2001.

ICT and Government Policy

The Austrian Government has given solid backing to ICT within its National Action Plan for Employment and is aware of the need for continuous training in new communication technologies. This was partly met through a project called "Circus Internet", a mobile training unit that toured Austria for two years from June 2001 to June 2003. The 1999 eEurope initiative led to an overhaul of Austria's ICT policies under the title "e-Austria in e-Europe" in the spring of 2000. Policy focus has shifted from improving conditions for the diffusion of new technologies to concentrating on skills and training in recent years due partly to concerns over a shortage of ICT skills in the labour force. More attention is now also being paid to e-government, particularly towards achieving extensive communication and transaction services.

Training & development market in Austria

Initial Vocational Training

In 2001, four out of five young persons completing compulsory schooling followed a vocational path, rather than attending a secondary academic school. There are two possible paths for young people to undertake initial vocational training (IVT):

- 1) *School-based IVT*: the technical and vocational schools and colleges at upper secondary level which involves full-time school attendance
- 2) *Apprenticeship Training System*: where training is mainly within the business environment with partial study at part-time vocational schools.

School-based IVT

There are two main types of school-based IVT, both of which offer general education alongside vocational training:

- 1) *Secondary technical and vocational schools* (BMS): courses last 3-4 years and involve a period of practical training in school-owned workshops, etc. Successful students leave with a qualification equivalent to a completed apprenticeship.
- 2) *Secondary technical and vocational colleges* (BHS): normally lasts 5 years and allows the pupil to enter a higher vocation programme, as they conclude by completing the *Matura* (school leaver's certificate, like in secondary academic schools). Courses are split equally between general education, vocation-specific theory and vocation-specific practical exercises.

In 2002 direct federal expenditure on BMS and BHS amounted to €1,084 billion. Some 49,400 young people attended BMS, while 126,500 attended BHS.

Apprenticeships

Apprenticeship training under the dual system plays an important role in the education and training of young people in Austria. Around 40% of those completing compulsory education enter an apprenticeship. Currently, there are around 124,000 apprentices training in 40,000 businesses and of these 12% of apprentices are in *industry* (averaging more than nine apprentices per business). The largest training sector is *trade and manual work* accounting for 61% of apprenticeship businesses and just over half of all apprentices.

Apprenticeships last 3 years on average and include time in the business (where apprentice compensation plus their tax/social contributions, and training costs are paid for by the enterprise) and time in part-time vocational school (paid for mainly by the provincial governments with additional funding from the federal government). There are over 270 available apprenticeship vocations. For 2001, the total provincial expenditure on apprenticeships amounted to around €550 million with a further €102 from the federal government. Though less reliable, estimates for business expenditure amount to approx. €1.6 billion.

Continuing Vocational Training, Training for Adults, Training for the Unemployed

Continuing Vocational Training and Training for Adults

Continuing/adult training is mainly funded by the private sector - either by enterprises directly or by individuals/households. As a result, data providing an overall picture of this sector are difficult to come by. There is some public expenditure for continuing training and this is essentially directed at educational establishments that work on a non-profit basis. Expenditure in this area amounted to €281 million in 1999 and just over half of this was spent on schools for people in employment.

Enterprise-based funding for continuing training benefits from tax incentives in the form of:

- a) Tax exemption for 20% of expenditure for both internal and external continuing and further education
- b) Since 2002, businesses may alternatively apply for an education premium equivalent to 6% of expenditure for external continuing and further education.

As noted above, overall data are notoriously difficult to obtain, though there have been a number of ad-hoc estimates. Perhaps the most useful of these - certainly from the perspective of international comparison - is the CVTS2.² According to this survey, training costs amounted to 1.3% of total overhead costs for employees, or a gross estimate of €723 million, of which €437 million was direct expenditure (including course fees, staff costs for internal training staff). In addition, expenditure by individuals/households on CVT and adult learning was been estimated at €792 million in 2003.³

Training for the Unemployed

This area is primarily the responsibility of the public sector and since 1994 has been under the control of the Job Market Service (AMS). Focusing on *active* labour market support (as opposed to the *passive* part, which is merely income support), total expenditure amounted to around €600 million in 2001 (this includes some €80 million from the European Social Fund) and of this around 60% was spent on so-called “qualification” measures, i.e. training-related activities. This funded 418,000 cases of which the main components were: *funding of training measures* (115,216 cases), *funding to cover the cost of living during training* (114,057) and *funding of auxiliary costs for courses* (109,311). Data from Eurostat’s LMP Database⁴ show that expenditure on active labour market measures amounted to €748 million in 2000, of which €408 million was spent directly on training measures. Overall active expenditure was equivalent to 0.365% of GDP with training amounting to 0.2%.

With a market share of 20 percent, the Austrian Chamber of Commerce’s Institute of Business Promotion (WIFI) is the top training and further education institution Austria. More than 320,000 participants attend approx. 26,000 courses taught by 11,000 trainers. The WIFI institutes have an annual turnover of EUR 109 mill. WIFI has an extensive national network of institutes with at least one main WIFI in each province and 80 branches, which all offer WIFI courses. It provides e-learning courses in some areas from its online platform:
<http://www.wifi.at>.

Educational sector in Austria

The Austrian educational system consists of several levels. The Grundschule is the first level that pupils attend. This lasts for the first four classes. The next stage is divided into different lower secondary schools depending of which educational career the pupils are expected to take. There is compulsory school attendance from 1st to 9th grades. The upper secondary level from the 10th grade consists of six different types of schools depending on the degree of theoretical or practical education that the pupil chooses. In the below table, schools within the compulsory school attendance from 1st to 9th grades are included in the category “primary and

² The Second Survey on Continuing Vocational Training carried out by Eurostat in 1999. It should be noted that this does not cover certain sectors (notably the public sector and agriculture). Nor does it include enterprise with fewer than 10 employees.

³ Peter Schlögl / Arthur Schneeberger: *Erwachsenenbildung in Österreich – Länderhintergrundbericht zur Länderprüfung der OECD über Erwachsenenbildung im Auftrag des Bundesministeriums für Bildung, Wissenschaft und Kultur*; Wien, Jänner 2003.

⁴ This is a more recent database of expenditure on - and participants in - labour market policies and is considered a more detailed and accurate source than the OECD database.

lower secondary schools” except for the “Allgemeinbildende Höhere Schule” (5th-12th grade), which is included in the category of upper secondary schools. There are 26 higher educational institutions in Austria including universities, colleges, academies and “Fachhochschulen”.

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	4,945 ⁵	1001 ²	26
Teachers	74,957 ²	45,254 ²	10,925 ²
Pupils	683,290 ²	499,916 ²	226,454 ²
Pupil:PC ratio	12 (2002) ⁴	8.5 ⁶	4 (2002) ⁷

Practically all educational institutions and school authorities are on-line, and all teachers have basic skills in multimedia and internet services. This and the ratio of pupils per PC thus all meet the objectives identified by the European Council saying 5-15 pupils per PC. The goal for 2005 is that there are 10 pupils per PC in the primary and lower secondary schools, 8.3 pupils per PC in upper secondary schools and 5 pupils per PC at maximum in all higher education facilities. It appears that these goals are almost already fulfilled. Furthermore, the active use of ICT in the learning process is explicitly assisted by initiatives such as bildung.at.

E-learning market size and characteristics

The corporate e-Learning market in Austria was in 2002 reported to be 102% percent, which was more than the European average of 96%. One third of the 500 largest companies in Austria was at that time already using e-learning as part of their training programme. In September 2003, Theo Hug from Research Studio E-learning assumed that the potential for the creative use of new media in learning in Austria still remains 90% unexploited. The e-learning market was estimated to be worth approximately 100 mill. EURO in 2003 and could grow by almost 100% in 2004.⁸

While e-learning is used primarily in larger companies, e-learning is assumed to have a large potential in small and medium-sized companies too. The market is still going through a consolidation phase and is still primarily a market of business to business solutions even though some offers such as WIFI, e-bfi, and the governmental www.bildung.at, are directed towards consumers.

Most Austrian e-learning providers are comparatively small companies that have been established within the last five years.⁹

In the private sector e-learning is mostly used in the financial sector in terms of banks and insurance companies followed by industry with regards to the spread of using e-learning as a

⁵ http://www.bmbwk.gv.at/medien/10342_stat_tb_2003_dt.pdf

⁶

http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computers_perp_secondary.gif

⁷ <http://www.efit-austria.at/english/infrastructure/>

⁸ E-learning challenges in Austrian SMEs, 2002, Klaus Reich and Friedrich Scheuermann, Institute for Future Studies, Innsbruck, Austria

⁹ <http://www.eurolern.net/Default.aspx?tabindex=4&tabid=624>

Supplement to existing training and development methods. However, the largest growth rate of e-learning use is found in the retail business.¹⁰

E-learning industry

The e-learning industry in Austria stretches across a wide range of businesses, public, private partnerships as well as other types of partnerships.

Research indicates that the Austrian market appears to be fragmented and dynamic.¹¹ This implies that only few providers have full factorial solutions within the e-learning market. The companies offering such full factorial solutions are mostly large and international companies like NETg, IBM and HP. There are, however, a number of solid Austrian providers such Bit Media and Hyperwave as well.

Bit media e-learning solution (60 employees 2004)

With a turnover of 4.4 Mio. Euro in 2003 the company is one of the Austrian market leaders within e-learning products and solutions. Bit media is owned by Siemens and BIT group and has clients like ThyssenKrupp Steel, Austria Railway, Ministry of Education, Science and Culture, KPMG, Boehringer Ingelheim, Henkel and has a number of international customers like Siemens Netherlands and ECDL in Switzerland. Bit Media covers the whole range of products and services within the e-learning sector and has also developed its own Learning management system together with Siemens – SITOS and the authoring tool ITS, Contentcreator. The company has launched the www.lernportal.at and have several large corporate clients using the platform for managing their on-line learning activities. Www.bitmedia.cc

A number of private suppliers are offering standard e-learning tools. There is no complete overview over the Austrian market, but the market does have both large and small companies operating in this field, even though the market is under pressure from especially German and global companies.

s.i.c-consulting (9 employees)

The company was founded in 1999 and specialises in the application of simulations for internal training. Among its customers are Erste Bank and Generali. www.sic-consulting.com

The e-learning suppliers addressing the educational sector is primarily represented by traditional Austrian publishers and innovative operations like Bit Media, but the e-learning industry is also characterised by a great deal of public private partnerships. Frameworks like “IT in Schule” (www.it4education.at) has been established in order to try and support these kind of partnerships.

¹⁰ Helmer, Christine (2002): *eLearning.at – Bestandungsaufnahme, Risiken und Perspektiven von eLearning für den österreichischen Weiterbildungsmarkt*

¹¹ Helmer, Christine (2002): *eLearning.at – Bestandungsaufnahme, Risiken und Perspektiven von eLearning für den österreichischen Weiterbildungsmarkt*

International suppliers

As stated above, large international companies are highly represented in Austria with regard to full factorial e-learning solutions covering content, technology and services. These include companies from non-German speaking countries such as France, UK and USA, e.g. HP, Cisco, IBM, NETg, etc. Some of these have offices in Austria while the Internet has made it easy for several suppliers to penetrate the Austrian market without even having a representation in Austria but delivering on-line.

IBM

IBM Management Development trains thousands of people each year using its Lotus Learning Space and various physically training sessions. The courses typically consists of so-called learning labs, collaborative learning over the net self managed simulation-based learning. Based on substantial internal experience, IBM has been offering its model and courses to external customers for several years.

<http://www-306.ibm.com/services/learning/at/>

Moreover, many firms from neighbouring countries act on the Austrian market. Thus, both Swiss but even more so for large German companies are present in Austria. Several of these do not have offices in Austria, and especially the linguistic and cultural similarities, such as similar educational systems, tend to make it easier for these companies to gain a foothold in the Austrian market.

E-learning content suppliers

A study in 2002 by Christine Helmer¹² in connection with her exam project in April 2002 into the e-Learning suppliers and their products in Austria identified 22 companies supplying 213 e-Learning courses within 33 different topics of which one third was IT related. Some companies are specialised in the development of e-Learning content and solutions for other companies, where as the majority supply off-the-shelf e-Learning courses. Dynamic Media offers a full service together with partners in the field of Consulting, Learning Management Systems and Hosting. The company's 16 employees focus on its core business which is content development. Dynamic Media is a partner of Hyperwave which has integrated the "Dynamic PowerTrainer" within the Hyperwave eLearning Suite. Together with Hyperwave, Telekom Austria and LearnChamp (Consulting) Dynamic Media organise a series of eLearning events all over Austria. More about the partnership can be found at: www.elearning-quartett.com.

Examples of Austrian Suppliers of bespoke content:

Dynamicmedia (www.dynamicmedia.at) provides both individual and standard content within e-learning. This includes both computer and web-based training. The company has worked for organisations such as Bank Austria Creditanstalt, Allianz Versicherung, Generali, UNIQA, Telekom Austria, Mobilkom Austria, GFK, Baumax, REWE Karl Franzens Universität Graz, Oberösterreichse Versicherung and Österreichischer Rundfunk. Dynamic Media with 16 employees provides both individual and standard e-learning content, but has also developed an e-learning Authoring Tool (Rapid Content Development) with more than 130 installations in the German speaking world. Dynamic PowerTrainer(R) (www.dynamicpowertrainer.com) has received a good review in a direct comparison with eleven other authoring Tools in a recent survey (summary published on this site: www.learnchamp.at).

¹² www.elearning.at

The other authoring tools: (Author42.ASP (bureau42), Breeze (Macromedia), Content Creator (bitMedia), Easy Prof (ITACA), EasyGenerator® (ISM Easy Generator), Idea (LINK & LINK), LearnCube (X-Pulse), Lectora 2004 (Trivantis), Lesson Creator (Know-how!), Trainersoft (OutStart) und WBT-Layer (engram).

IVG DATA (www.ivg.at) delivers bespoke e-learning solutions for German and Austrian customers. It uses Toolbook and its model GRADUATE to develop learning content. The company was established in 1989 and has 25 employees. Significant customers include SPARDAT, FSC, Fujitsu Siemens, UNIQA

E-learning Technology Suppliers

There are a number of companies supplying e-learning related technologies within the Austrian e-Learning industry, however they are concentrated on mainly international companies and German companies supplying their platforms also in Austria. However, there are a few Austrian Operators supplying mainly their own platforms, notably Bit Media and Hyperwave.

Examples of e-Learning technology suppliers

Telekom Austria (www.telekom.at). With total managed revenues of € 3.9 billion and 15,000 employees in 2002, Telekom Austria is the largest telecommunications company in Austria and also one of the leading corporations in this country.

MiT (www.mit.at) has developed platforms for e-learning since 1996 and is one of the pioneers in Austria within this area. In collaboration with WIFI Österreich a complete e-learning platform has developed which has been operating for three years as the Tele.WIFI, within educational institutions in Austria including Wirtschaftsförderungsinstituten and several Fachhochschulstudiengängen. The platform is used by more than 5000 users today.

Hyperwave (www.hyperwave.at) originates in Austria, but today the main offices are situated in Munich, Germany. Nevertheless, the development capability of the Austrian department is significant, and the number of Austrian customer references indicate a strong presence in Austria.

E-learning service suppliers

The partner to AC Nielsen, Markant¹³ conducted a study of the e-learning suppliers in 2001 and found of 23 identified suppliers that responded, 19 operating in the service segment compared to 15 in content and 17 in technologies. In total at the time, these 23 companies employed some 168 employees. In other words, it is an industry of small companies. Most of the services are supplied in the business to business area. The business to consumer market is quite small, but made up of mainly operators like AcademyNow and WIFI. Finally, there is a significant group of suppliers covering eLearning advisory services and consultancy in connection with e-learning projects. Many of these also originate from the University centres where extensive research work has been done within the domain.

Academy Now (www.academynow.com) has approximately 50.000 registered users and more than 1,000 online Courses within languages, business and IT. It makes the company one of the biggest e-learning portals within the German-speaking markets. Since 2002, Academy NOW Internet Lernportal GmbH is fully owned by the bit Group, the biggest private provider qualifications in Austria

Badegruber & Partner (www.clickandlearn.at) has been active in the adult education and training

¹³ Markant study: "eLearning 2001 – Neue Formen des Lernens"

market since November 1996. Already in 1998, the first server with e-learning modules was established. Today the company offers more than 1,000 IT-related courses. Since 2000, the company has offered its “e-akademie”, a virtual seminar centre on the Internet. In April 2002, it also opened up its virtual language learning centre.

Common sense (www.common-sense.at) is a young international team that arranges education and training projects for enterprises, NGOs and public institutions and helps their clients realise them.

Belgium

National policy and economic conditions

In the field of training and education, Belgium is divided into three communities, the French-speaking, the Dutch-speaking and the German-speaking communities.

All three communities conduct a deliberate policy for the development of ICT. The Flemish community regards ICT as a new 'lifelong learning' process. In October 2003, the Education Department of the Ministry of the Flemish community launched the www.bisonline.be directed at 25,000 users. BIS Online is the eLearning project for adult learners. Within this concept the distance learning programme is presented in a virtual classroom with communication as in a traditional classroom. The Constructivist courses are 'web-based', interactive and use several media such as text, sound and video. It has launched several other co-financed projects to develop and disseminate learning objects, educational software and other ICT-based resources, including content development : <http://www.anywize.net>, content development : <http://www.onderstroom.be>, content development: www.eun.org/vs (go to: primary department), educational portal : <http://www.klascement.net>, and awareness raising : www.digikids.be.

The French community envisions the incorporation of ICT into different subjects rather than introducing a special course in this field. Furthermore the French community has established the web-site 'Enseignement à Distance' (Distance Education) with more than 10,000 users and offering more than 150 different courses. The German community also insists on in-service training.¹⁴

The different regions of Belgium have different constellations of responsibility sharing, but it is significant that several governance levels are included in the responsibility process. The region Wallonne runs the education and training programme Technofutur3 which provides online training and development within various technologies <http://www.technofutur3.be>.

The current Policy Plan for the Flemish Government 2002-2005 is based on a new vision and will be implemented along 5 strands:

ICT policy is part of a larger innovation policy

ICT offers a substantial potential for innovation in education. ICT facilitates the learning process, the use of learning resources, etc. In the near future schools will become open learning centres with an electronic learning environment as a central element.

ICT skills are basic skills

At the end of every level of education, students must obtain competence and skills in using the PC and internet in a correct and safe way. Therefore, it is necessary to implement ICT in all subjects and at all levels, from nursery to higher education.

¹⁴ http://www.elearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=1&doclng=1&p1=1&p4=1

ICT as a core element of powerful learning environments

The added value offered by ICT can only fully be exploited when it is combined with other learning methods and resources. Teachers must be able to guide the students in a way that enables them to develop their own frameworks of reference and a critical view on media.

Teachers are the key actors for ICT-integration

ICT-integration starts with teachers using it. Support for teachers who are at the forefront of ICT-integration is crucial, much more than focussing on those teachers who are less innovative. Successful ICT-integration requires an open and creative vision from our teachers.

An ICT policy based on partnerships

Government is not the only responsible actor for ICT-use in schools. The new policy will be based on partnerships with schools, teacher training institutes, private companies, etc.

ICT profile of Belgium

Demographics and Network Readiness Status

Belgium has a population of 10.2 million and has a Networked Readiness Index ranking¹ of eighteen. Slower to develop its ICT systems than most of its European counterparts, Belgium introduced free Internet access in 1999 and is beginning to gain ground, helped by its ability to utilise the existing advanced cable infrastructure for cable-based broadband connections. However, Belgium is hampered in its efforts by being a multilingual society, which has had implications for Internet content.

Forty per cent of Belgian households are connected to the Internet and public Internet access points are available at libraries although coverage is sparse with only 601 points in total. Although only 22.8% of Belgians were using a PC on a daily basis in November 2000, 39% considered PCs an important part of daily life. According to 2002 figures, Belgium was below the EU average for digital literacy even when results were restricted to those under the age of 25, and the gender gap regarding use of ICT widened between 1997 and 2002. However, e-commerce and e-government is rapidly catching up, and Belgium has been particularly innovative in electronic banking. The rate of future ICT development is partially dependent on how quickly Belgium can liberalise its telecommunications system that is still largely dominated by Belgacom, which results in high costs.

Year	2001-2002
Main telephone lines per 100	49.93
No. of cell phone subscribers per 100	54.88
No. of personal computers per 100	34.45
No. of personal computers connected to the Internet	8.58%
Internet Hosts per 1000	29.5

*Source: Center for International Development at Harvard University
Global Information Technology Report 2001-2002: Readiness for the
Networked World (Country Profiles)*

Education

Seventy per cent of Belgian primary schools and ninety-five per cent of secondary schools are connected to the Internet. A project developed by the Flemish region called e-Television acts as a means of reinforcing interactive learning by using television as a platform, and e-courses are currently being further developed and updated. Schools within the Walloon Region and German community have been provided with computer equipment and technical backup under the auspices of the 'Cyber School' project, a network which had provided schools in the area with more than 400 cyber media centres by August 2000. The Flemish government also supports the Virtual University for Europe (VirtUE), a project aimed at providing a Europe-wide university network that will provide a broad range of courses electronically to all categories of learners. Belgium has a 99% literacy rate, spends 3.1% of its GDP on education and has 57% of the relevant age group involved in tertiary education.

ICT and government policy

As a result of the European Council's e-Europe action plan, 'An Information Society for All', Belgium has put a range of initiatives designed to boost the development of the information society in place. These initiatives cover improved telecommunications networks in government offices, institutions and departments, research into the use of digital television as a platform to interactive media, free Internet access through libraries, financial incentives for companies that develop their e-commerce potential and the development of e-government, notably through e-portals providing an integrated service to Belgian citizens and companies. The government also carried out a six month awareness campaign between October 2001 and April 2002 to encourage more women to become involved in ICT professions and more employers to hire them. Eighty per cent of central administration workers are trained in the use of ICT, and the Belgian government has made a strong commitment to modernise its systems by using information technology.

Training and development market in Belgium

Initial vocational training

School-based IVT

French community:

Young people aged 16 and over can continue their education in a part-time compulsory education system involving one of the following three options:

- *part-time vocational education*: the dual vocational and education centres (CEFA) give courses and are responsible for organising and managing this area.
- *industrial apprenticeship*: intended for young people aged 16-21 with poor qualifications
- *approved training schemes* (apprenticeship):

Flemish community

Industrial training courses allow apprentices aged 15-16 to learn the basics via an apprenticeship contract with a manager/trainer to work as an employee in a company.

Apprenticeships and alternance training

Courses for all development stages of a company are offered by VIZO¹⁵ in the Flemish community and by IFPME¹⁶ in the Walloon region. There are three training levels: apprenticeship, entrepreneurship training and advanced training. The purpose of apprenticeships is to enable the acquisition of the general and vocational knowledge necessary to engage in an independent profession as an artisan, in a small business, as well as in certain professional jobs.

The apprenticeship contract is a dual arrangement involving, on the one hand, practical training of around 30 weeks per year (4 days a week) with an entrepreneur or in an SME, and on the other hand, complementary theoretical education covering general and vocational subjects.

Continuing vocational training, adult training and training for the unemployed

CVT and adult learning in Belgium consist of the following:

- *Training operators*: these are non-profit agencies offering training courses or work experience placements for low-skilled adults encountering problems integrating into the job market.
- *Social advancement education*: works on the same level as secondary or higher education and, like them, is the only agency able to offer recognised qualifications. It offers more than 600 training schemes and in 2001/02 reached 251,000 adults in the Flemish community and 150,000 in the French community, thereby making it the largest training operator.
- *Public institutions*: offer adult vocational training and guidance and are run as para-regional bodies, notably VDAB (Flemish Office for Placement and Vocational Training), FOREM (Walloon Office for Vocational Training and Employment) and Bruxelles Formation (for French speakers in the Brussels region).
- *Middle Class Institutions*: such as IFPME, VIZO, IAWM which organise two year training schemes for those wishing to set up their own business.
- *Sectoral initiatives*: these have been expanding in recent years in a wide range of sectors (including construction, chemicals, gas/electricity).
- *Other training schemes*: covering in-firm training, training for the disabled, distance learning, training of the unemployed and other disadvantaged groups.

Educational sector in Belgium

The three communities in Belgium have similarly structured educational systems. The language of instruction and curriculum, however, differ between the communities. All three systems consist of primary schools from the age 6 to 12 and secondary school from 12 to 16 or 18 of age. Full-time education is compulsory from the age of six to the age of 15 or 16. From then on education remains compulsory until the age of 18, but pupils may continue on a part-time basis. In the French community, a distinction must be drawn between university and non-university higher education. Non-university higher education provided by the *Haut-Écoles* may be short or long and, in the latter case, are at the same level as university courses. The Flemish community equally distinguishes between university and non-university education, *Hogescholen*. Only short-course, non-university higher education (teacher and nursing training) is provided in the German community.¹⁷

¹⁵ Flemish Institute for Independent Entrepreneurship

¹⁶ Institut de Formation Permanent pour les Classes moyennes et les petites et moyennes entreprises.

¹⁷ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

	Primary schools	Secondary schools	Universities and colleges
Number of schools	4571	1547	16
Teachers			
Pupils (2000) ¹⁸	769,017	761,915	97,593
Pupil:PC ratio(2001) ¹⁹	11.1	8.1	3.1

There are 16 higher education institutions in Belgium including some small institutes offering only few courses in the French community. At this level, we find the most PC's pr. pupil in Belgium. The different communities drive the different educational levels in Belgium. This makes it difficult to obtain a complete overview of ICT in the educational sector. Since 1998, the French community has implemented a scheme to provide all primary and secondary schools that it administers with multimedia equipment, Internet access and teacher training. Regarding the tertiary level it is official policy to incorporate new content into training including knowledge and teaching applications of ICT and ICT media. In the Flemish community, the general aim is to make ICT part of a lifelong learning processes. Educational institutions are urged to be a part of this process so that it can be a framework in which lifelong learning can take place. In the German community the general aim is to strengthen ICT in schools.²⁰

E-learning market size and characteristics

The private market for eLearning in Belgium appears to be growing fast. The market potential appears, however, not to be fully utilised. In 2002, 11% of the training budget in Belgian enterprises was spent on eLearning activities. E-learning constituted 10% of the external and 18% of the internal training activities. It was assumed that 26% of the training activities would consist of eLearning in 2003. Four or five percent of Belgian employees have been through an eLearning module. The market drivers are primarily business service companies. Furthermore, there is a tendency that major corporations use eLearning more than smaller corporations.²¹

In the French community, and equally in the German-speaking community, there are almost no public-private partnerships so in this area the public educational institutions only scarcely promote the development of the eLearning market. They co-operate with Belgacom to some extent. In the Flemish community there are, on the other hand, several public-private partnerships facilitating growth for the private market within the eLearning sector. In this instance, Belgacom is also an important supplier providing the *I*-line (see below).

E-learning industry

The eLearning industry in Belgium, seen for the country as a whole, stretches across a wide range of businesses, public-private partnerships as well as other types of partnerships. There are several hundreds eLearning suppliers in the Belgian market. According to a study from Nidap there were more than 200 eLearning providers in the Flemish part of Belgium alone in 2002.²² The industry has developed even further since 2002. The Belgian Network for Open

¹⁸ Eurydice: 'The Educational System in Belgium, French Community (2000/2001)', 'The Educational System in Belgium, German Community (1999/2000)', 'The Educational System in Belgium, Flemish Community (2001/2002)':

http://www.eurydice.org/Eurybase/frameset_eurybase.html

¹⁹ http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/index_en.htm

²⁰ 'ICT@Europe.edu' by Eurydice (2001):

http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

²¹ www.traininginfo.be/stat/nidap_elearning_report_2002.php

²² www.traininginfo.be/stat/nidap_elearning_report_2002.php

and Distance Learning <http://www.be-odl.org/> has emerged as an important hub for coordinated activities in Belgium.

Some public institutions offer eLearning products for the corporate and the public sector. Moreover, there are several private suppliers. Some of these have roots in especially the public educational institutions. These kinds of institutions have activities directed towards both the public and private markets.

Didascalía (www.didascalía.be) offers linguistic multimedia training for primary, secondary and adult education. Didascalía offers a wide range of services to companies, organisations, schools and individual language learners and parents. These include project development, project coaching, consultancy and information. Finding its roots in the University of Antwerp, Didascalía carries out research projects and develops tailor-made solutions for companies, publishers, universities, schools and public institutions.

Being so differentiated, the eLearning industry in Belgium includes different types of eLearning companies. Apart from private suppliers of eLearning courses covering learning management systems, project management, IT (user level as well as expert level) there is a great number of suppliers offering eLearning courses in connection with the supply of IT and other systems. This means that there are many Belgian companies within the fields of eLearning content, eLearning technology and eLearning services.

International suppliers

Several international eLearning suppliers are deeply involved in going the entire way of offering full-time education or extensive courses on the Internet. Among these are both foreign, and primarily US, universities and companies offering extensive training activities. The expansion of the Internet makes it easier for such foreign companies and universities to obtain access to the Belgian market.

University of Phoenix (www.uopxonline.com) is an operator on the Belgian market, which you are guided to via the commercial Belgian eLearning portal www.seminars2.com. University of Phoenix offers college degrees via an online service.

International suppliers of eLearning products are also present in Belgium, i.e. companies with all kinds of eLearning products ranging from Learning Management Systems to hardware or service. Some of these service the Belgian market from offices outside the country. Equally some international corporations are represented in Belgium, servicing primarily the neighbour countries of Luxembourg and the Netherlands.

IntraLearn (www.intralearn.com). The Education department of the Ministry of the Flemish Community has chosen for IntraLearn as the Learning Management System (LMS) used at the BIS Online. Over 750 organisations provide eLearning to over 2 million learners through IntraLearn. In Europe the company is based in the United Kingdom.

Cognos (<http://www.cognos.be/be/training/elearning.html>) is a multinational company with a Belgium/Luxembourg office situated in Belgium. The award-winning computer-based training product is an alternative method for learning that complements current classroom training offerings. A considerable advantage of these courses is that they are self-paced. In Belgium, the company has worked

with Centre Hospitalier Universitaire Saint-Pierre and Janssen Pharmaceutica.

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies. Some of these offer content to both public organisations and private companies. A characteristic is, however, that these companies primarily provide the learning tool, leaving hardware and context services to other companies. The content tools stretch across a variety of areas such as linguistic training and organisation optimising, learning management systems, learning tools using both CD-ROM and Internet.

Examples of Belgian suppliers of bespoke content

Xaurum (www.xaurum.com) specialises in implementing LMS and eLearning. It has offices in Belgium and the Netherlands, and implemented and customised the LMS www.bisonline.be to the specific demands of the Flemish community in 7 months.

U&I Learning www.uni-learning.com has its offices in Ghent. Its staff consists of a 40 employees who work in the fields of e-learning, education, documentation, graphic design, coaching, ICT, multi-media and business development. It has supplied knowledge and learning solutions to more than 200 Belgian companies.

Opikanoba (www.opikanoba.be) has created eLearning products for more than 100 different companies. The company provides bespoke content depending on the training problem and the context in which it is to be used.

E-learning technology suppliers

A large number of suppliers provide technology that support eLearning. There are both international and Belgian suppliers in this market. The Belgian suppliers often have a basis in telecommunications in general. This means that some of these are subject to public authority restrictions in order to prevent monopolies.

Examples of E-learning technology suppliers:

Belgacom (www.belgacom.be) is the leading supplier of global telecommunication facilities on the Belgian market. It is a public limited liability company. An agreement with Belgacom gives the company responsibilities regarding the pricing of services towards educational institutions. Schools are offered preferential rates for Internet access via the I-line.

Brutélé (www.brutele.be) has an official licence as an operator of telecommunication infrastructure and services. Brutélé has been involved in the PC/KD programme equipping primary and secondary schools with multimedia equipment.

Claroline is translated in 28 languages and used by more than 200 institutions around world. The software was initially started by the [University of Louvain](http://www.univ-louvain.be) (Belgium) and released under Open Source licence (GPL). Since then, a community of developers around the world contributes to its further development. According to the site: www.claroline.net some 16.000 people downloaded Claroline between March, 2002 and June, 2003.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. These companies offer services like organisation optimising and

support during the entire training process. Some also guide companies through the process of selecting and implementing both eLearning technology and content.

Osito (<http://www.osito.be>) **OSITO** has been founded on the basis of 15 years experience in e-learning in order to advise and support organisations acquiring or deploying e-learning solutions. Its particular areas of expertise are in e-language learning and e-assessment.

PreparedMind (<http://www.preparedmind.be/elearning.html>) creates links to knowledge objects that learners use in their daily work and assists experts with knowledge object creation and modification. Furthermore PreparedMind analyses the learner's activities and his interactions with the eLearning modules and other knowledge objects, so as to help the expert to determine where the learner stands and to guide him through the available resources.

Astech www.athena-learning.com provides e-learning courses primarily within the subjects Physics, Electricity and hydraulics, but also within IT to businesses, individual and educational institutions.

Econocom (www.econocom.com) helps corporate clients regain control over their systems and reduce costs by outsourcing IT infrastructure management enabling them to concentrate on the strategic aspects of their information systems.

Belgian eLearning companies in international markets

Some Belgian eLearning companies are present in foreign markets. First of all some Belgian companies have the competitive advantage of being close to neighbouring countries like Luxembourg and the Netherlands regarding language, culture, distance, etc. Especially companies such as Xaurum have offices in both the Flemish part of Belgium and the Netherlands. These areas are highly integrated with regard to the market. The same applies to companies based in the region of Walloon and northern France.

Furthermore, there are companies operating on the global market offering products within the areas content and IT-infrastructure. An example is Econocom Group with branches in ten countries both in and outside of Western Europe, but also smaller companies such as Opikano have activities directed towards foreign markets. As well as a threat, it must be considered an advantage for Belgian eLearning suppliers that they are situated in a cross-country market. The competition with and presence in the Dutch and French markets is a stepping stone for the Belgian companies access to the European and global markets.

Cyprus

National policy and economic conditions

The Ministry of Education and Culture's information technology department develops varied multimedia programmes and eLearning platforms in collaboration with higher education institutions and the University of Cyprus. The major initiatives are aimed at achieving the following goals:

1. Enabling all schools, teachers and students to have easy access to the Internet and multimedia resources.
2. Internet transmission of educational backup and services.
3. Teacher training²³

Educational sector in Cyprus

In Cyprus education is compulsory until the age of 15. Education is provided at the following levels: Pre-school level education by attendance at one of the following types of schools: public kindergarten ([dimosio nipiagogeio](#)), community kindergarten ([koinotiko nipiagogeio](#)) or a private kindergarten ([idiotiko nipiagogio](#)). Pupils attend this level of education up to the age of 5 years and 8 months. Primary level education by attendance for six years at a public primary school ([dimosio dimotiko scholeio](#)) or in a private primary school ([idiotiko dimotiko scholeio](#)). Pupils enter the primary education level at the age of 5 years and 8 months, and at the end of their schooling they receive a school-leaving certificate ([apolytirio](#)) which entitles them to enter high school ([gymnasio](#)). This is followed by the secondary level education for three years in lower secondary school ([gymnasio](#)). Successful graduation from the gymnasium is certified by a certificate ([apolytirio](#)) entitling the graduate to enter an upper secondary school. Upper secondary education is provided by attendance for another three years at the lyceum ([lykeio](#)) or at technical and vocational school ([techniki scholi](#)). Successful completion of upper secondary education is certified by a leaving certificate ([apolytirio](#)) entitling the graduate to enter a university or other higher education institution. Secondary education is also provided by private secondary schools offering programmes that last six or seven years. Higher education by attendance at universities, other public higher education institutions, or at private higher education institutions and colleges offers programmes with a variety of duration and requirements.²⁴

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools ²⁵	342		8
Teachers	3,808		835
Pupils	59,380		10,527
Pupil:PC ratio ²⁶	50 (1999!)	210 (1999!)	22 (1999!)

²³ http://elearningeuropa.info/dir_national2.php?lng=11&vnt_cntr=41&doclng=1&p1=1&p4=1

²⁴ http://www.eurydice.org/Eurybase/frameset_eurybase.html

²⁵ Eurydice: "The Education System in Cyprus (2001/2002)": http://www.eurydice.org/Eurybase/frameset_eurybase.html

²⁶ <http://www1.moe.edu.sg/press/1999/pr991122.htm>

E-learning market size and characteristics

No estimates of the size of the eLearning market on Cyprus have been identified. However, the market is very small and particularly the schools market is very small.

E-learning industry

The eLearning industry in Cyprus primarily consists of the activities conducted by the international universities on the island and operations carried out by the major Greek suppliers. The rest of the eLearning activities have been set up by international companies.

Apart from the Universities and subsidiaries of international companies, it has not been possible to identify any eLearning operators on Cyprus.

International suppliers

Cyprus is, as one of the smaller countries in Europe, a vulnerable market that is easily accessible for foreign companies. Several international suppliers are thus penetrating the Cypriot market by establishing offices in Cyprus or simply by selling, providing and servicing solutions online via the Internet. There are, however, the barrier for several foreign companies that the Greek part of Cyprus uses the Greek alphabet and language. Therefore Greek companies or international companies already settled in Greece have a comparative advantage regarding the linguistic and cultural similarities. Several companies use Greece as their representation office for both countries.

Schools in Cyprus and Greece are now using the **Click2learn**

(http://home.click2learn.com/en/news/pr_0211111_GreekSchools.asp) company's highly acclaimed desktop eLearning authoring software ToolBook, to introduce students to the benefits of multimedia, eLearning and electronic books. Click2learn is a partner of Agisoft Hellas. As part of a major government project to get IT into schools it supplied ToolBook to the Ministry of Education in Greece. Agisoft is the certified reseller of Click2learn products and services for Greece and Cyprus. Agisoft Hellas was established in 1994 and specialises in designing multimedia and eLearning applications.

Founded in 1997, **SAP Cyprus Ltd** (<http://www.sap.com/cyprus/company/>) is a wholly-owned subsidiary of SAP AG. Headquartered in Nicosia, and with an estimated 60+% market share, SAP Cyprus is the largest local inter-enterprise software company. Currently, it employs over 30 professionals who are dedicated to providing high-level customer support and services.

WebCT (www.webct.com) has installed its learning management system at the University of Cyprus. Approximately 15 courses in Greek and English are currently run on the platform.

Cytanet (<http://www.education.cytanet.com.cy/>) the biggest Internet provider on Cyprus has established an education portal.

Czech Republic

National policy and economic conditions²⁷

The Czech Republic is part of the eEurope Action Plan that has the objectives of:

- Accelerating the putting in place of the basic building blocks for the Information Society
- Providing a cheaper, faster securer Internet
- Investing in people and skills
- Stimulating the use of the Internet

For the Czech Republic, this has meant implementing the policy 'Internet for Schools', securing infrastructure, accessibility and training in ICT for primary and secondary schools – a project with a budget of € 250 million and 2005 as a timeframe. The universities are also included in the government strategy by upgrading the Internet connections of the already existing educational network, CESNET (Czech National Research and Education Network).

ICT profile of the Czech Republic

Demographics and Network Readiness Status

The Czech Republic has a population of 10.3 million and a Network Readiness ranking of 28th in the Centre for International Development's Index.¹ The country occupies third place after Estonia and Slovenia in leading the region in networked readiness. Roughly 40% of the population uses the Internet with 9% of households having Internet access. There were government plans to increase public access through Internet kiosks across 30 Czech towns. More than a third of the population felt confident in using at least one Internet service.

Moves to liberalise the telecommunications industry began in 1995 but the sector remains under government control. Fixed line telephone costs are high and although the number of lines per 100 inhabitants rose from 24 in 1995 to 105 in 2001, mobile telephone subscriptions have mushroomed from 0.5 per 100 inhabitants to 68 per 100 in the same period. This has resulted in 76% of the population using mobile phones, 93% of who are under 24 years old. Only 5% of the over 65's own a mobile phone.

E-commerce is at a low level in the Czech Republic with approximately 5% of the population having used the Internet for online banking or for buying a product or financial service. Credit card use is low, and e-commerce has no doubt been inhibited by the fact that the Czech Republic has the second highest Internet access costs amongst OECD countries. Moreover, the Czech business community generally lacks IT awareness although there are some very advanced examples of e-commerce ventures such as eCity, an online banking facility.

E-government is at a very early stage although there is the opportunity for Internet users to interact with the state administration at some level.

²⁷ 'The use of Learning Management Systems in the Czech Republic and Slovakia' by Maria Micincova, <http://www.nettskolen.com/forskning/The%20use%20of%20Learning%20Management%20Systems%20in%20the%20Czech%20Republic%20and%20Slovakia.pdf>

Telecommunications infrastructure

Year	2001-2002
Main telephone lines per 100	37.79
No. of cell phone subscribers per 100	42.42
No. of personal computers per 100	12.20
No. of personal computers connected to the Internet	12.75%
Internet Hosts per 1000	15.55

Figures taken from Centre for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

The Czech Republic has an adult literacy rate of 99%, and the work force is generally well educated and computer literate. Overall, thirty per cent of the labour force participates in some form of learning with twenty-two per cent of employees involved in self-directed learning, five per cent using online eLearning. Young Czechs expressed most interest in learning a foreign language online. PCs and the Internet are widely used in schools and universities and there are 5,000 IT graduates each year. There is no appreciable gender gap in digital literacy but there is a divide based on age with older people very underrepresented in IT use. The Czech Republic spends 4.2% of GDP on education and 26% of the relevant age group is involved in tertiary education.

ICT and government policy

The Czech Republic first tackled the question of the Information Society in 1998 and produced the 'State Information Policy' in May 1999 which was based on an earlier document entitled 'The Main Principles of Telecommunications Policy' originally produced in 1994. Overall responsibility for ICT policy now comes under the Ministry of Information Technologies established in January 2003. However, each local government area is responsible for implementation locally. There are also central government bodies responsible for gathering statistics relevant to ICT. The government is trying to provide incentives for e-commerce and has taken a number of initiatives to build e-market places including giving Cesky Telecom, the national operator, a subsidiary to do so. In 2000, the government also created an integral site giving information on all public tenders and auctions and customs declarations are mostly submitted online. The government is also committed to heightening public awareness of e-commerce and strengthening the infrastructure to support this.

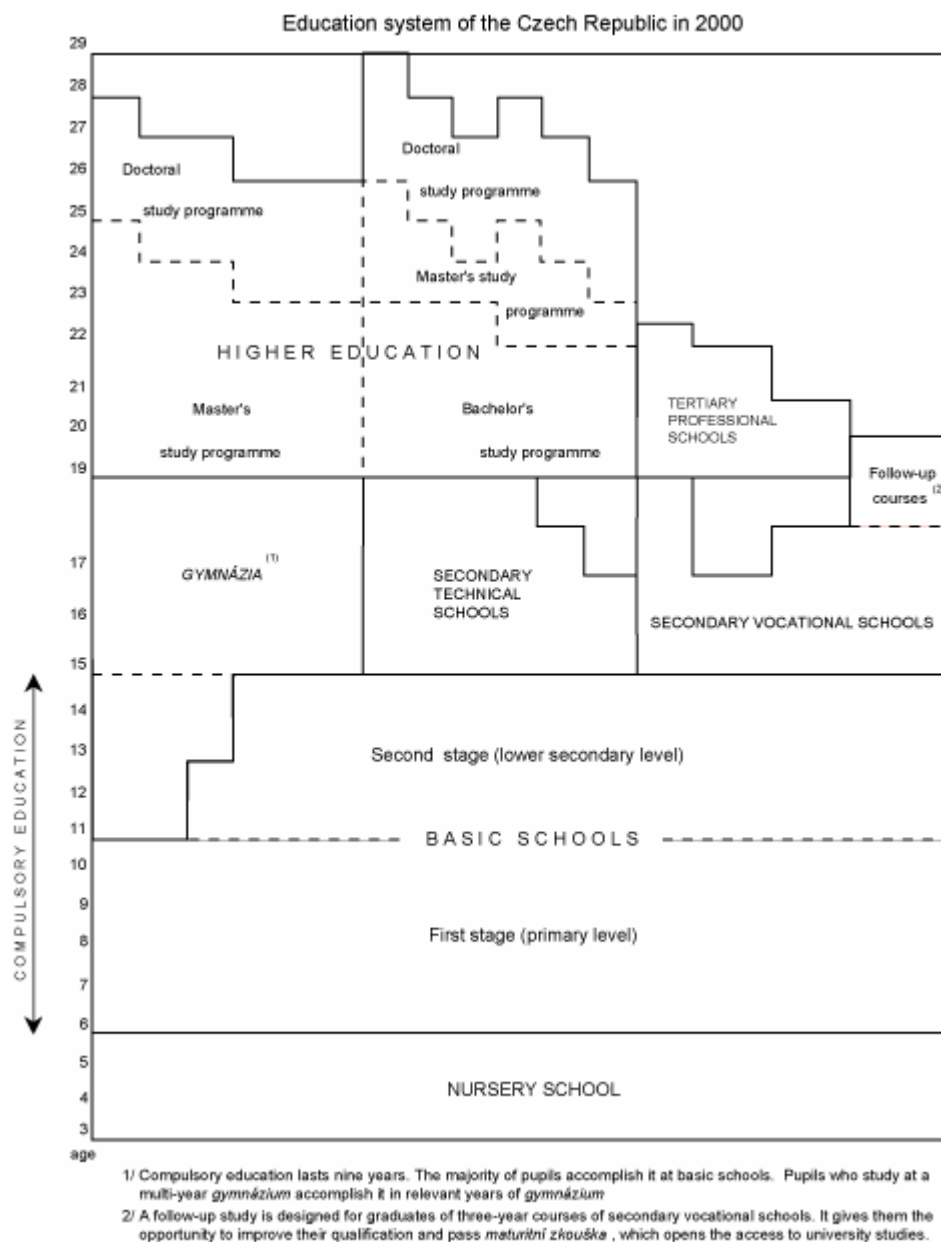
Educational sector in the Czech Republic²⁸

The compulsory education lasts nine years starting at the beginning of the school year following the day on which the child reaches six years of age. Compulsory education takes place at a 'základní škola'. Gifted children, who transfer to a multi-year 'gymnázium' or to a multi-year 'konzervator' in the course of compulsory education, complete their compulsory education at these schools.

²⁸ <http://www.eurydice.org/Eurybase/Application/frameset.asp?country=CZ&language=EN>

Pupils who have passed their ‘maturitní zkouška’ are qualified for entry to higher education institutions, even though more than half the applicants fail to gain admission to higher education due to lack of study places.

Three types of higher education are available: The Bachelor’s study programmes, the Master’s study programmes (aimed at getting theoretical knowledge based on scientific findings, research and development) and Doctoral study programmes (focus on scientific inquiry and independent creativity in research and development). All three types of study programmes may be studied either full-time or part-time and in the distance form or in their combination.



For the academic year 2001-2002 the data were:

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	3,999	1,913	45
Teachers	62,061	30,610	13,641
Pupils	1,027,827	473,726	228,635
Pupil:PC ratio ²⁹	Data not available	1:44	1:17

E-learning market size and characteristics

The Czech market is relatively new to eLearning, but one of its characteristics is that it is developing very fast and in that way approaching the western European standards for use of eLearning.³⁰

Global surveys are said to show that 75 percent of company training is based on the company's own know-how, and only 25 percent of company training is being done through the purchase of prepared courses. In the Czech Republic (and Slovakia), however, the ratio is even more in favour of internally developed courses. This is mainly thought to be because of the small size of the market, resulting in a considerably lower number of prepared courses in the local language that can be bought and directly implemented. Some companies therefore offer systems that enable corporate clients to effectively develop and manage courses on their own, or prepare them based on the clients' requests.³¹

E-learning industry

The eLearning industry in the Czech Republic has a focus on educational institutions as well as the commercial companies.

The University of Ostrava opens a project of building up the Virtual University and providing distance education by means of online learning. Environments for the creation of the training courses ToolBook II Instructor by the company Click2learn have been bought from grants; administration of the studies is secured in Tutor 2000 environment and this all runs on a Dell server. Currently a team of specialists, who will participate in the creation of courses and administrative-technical provision of the teaching, is being created in the Centre of Information Technologies.³²

An overview of eLearning suppliers in the Czech Republic is not easy to acquire, even though the market is not very big. Besides private suppliers of eLearning courses (national as well as international), covering learning management systems, project management and IT, there are public institutions, e.g. universities or railways, that offer eLearning courses as part of the training activities connected with a system implementation or in-job training.

²⁹ <http://www1.moe.edu.sg/press/1999/pr991122.htm>, 1999-numbers

³⁰ 'The use of Learning Management Systems in the Czech Republic and Slovakia' by Maria Micincova, <http://www.nettskolen.com/forskning/The%20use%20of%20Learning%20Management%20Systems%20in%20the%20Czech%20Republic%20and%20Slovakia.pdf>

³¹ <http://www.slovakspectator.sk/clanok-13635.html>

³² <http://www.osu.cz/ang/virtualni/>

CESKY TELECOM, the main Czech telecommunication provider, is actively connected to the Czech E-Learning Network (CELN) <http://www.celn.cz/>. This is a civic association project with the goal of increasing the computer literacy and specialist skills of the citizens of the Czech Republic, and through this to contribute to improving the country's competitive strength on the open market of the European Union. CELN and CESKY TELECOM are supporting three basic methods:

1. Offering its own internal courses (specialising in products and services)
2. Mediating and supporting co-operation with the authors and creators of online courses with which CESKY TELECOM has had good experience.
3. Active co-operation in preparing methodology for creating and lecturing on-line courses.³³

International suppliers³⁴

The Czech Republic has several international players in its market, primarily targeting the educational sector. Mostly the companies are American, but also a Canadian company is present.

SumTotal Systems (http://home.click2learn.com/en/aspen/aspen_lms.asp). Aspen Learning Management Server (LMS) is a global, scalable, 100% Web-based application that can be used to enhance student registration and tracking, record management and curricula management and reporting. In the Czech Republic SumTotal is represented by Kontis. It has one implementation of Aspen LMS in the Czech Republic at the Czech telecom – case study can be accessed at

<http://onlinelearning.kontis.net/>

Cisco (<http://cisco.netacad.net/public/gln/overview/index.html>). The GLN – Global Learning Network – integrates eLearning applications for authoring, management, and assessment with rich media content, delivery, and a network infrastructure.

Oracle <http://ilearning.oracle.com> – Oracle has two implementations of its iLearning platform in the Czech Republic – one at the Raiffaisen bank and one in a Government office

IBM – Lotus <http://www.lotus.com>. LearningSpace provides eLearning solutions to improve education and training while generating significant cost savings. It allows reaching the entire enterprise with timely training programs while providing a flexible framework that can handle any content. LearningSpace puts instructors in control of course content, creating a flexible, customisable approach that can respond to individual styles and changing priorities.

WebCT <http://www.webct.com/products>. Using WebCT, (Canadian) that provides integrated eLearning systems for education, allows institutions to provide more personalised learning options for students and pupils. In the Czech Republic, this is used by a number of schools.

Microsoft is represented in the Czech Republic market by the company S-Comp Centre <http://www.scomp.cz> which provides the Microsoft Class Server product to the schools market.

E-learning content suppliers

It seems that only very few Czech companies are specialised in the development of eLearning content and solutions for other companies. Mostly foreign companies translate and distribute their solutions to the Czech market or the company develops its own content for its own use, not focussing on a commercial market.

³³ http://www.telecom.cz/infocentrum_e/tiskove_centrum/tiskove_zpravy/clanek.php?tz=30092003_4

³⁴ 'The use of Learning Management Systems in the Czech Republic and Slovakia' by Maria Micincova, <http://www.nettskolen.com/forskning/The%20use%20of%20Learning%20Management%20Systems%20in%20the%20Czech%20Republic%20and%20Slovakia.pdf>

Examples of Czech Republic Supplier of bespoke content

Speakspeak (http://www.speakspeak.com/html/c_our_courses.htm) is a British and Czech-based English teaching service. It was established in 1996 by a British language teacher and operates from Prague. As well as offering unique Internet-based learning, it also teaches many individuals and employees of companies in the Czech Republic.

Prevent www.prevent.cz provides online training solutions for health and safety at work security

Langmaster www.langmaster.cz provides language courses online.

Zebra Systems www.zebra.cz The company was founded in 1993 and since then one of its priorities has been to develop applications for electronic education and multimedia presentations. Zebra systems has further diversified into creating e-learning courses reflecting the progress and development in this field.

E-learning technology suppliers

There are some companies supplying eLearning related technologies within the Czech E-learning industry, but mostly the technology is developed internationally – see examples above.

According to the company Kontis they have sold more than 250,000 licenses of the LMS system iTutor (http://onlinelearning.kontis.net/produkty_iTutor.asp), representing approximately 65% of the workplace LMS market in the Czech Republic. The customers of the LMS iTutor are for example the Czech Insurance Company, Czech Railways, McDonald's, Český Mobil, Czechoslovak Trade Bank, Philip Morris, T-mobile, Air Navigation Services, Metro, North-Bohemian Power Supply, eBanka (eCity). Detailed case studies can be studied at the following website: http://onlinelearning.kontis.net/produkty_itutor_customers.asp.

Other solutions identified on the Czech Republic LMS Market are:

- Aspen in Czech Telecom – 15 000 users, also implemented by Kontis
- Lotus LearningSpace implemented at the CZECH SOCIAL SECURITY ADMINISTRATION – 6 000 users, implemented by IBM
- iLearning in RFB – 800 users, implemented by Oracle
- iLearning in Government Office – 1600 users, also implemented by Oracle.

Kontis (http://onlinelearning.kontis.net/uvod_kontis.asp) is a Czech company that has developed its own LMS system, Tutor2000, as well as being representative of click2learn and in that way covering eLearning and standard training including human resource management. Also the company itself has developed a number of courses in Czech language highly interactive and multimedia related, as well as being distributor of SkillSoft. Kontis developed more than 150 courses for commercial market, see http://onlinelearning.kontis.net/produkty_kurzy.asp, as representation of SkillSoft they also sell SkillSoft courses (which are used in the Czech Republic for example in Czech Telecom, Nestle or Philip Morris). Kontis and Czech Telecom also run the EduPortal together – a solution for delivering content to SMEs. The Portal holds many Czech courses developed by Kontis and Czech Telecom.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultation in connection with eLearning projects. These cover eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. There are companies combining the service with the development and selling of technology or content. The number of these companies in the Czech market is not overwhelming, but still – as the example below shows – they are present.

Computer Help, spol. s r.o. (<http://www.computerhelp.cz/EN/elearning.asp>) provides comprehensive solutions of eLearning issues. All of these solutions come out of an analysis of the client's needs and are prepared in co-operation with the client, so that the final result represents savings in the financial area, organisational aspects and human resources.

The supplied eLearning solutions include the following steps:

- Supply of the eLearning system (optionally the Czech environment for the eLearning operation)
- Client's environment analysis before installing the system
- System installation
- Production and supply of the courses
- Support of running the courses with a tutor
- Training course

The Computer Help courses include three main parts:

- interactive lectures and demos
- interactive exercises
- interactive test with final analysis of results

Infinity (<http://www.infinity.cz/view.asp?ID=196>) offers solutions that supports the main goals of distance education in the form of e-Learning :

- The eDoceo control system for electronic education and administration of personal data
- A high-quality instrument (the Autor application for the creation of electronic educational programmes, which achieves the standards customary for this area)
- Knowledge and experience from the area of system integration

In addition to the above the real significant service suppliers with realized projects on the Czech workplace market are Kontis s.r.o, IBM and Oracle.

Czech Republic eLearning companies in international markets

Czech companies are not very present in the international market, but some – e.g. the company Kontis, described above – operate in the Czech as well as in the Slovakian market. The two languages are very similar, and the countries have a natural cultural connection and familiarity due to their years of being one country. In addition, Kontis operate in Russia and Poland.

Denmark

National policy and economic conditions

As part of the annual “IT and Telecommunications Policy Action Plan” the Danish government in November 2003 launched an initiative to further the use and development of e-learning. The initiative aims at creating a focus on better use of e-learning in Danish public institutions and in small and medium-sized enterprises (SMEs). The Initiative has three parts:

1. The Ministry of Science and Technology has made a report on the use of e-learning for vocational training. The overall message is that organisations will gain from using e-learning as a tool to increase competitiveness, primarily by taking advantage of the flexibility offered by e-learning.
2. The Ministry has opened a pool of 10 million DKK to support projects that introduce and demonstrate the potential of e-learning when implemented successfully in SMEs and public institutions.
3. The site www.e-kompetencer.dk has been published to illustrate the wide range of possibilities open to organisations and individuals choosing to work with e-learning.

ICT profile of Denmark

Demographics and Network Readiness Status

With a population of 5.3 million, two-thirds of who are aged between 16 and 65, Denmark has one of the highest levels of Network Readiness in the world. According to the Centre for International Development’s Networked Readiness Index¹ Denmark ranks seventh out of 75 countries surveyed based on figures relating to 2001-2002. Denmark scores well in all four main “enabling” indices (access, policy, society and economy), coming lowest – fifteenth - in ICT policy.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	75.25
No. of cell phone subscribers per 100	60.99
No. of personal computers per 100	43.15
No. of personal computers connected to the Internet	Figure not available
Internet Hosts per 1000	62.66

Figures from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

The above statistics indicate a high level of penetration and usage of ICT. In addition, Denmark’s expenditure on education, currently at 6.9% of the GDP, makes it the fifteenth highest spender in the Economist’s world rankings of 174 countries. Denmark also has 55% of the

relevant age group involved in tertiary education making it the 13th highest-ranking country globally.²

ICT and Government Policy

In the future, Denmark needs to increase its employment figures by 60,000 by 2010 to meet its economic objectives, and the Government has put strong emphasis on education, training and lifelong learning as one of the main thrusts of its strategy for achieving this aim. The impetus is to improve the quality and efficiency of education and training systems geared to equip its citizens with the skills needed to function and progress as part of a modern work-force in a knowledge-based society. Whilst there is no specific reference to e learning, the Danish National Action Plan³ lists a number of broad themes under the objective of improved education and training, including “internationalisation”. This seems to bode well for the future development of e learning and Internet based training in Denmark.

Training & Development market in Denmark

Initial Vocational Training

In Denmark, IVET is usually organised as sandwich courses consisting of a combination of theoretical training at schools and practical training through work placements in companies (or at schools, if no company work placements are available). IVET in Denmark can be split into the following sub-groupings:

- ***Grundlæggende erhvervsuddannelse, IVET (Initial Vocational Education and Training)*** The IVET general initial vocational training system in Denmark was set up in 1991 (by Act of 1989) and latest revised in 2002. IVET is youth training, and involves an extension of the nine years of compulsory education. Today, there are seven basic entries giving access to several courses (specialisation). Course duration is 3-4 years and of this anywhere between 6 months and 2 years is spent in theoretical schooling at vocational colleges.
- ***Basic social and health care training programmes (SOSU) Grundlæggende social- og sundhedsuddannelser SOSU (The basic social and health care training programmes)*** consist of three individual training courses: social and health worker; social and health assistant; pedagogical basic training.
- ***Agricultural training:*** Agricultural training in Denmark lasts 3 years and is also structured as sandwich courses. The financing is organised similarly to basic vocational training through a taximeter rate per student, provided directly by the state to individual colleges. There is free access and choice of college.
- ***Special educational programmes:*** In addition to the courses mentioned above, a number of educational activities that aim at motivating young people to continue education and training have been established:

IVT in Denmark is funded primarily by the public sector at the central level (SOSU courses are financed at the regional level). Companies do not directly cover expenses in connection with the theoretical part of vocational training. In addition, apart from having to purchase certain educational tools, there are no tuition fees. The contribution of companies to IVET includes wage expenses for work placements and the companies’ payments to *Arbejdsgivernes Elevrefusion AER* (Employers’ Reimbursement System). These payments are provided both

by private and public sector firms and totalled €302 million in 2002, 85% of which comes from private employers.

Continuing Vocational Training, Adult Training and Training for the Unemployed

Continuing vocational training in Denmark is directed at both employed and unemployed persons and includes:

- *Arbejdsmarkedetsuddannelserne*, AMU (The labour market training courses – the AMU system). The labour market training courses include qualifying education, ordinary and special programmes, company-specific programmes, etc. The purpose is to offer relatively short training and re-training courses, which are continuously adjusted to the current demands for skills and knowledge on the labour market.
- *Åben uddannelse* (Open education). Open education aims to provide the adult population with the opportunity to follow certain sub-elements of continuing vocational training as well as short educational courses.
- *Kurser på videregående uddannelsesinstitutioner* (Courses at institutions of higher education). These courses include continuing vocational education of teachers, pedagogues, social consultants, experts in nutrition and home economics, architects and librarians. The courses take place at any relevant institution of higher education. Most of these courses are or will be rearranged in accordance with the model for open education
- *Anden statslig efteruddannelsesvirksomhed* (other state-financed continuing educational programmes). This area includes continuing education for farmers, the film industry, artists and sailors.
- *Erhvervsrettet efteruddannelse udbudt af private* (continuing vocational training offered by the private sector). Suppliers of private courses include: Commercial suppliers (including computer companies); Employer and business organisations; Trade unions and associations; Public suppliers (such as AMU centres and vocational colleges, which offer courses in addition to the publicly financed courses, which constitute their core activity).
- *Intern efteruddannelse på den enkelte arbejdsplads* (internal continuing education at the workplace). Internal continuing training can include “on-the-job-training”, participation in conferences and seminars, courses offered by suppliers (where the supplier of a product teaches about its use), participation in project groups and job rotation.

CVT expenditure by public and private companies has been estimated at €1.084 million in 2002.³⁵ (As is usually the case with estimates of expenditure by companies it is advisable to treat these figures with a certain degree of caution). State training for the unemployed in 2000 was estimated to amount to €2.853 million - or 1.64% of the GDP. Spending on training-specific measures was €1.174 million, which along with Sweden represents by far the highest level of spending on training for the unemployed in the EU. There are no estimates available for the level of individually/household funded training in Denmark.

Educational sector in Denmark

The Danish educational sector consists of three levels of education. The first level from 0th to 9th grade (the 10th grade is optional) covers the compulsory education. At the secondary level it is possible to choose between different kinds of general and business/technical oriented edu-

³⁵ Institut For Konjunktur Analyse IFKA, 2003. Reported in Danish ReferNet national report, Cedefop 2003.

cation. Consequently, there are four different kinds of upper secondary schools that all with successful completion offers access to higher education. The higher education level in Denmark consists of six traditional academic universities and additional commercial and technical universities and colleges.

	Primary level	Upper secondary level	Universities and colleges
Schools	2,163		16
Teachers ³⁶	52,624	12,300	
Pupils ³⁷	699.702 (2002)	98,891 (2002)	103,093 (2002)
Pupil:PC ratio	7.3 (2003)	5.4 (2000) ³⁸	

The Danish Educational sector is being driving forward in the field of ICT in education. Therefore, there are only few pupils pr. PC in the Danish educational institutions. In the higher education area, however, the institutes have a high degree of self-determination that means that the picture here is very differentiated from institute to institute even within the same university. The implementation of ICT in the Danish educational sector has been supported by the development of the SektorNet giving cheap access to the Internet for all schools, SkoleKom giving conference and mail opportunities for all teachers and pupils and the EMU portal, www.emu.dk. The site <http://www.learningnet.dk/> has been launched to support teachers and educational institutions in the development of online learning materials and activities. It includes a database of examples and experiences of teachers and institutions that already have some experience with e-learning.

The twelve Danish Universities have also established a portal for guiding students and employers to further educational opportunities within the institutions. The portal, launched in 2003, is financed by the Ministry for Science, Technology and Innovation. www.unev.dk

E-learning market size and characteristics

According to a report by IDC in April 2002, the corporate e-learning market in Denmark will be worth some € 111 mill. in 2006 representing an average annual growth rate of approximately 24% from 2001 to 2006.

According to the yearly statistics on ICT usage in companies from the Statistical office in Denmark³⁹ the study suggests that 19% of Danish companies with more than 10 employees currently uses e-learning. 40% of companies with more than 100 employees include e-learning in the development of their employees. 51% of those companies using e-learning for training purposes use it for IT training.

Research⁴⁰ also indicates that the e-learning usage is quite well developed within the public sector in Denmark. Particularly large ministries and agencies have implemented significant e-learning initiatives to support the learning processes associated with organisational changes

³⁶ Eurydice: The Education System in Denmark (2000/2001):

<http://www.eurydice.org/Eurybase/Application/frameset.asp?country=DK&language=EN>

³⁷ Danmarks Statistik: <http://www.statistikbanken.dk/statbank5a/default.asp?w=1024>

³⁸ <http://www.uvm.dk/statistik/gym/udstyr2000/udstyr2000.htm>

³⁹ <http://www.dst.dk/Statistik/IT/Virksomheder.aspx>

⁴⁰ A study of e-learning practice within the Danish public sector conducted by Danish Technological Institute for the Ministry of Science, technology and development covering 135 public institutions, June-august 2003.

and implementation of new systems. Similarly, the annual statistics⁴¹ suggests that private company usage is comparative to that of the public sector. In 2003 45% of public administrations used e-learning which is roughly the same level as that of companies with more than 100 employees.

In the private sector it is particularly the retail, financial, IT, business services and telecommunications sectors that are driving the introduction of e-learning as a supplement to existing training and development methods.

E-learning industry

Public educational institutions in Denmark are active providing technology-based learning opportunities including both short courses and long-term diploma courses. In addition, a number of private suppliers are offering standard e-learning courses.

Børsen E-learning

The company "Børsen Kurser" offers a range of learn-yourself standard products delivered both via CD-ROM as well as over the World Wide Web. The courses are offered both to individual customers and to companies. The course concept consists of an introduction to the topic, a pre-test identifying the needs of the individual, a learning activity covering both theory and practice, and a concluding test ensuring that the individual has learnt what he or she set out to learn.

Source: Børsen E-learning homepage, www.borsen-e-learning.dk

There exists no overview of e-learning courses in Denmark, however, the number of courses on offer is not very large. Apart from the private suppliers of e-learning courses covering IT (user level as well as expert level), project management, employee development and management topics, there is an extensive number of suppliers offering e-learning courses in connection with the supply of especially IT but also other systems. Companies or public authorities will offer e-learning as part of the course activities connected with system implementation. The e-learning industry in Denmark is best presented by the blog and news site called LINQX <http://www.linqx.dk/info.php> which also lists the main operators on the market of which many are profiled in this document.

International suppliers

A number of international suppliers of further education and courses are either already present on the Danish market or on their way into the market. The Internet and delivery over the web offers the opportunity for suppliers from Canada, USA, Australia and elsewhere to cater for Danish corporate and public training and development needs without actually setting up a representation in Denmark. International suppliers may identify a local partner to sell and distribute their products, use a European based representative to cover several countries of which Denmark is one or simply service Danish clients at a distance.

Several renowned international universities are offering their courses through e-learning in Denmark. Corporate Universities in companies like ISS, FLS Industries, ECCO and Danfoss are sourcing some of their further education and training services from these international universities.

⁴¹ <http://www.dst.dk/Statistik/IT/Virksomheder.aspx>

Henley Management College has sold a part of its education programme to a private educational supplier that uses the “brand” Henley and among other courses are offering MBA-education (Master of Business Administration) to companies and their employees. The studies are supported by group workshops, company visits and e-learning. Henley has a department in Denmark and companies such as Danfoss and TDC collaborate with Henley.

A number of international private operators without a direct link to the educational institutions are also offering their products on the Danish market. They consist of education and training portals offering e-learning courses to both individual consumers as well as to companies.

RedVector.com is an example of such a portal and is according to the company one of the leading learning portals within the engineering and architectural sectors with more than 2000 e-learning courses. Red-Vector.com collaborates with a number of Universities such as Indiana State University and Clemson University as well as the trade organisations National Society of Professional Engineers and American Institute of Architects.

International suppliers of standard e-learning courses within areas like general IT competencies or management are also active on the Danish market.

SkillSoft is a company, which launched itself as the biggest library of e-learning. The company has established a catalogue of more than 400,000 so-called learning objects – covering 15 languages – within Technology Skills (more than 2,800 courses) and Business Skills (more than 1,600 courses). Access to courses is sold through specific licence agreements with companies.

E-learning content suppliers

A number of companies are specialised in the development of e-learning content and solutions for other companies and organisations that are interested in using bespoke e-learning courses. These companies typically have a range of customers and/or a region that they have serviced for a period of time. Some of these suppliers are also offering learning management systems and/or bespoke content management tools to support the administration and maintenance of these learning activities.

A large part of content production takes place in-house within the customer organisations. A survey⁴² showed that 10% of companies using e-learning have exclusively had their modules developed by e-learning suppliers, 40% of user organisations had developed modules in collaboration with the suppliers, and as many as 50% of companies have developed the e-learning content in-house.

The publishers of electronic learning materials for the educational sector are dominated by publishers who supplement their book systems with online or CD-ROM study materials. These companies include Alinea www.alinea.dk, which also provides a free online learning universe for primary school students: <http://elevunivers.alinea.dk/univers/index.htm>. Other operators are Gyldendal, Systime (www.systime.dk) who also offers a range of e-books.

⁴² E-learning in practice – a study of e-learning in 285 public and private companies in Denmark, January 2003

Examples of Danish Suppliers of bespoke content:

Courseware (9 employees) – Courseware have developed lasting relationships with the companies DSB (Danish Railway), LK (Electrical supplier), Danske Bank and several other customers. It has a long history of CBT and e-learning development. In addition, to bespoke content it offers services in the area of content management systems, training and strategic consultancy.

IMS Learning (25 employees) – IMS Learning is a young company which has experienced significant growth over the last three years. The company has established an e-learning interest group that includes several user organisations. IMS has a number of large Danish companies among their clients including Lundbeck, FLS Industries, TDC, The Tryg Fond, etc.

Key2Know (50 employees) - Key2Know is a distributor of the tutorPro authoring and LMS products and has developed content for some major customers within the public, health and financial sectors. The company also delivers a range of Knowledge management solutions.

Zenaria (8 employees) - Zenaria has strong traditions in the development of technology based soft skills training presenting the users with decision making scenarios presented by actors. The company has a number of large clients including TDC, B&O, Copenhagen Municipality etc.

MOCH (2 employees) - MOCH is a small e-learning development house which has worked with TDC, F Group, Danisco and several other user organisations.

Context (3 employees) - Context offers a simple to use Learning Management System “Eduframe” and develops bespoke content to a number of companies and public institutions. In addition, the company has developed a number of expert systems within the health sector.

Effective Learning – Effective Learning is associated to the Maersk Group and has more than 15,000 internal customers within the group. In 2002, it facilitated more than 200,000 online course deliveries. It is, however, also developing a market outside Maersk.

VerticPortals – is a developer of interactive media and combines e-learning with simulations and games theory. The company has several international customers and has identified a good combination of interactive communications and learning solutions for the customers and employees of large organisations.

E-learning technology suppliers

There are a few companies within the Danish e-learning industry supplying tools for managing e-learning content and learning activities as well as tools for authoring learning modules. In addition, a couple of suppliers offer collaborative tools and knowledge management systems that support the learning processes within groups of people and companies. The vast majority of e-learning tools represented on the Danish market have been developed outside the country and are sold through distribution partners.

Examples of E-learning technology suppliers:

Danish Probe: ABC academy is a Learning Management System that provides a tool to build, manage and maintain learning solutions. It has received an International Comdex Award by Microsoft, Fujitsu-Siemens and Ziff-Davis Softbanks in the category “Best NT & Backoffice Product. The LMS product is used by Microsoft, Canon EMEA, Kuwait Petroleum, Danish Radio and the F Group and a range of educational institutions in Denmark. www.danishprobe.com

Groupcare: The leading Danish Supplier of web-based collaborative tools with more than 400,000 registered users and 85 client companies. It offers solutions for knowledge sharing, project manage-

ment and learning across intranets and Extranets. www.groupcare.com

Etiro: Etiro offers Reactor, an end to end SCORM compatible authoring tool for windows XP, offering template functionality, multimedia capability and control over layout and course structure. The company partners with the company Børsen Courses and boosts one significant client: FOSS.

<http://etiro.pro.dir.dk/>

Composite: Composite CMS can be extended with a number of e-learning modules that allows users to build and administrate e-learning solutions. The system allows for development and maintenance of learning content and distribution over the Internet, Intranets and/or extranets. The company partners with Svifnik A/S, a sales training e-learning company and has produced a major solution for the ISS.

www.composite.dk

Context: Eduframe is a tool that allows easy production of multimedia learning materials. It is aimed at the trainer with PowerPoint capabilities that wishes to supplement traditional training with online multimedia learning facilities. Eduframe also allows the trainer to manage the electronic learning process learner by learner. www.context.dk

The supply of learning and communication platforms for the educational sector is dominated by public private partnerships and initiatives by local educational authorities.

Some educational institutions have joined forces and developed their own platforms, but it is primarily the government supported SkoleKom www.skolekom.dk network that dominates the primary school sector although other platforms more dedicated to learning activities are being developed. Private operators providing learning platforms for schools include: KMD with its My school platform, <http://www.kmd.minskole.dk/> and Skoleintra <http://www.skoleintra.dk/> from Skolesoft A/S managed by UNI-C as well as Fronter from Norway, First Class from Canada and several others.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with e-learning projects. This may cover strategies for e-learning, development planning that cover e-learning, pedagogical and technical advice in relation to e-learning design and implementation, Consultancy around acquisition of e-learning systems, evaluations and measurement of results.

Some suppliers of e-learning hosting services (LMS ASPs) are also operating on the Danish market. These actors combine this service with the development of bespoke content or sales of learning management systems.

EUC North a merger of three Business and Technical colleges in the North of Jutland in Denmark provides an online learning management system covering both asynchronous and synchronous (integrating Centra) learning opportunities. The institution offers to develop and host learning activities on behalf of both private and public companies as well as other educational institutions. EUC North has supplied learning services to a number of Danish and international companies and institutions. www.eucnord.dk

Danish E-learning companies in international markets

Only very few Danish e-learning companies have achieved any success outside Europe. One example is Danish Probe who achieved recognition for its Learning Management System

ABC academy and won over international clients such as Canon and Microsoft. Another example is IMS Learning that sold its concept www.ergosaver.com, an intelligent e-learning system that tracks the PC users actions and proposes exercises and breaks to Boeing in the USA. There are several examples of Danish companies selling e-learning solutions to customers in other European countries. However, in terms of international trade, Denmark has a significantly higher import than export of e-learning products and services.

Estonia

National policy and economic conditions^{43 44 45}

Following the eEurope Action Plan, Estonia launched the 'Tiger Leap'. It is a national target programme with the overall objective to promote the introduction of modern information and communication technology in the educational system in Estonia. The program is first and foremost aimed at general education but it also involves basic and vocational education. Tiger Leap:

- helps to provide Estonian teachers with elementary computer skills and guides them to use the opportunities offered by modern information technologies in teaching their subjects
- supports curriculum development with the assistance of an interactive learning environment promoting learning skills
- encourages creation of original software on the Estonian language, culture, history and nature in accordance with the national curriculum
- helps counties to develop the IT infrastructure of schools
- supports schools in establishment of Internet connections

At the end of 2000, the contribution of Tiger Leap to IT development in Estonian schools included the following:

- An efficiently operating financing plan for computer procurement in counties has been set up, supported by local governments with EEK 87,500,000. Over the same period, businesses and organisations have contributed EKK 2,000,000 to the Tiger Leap Programme.
- 10,900 out of the 17,000 teachers in Estonia have been trained at the elementary level in computer skills with support from Tiger Leap, and 2,600 teachers have participated in different in-service training courses.
- Schools have been supplied with 61 different educational software programmes by Tiger Leap, including the financing of the creation of 39 new original educational software packages in Estonian.
- Tiger Leap has supported 172 development and training projects through project competitions as well as the setting up of Teacher's NetGate - an Internet gate reinforcing communication and co-operation between teachers who are accustomed to computer use in their daily work.

In the 2000, Estonian schools were furnished with means of information and communication technology to the following extent:

- twenty-five pupils per computer on the average (15 in Hiiumaa and 48 in Tallinn); there are no upper secondary schools nor basic schools without computers.
- 75% of all the schools have online Internet connections and the remaining schools have a dial-up option.

⁴³ <http://www.tiigrihype.ee/eng/sihtasutus/eesmargid.html>

⁴⁴ http://www.tiigrihype.ee/eng/tiiger_pluss/strateegia.html

⁴⁵ <http://www.riso.ee/en/nordic/>

These resources are mainly used in informatics classes, but each year more are being used in other subjects. According to the national curriculum, informatics is an optional subject, yet in the majority of computerised basic schools and upper secondary schools it is already being taught at the basic school stage.

The Tiger Leap Plus development plan focuses on support for ICT development in Estonian general education and teacher training. It focuses on **four priority fields**:

1. **ICT competencies** - development of the competencies of graduates from each stage of study, and of teachers and officials in education, by means of up-to-date curricula, in-service training courses and training materials;
2. **Virtual learning** - production of electronic training materials and educational software in Estonian, support for virtual collaboration of teachers, in-service training and exchange of experience, creation of virtual upper secondary schools, and legalisation of virtual learning;
3. **Sustainable development of infrastructure** - continuous upgrading of ICT hardware and software in schools, securing high-level Internet connections and technical support to schools in co-operation with school administrators;
4. **Collaboration between all parties involved** - collaboration between the state, local governments, schools, parents and organisations, and elaboration and implementation of principles and different forms of co-operation.

ICT profile of Estonia

Demographics and Network Readiness Status

Estonia has a population of 1.31 million and a Network Readiness Status as 23rd in the Centre for International Development's Index.¹ The country has forged ahead of its Baltic neighbours in the development of its ICT infrastructure and is on a par with France and Israel in terms of network readiness. This is partly due to early reforms of economic and social conditions soon after independence was established in 1991. The telecommunications infrastructure is modern and advanced with relatively generally low access costs and free Internet access within government, education and the medical sectors. Twenty-two per cent of Estonian households have a computer and sixty-eight per cent of the population had mobile phones in 2002. Fifty-nine per cent of people had access to and used the Internet on a regular or occasional basis with eighteen per cent being online for over six hours a week, a higher figure than the EU average. Only fifteen per cent of Estonians purchase goods online as against an EU average of nineteen per cent although there is widespread use of Internet banking with thirty-four per cent of citizens using online services.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	36.32
No. of cell phone subscribers per 100	38.70
No. of personal computers per 100	13.55
No. of personal computers connected to the Internet	15.44%
Internet Hosts per 1000	28.42

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Estonia suffers from escalating brain drainage due to the low earning capacity of ICT specialists. Significant improvements in the availability of ICT education in schools over recent years has led to an increased number of ICT graduates who are unfortunately going abroad in pursuit of higher salaries, resulting in an overall skills shortage. The government is counter-acting this through the introduction of various measures to increase the volume of ICT workers. The number of schools connected to the Internet and the availability of teacher training in IT has been greatly aided by the Tiger Leap Foundation, established in 1997. By 2002 all schools were connected to the Internet, 75% via broadband and the rest with a dial-up connection. Sixty-three per cent of teachers had also received basic training. Twenty-eight per cent of the labour force in Estonia participates in self directed learning, thirteen per cent of which is via eLearning. At a general level, forty-four per cent of the population feels comfortable using the Internet and there appears to be no real gender gap in digital literacy.

ICT and government policy

The development of the Information Society is a major priority in government policy. The first national IT development programme was created in 1994 and expanded in 1998 with the 'Principles of Estonian Information Policy'. This concentrated on four areas: modernisation of legislation, assistance in the development of the private sector, fostering of communication between state and citizens and the acknowledgement of problems related to the Information Society. Current priorities are telecommunication and access, education, work/skills/employment, social inclusion and e-government. A main goal is to create a comprehensive, easy-to-use IT system providing good access to all services, backed up by education and training systems that would motivate people to use the technology available. The Estonian Informatics Centre established in 1997 is responsible for solving problems across organisations, and the Look@World, started in April 2002, is currently providing basic computer and Internet training free of charge to 100,000 people. The aim is to achieve 70% Internet penetration by 2005. There are already a number of public sector services available to Estonians via the e-citizen project such as income tax declaration, job search services and health-related services. The Public Information Act adopted in 2001 obliged public institutions to provide information to citizens and there are plans to create an integrated, common server to access these more easily.

The Tiger University Program goals approved by the Estonian Government in 2002 (2002-2004) are to⁴⁶:

Support the development of the ICT infrastructure at higher educational establishments,
Support the development of ICT academic staff and degree courses' infrastructure.

The priorities in 2004 are:

development of ICT infrastructure (upgrading the academic backbones and networks, PC procurements, equipping the labs, providing software),
development of ICT-related curricula (new curricula, creation of study materials, e-University, e-learning, literature and electronic resources),
motivating the academic staff (mentoring PhD students, academic sabbaticals, lecturers' and PhD students mobility scheme, internships, visiting lecturers).

Educational sector in Estonia⁴⁷

The language of instruction is Estonian or Russian, the majority of the schools teaching in Estonian, a smaller group of schools in Russian exclusively and some in both languages.

Most pupils attend public-sector schools (95%) which are state-funded. Private schools costs for teacher salaries and textbooks are covered by the state budget, however, students who attend private schools pay tuition fees.

The structure of the school system is first the compulsory 'põhiharidus' which is the combined primary and general lower secondary school for children 7-15 years of age.

Post-compulsory education is the upper secondary and post-secondary level, which consists of 'Üldkeskharidus' the general upper secondary for pupils 16-18 years of age, or 'Kutsekeskharidus põhihariduse baasil' the vocational upper secondary 16-18/19 years of age and 'Kutsekeskharidus keskhariduse baasil' the vocational post-secondary for students 19-21 years of age. Admission to upper secondary general or vocational schools is based on the compulsory education certificate. Admission to these post-secondary vocational schools is based on the upper secondary school leaving certificate.

There are two types of higher education establishment: universities, offering academic programmes; and applied higher education institutions, offering applied higher education programmes ('rakenduskõrgharidus'). Applied higher education programmes can be offered also by universities and vocational education institutions that operate on the basis of secondary education. The pre-condition for admission to higher education institutions is secondary education obtained in Estonia or qualifications equal thereto obtained abroad.

⁴⁶ <http://www.eitsa.ee/inenglish/tigeruniversity.asp>

⁴⁷ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools ⁴⁸	396	240	Data not available
Teachers ⁴⁹	14,235	Data not available	Data not available
Pupils ⁶	180,649	74,518	49,580
Pupil:PC ratio	Data not available	Data not available	1:35 ⁵⁰

E-learning market size and characteristics

The market for eLearning in Estonia is very small. This might be connected to the fact that Estonia has a small but growing ICT sector, illustrated by the fact that the biggest IT departments are in the banks.⁵¹ Nevertheless, some of the major companies in the Baltic countries such as Elion, Hansapank, EMT, Microlink, Baltic Computer Systems, IT Grupp, etc. initiated the look@world programme which trained more than 100.000 Estonians in ICT and Internet over the period from 2001 to April 2004. The eLearning initiatives that do exist are primarily placed within higher educational institutions without a commercial aspect. This is also the case for the eUniversity, a collaboration between several Estonian Universities, that since its origin in 2002 has launched almost 300 e-learning courses in a wide range of subjects. Currently, between 0-5% of courses in HE institutions are based on e-learning. There are 60000 students at HE institutions in Estonia of which 25000 are adults who are in employment while following courses at Universities. The milestones for 2007 are that 50% of HE courses include some form of e-learning element, that 30% of teachers at HE will include e-learning as part of the study process. There are other ambitious goals mentioned in the strategy for the eUniversity of Estonia.⁵²

In 1999 there was only seven home computers and one ISDN line pr 100 inhabitants. However, the market for Internet access has been fully liberalised with nine providers⁵³ and this has improved PC and Internet penetration significantly.

Another example of the educational institutions' initiatives is the Estonian Educational and Research Network (EENet). This is a governmental non-profit organisation established in August 1993 by the Ministry of Education with the task of managing, coordinating and developing a computer network of science, education and culture. In 1993, the whole network consisted of less than two hundred computers in Tartu and Tallinn. At the beginning of the year 2003, the number of end-users of the Estonian academic network was approximately 202,000 people, i.e. researchers, students, teachers, pupils, etc. The network extends to most counties in Estonia. EENet's main task is to offer Internet connections.⁵⁴

Another initiative is the Educational School Net Koolielu (School Life). It is an electronic meeting place for school staff, students and parents, and anyone else interested. The portal Koolielu forwards information about different events in educational life in Estonia and elsewhere, such as conferences, competitions, possibilities of supplementary education and leisure

⁴⁸ <http://www.hm.ee/>, for the academic year 2002-2003

⁴⁹ <http://www.eurydice.org/Eurydice/Application/frameset.asp?country=EE&language=EN>, for the academic year 2000-2001

⁵⁰ http://www.riso.ee/en/nordic/NeDAP_Feasability_study_Final.pdf, 2002-numbers, for public universities.

⁵¹ http://www.riso.ee/en/nordic/NeDAP_Feasability_study_Final.pdf

⁵² http://www.e-uni.ee/documents/e-Uni_Strategy.pdf

⁵³ <http://www.eu-esis.org/esis2basic/esis2basicQ3/EEbasic3.htm>

⁵⁴ <http://www.eenet.ee/englishEENet/>

activities. The web environment offers teachers free and controlled study materials, but does not offer possibilities for eLearning as such yet.⁵⁵ A short study on the use of computers in the primary schools can be found at

http://www.tiigrihype.ee/eng/publikatsioonid/tiigerluup_eng/tiigerluup_eng.html.

LearningFolders serves online learning communities over 8 years and more than half of Estonian schools. Last year every schoolday our servers in Estonian got more the 100 000 page-views and between 20 000 - 25 000 visits. Miksike Learning Environment, works for regular schools and for the life-long learning communities. Miksike gives away more than 20 000 worksheets in HTML- called eWorksheets and offers a set of collaborative learning services. In 2002 Miksike was awarded European Language Label for successful language learning practices.

Miksike has 11 project managers and approx 1000 volunteering contributors online (pupils, teachers, parents). Miksike development started 1994 in the non-profit organization "Miks ja Millepärast", which works successfully till today with projects with small rural schools and Russian speaking minorities in the Baltics. OÜ Miksike grew out from NGO "Miks ja Millepärast" in 1998.

Miksike has successfully worked with Estonian state structures (Ministry of Education, Ministry of Environment, Ministry of Finances etc.) and different organizations in Estonia and internationally. Miksike has been showcased as one of the successful European IT initiatives during the EuroTex event (April'99), which was organized in collaboration between European Union and the State of Texas. Miksike was also highlighted in the UNDP Background Papers for the 2001 as one of the best examples in education. Miksike is presented in more than 10 international conferences organized by MIT Media Lab, The Internet Society, ERIC/EECE and others.

Miksike has organized during last years nearly a hundred online learning collaborative events/activities in Estonia and also internationally. Bigger international projects organized by Miksike are: in 1998 The Dino contest, 1999/2002 Environment and in 2002 Adjective contest and TQ Quiz Cup and MentalMath e-Xcitement 2003. Participants from more than 70 countries have participated in these activities.

Since 2000 Miksike is helping learners who live abroad learn Estonian language online.

E-learning industry

The commercial eLearning industry in Estonia seems to consist of very few companies, some of them mentioned below, while the educational sector seems to be developing quite a few projects, though primarily for their own students.

International suppliers

Very few international suppliers seem to be present in the Estonian market, as it is not very developed yet. However, technology suppliers are being used in the educational programmes, as the following examples shows:

⁵⁵ <http://www.koolielu.ee/pages.php/011502,5571>

IBM Websphere Application Server is being used in an eLearning project in Pärnu (see below).

WebCT (www.webct.com) is an international provider of Learning Management Systems. One of its customers is the Estonian e-university mentioned above.

E-learning content suppliers

The content suppliers that exist in Estonia are mostly educational institutions. Their target groups are primarily students and people operating in the educational world.

Example of Estonian Supplier of bespoke content:

The Foundation Pärnu Computer School started a project in 2001 called: "eLearning and Lifetime learning Center in Pärnu" in cooperation with the Information Technology Faculty of the State Vocational Training Center in Pärnu. The goal is to implement an eLearning infrastructure with IBM Websphere Application Server platform. The system will implement web-based learning materials, video-on-demand server for real-time and recorded lectures, web-based forum, live chat student-mentor and also students' info-server with study-plans and progression sheets, etc.⁵⁶

E-learning service suppliers

There does not appear to exist neither many Estonian service nor content suppliers, according to one web-site only the one described below exists.⁵⁷

The company **Trainator Ltd.** is operating on the education and training market oriented towards life-long learning using innovative methods. Their trademark EDUCAS stands for Education Knowledge and Society promoting the learning culture. They offer a selection of on-line courses, design and consultation for course set-up and on-line methods, creation of testing environments, help with installation and maintenance of on-line freeware. An onlin eLearning environment is currently in testing phase and soon to be opened on the www.edukas.ee onlin eLearning portal.⁵⁸

⁵⁶ <http://www.bizred.de/index.cfm?f=172&b=1008&RubID=365>

⁵⁷ <http://www.mimerdesk.org/community/engine.html?page=32>

⁵⁸ http://www.edukas.ee/index.php?go=2&lang=eng_

Finland

National policy and economic conditions

In the spring of 1999, the Finnish Ministry of Education devised an information strategy for the period 2000-2004. This was the second of its kind. The first strategy had been devised to steer national information society development in the fields of education and research from 1995 onwards. The vision in the second strategy is as follows: *By the year 2004 Finland will be one of the leading knowledge and interaction societies. Success will be based on citizens' equal opportunities to study and develop their own knowledge and extensively utilise information resources and educational services. A high-quality, ethically and economically sustainable mode of operation in network-based teaching and research will have been established.*⁵⁹

The information society in Finland is generally found to be of a high standard, particular with regard to technological infrastructures. It is, however, found to be inadequate and inconsistent in regard to the use of ICT in education. The most important objectives in this regard are: development of the knowledge and skills needed in the information society, promotion of computer networks as a mean of learning, accumulation of information digital capital and the strengthening of infrastructure in the education and research sectors.⁶⁰

The virtual school has been based on local, regional and national projects. Using the www.edu.fi -service as a basis, the National Board of Education developed a national virtual school portal, the first version of which was available in autumn 2001. It has since been evaluated and enhanced on the basis of the experiences made since then.⁶¹

To enable the continuation of research projects and educational and training projects and services launched during the previous strategy period, € 22.5 million will be set aside to cover such things as equipment acquisitions, the joint information technology services of the universities, and expansion of education, training and research at the universities, while a further € 1.7 million is to be provided for the development of the public libraries. Furthermore, a total of €25.8 million should be targeted at the focal areas of the strategy annually. Thus, the funding of information society projects will rise by approximately €6.7 million from the present level.⁶²

ICT profile of Finland

Demographics and Network Readiness Status

Finland has a population of 5.2 million and is widely recognised as a world leader in ICT, a reputation that can partly be traced back to Finland's historical connection with the beginnings of the telecommunication industry in the 1920's and the country's subsequent development of information systems to connect its scattered population. Finland ranks third in the Centre for International Development's Networked Readiness Index¹ and scores highly on all indices gauging the current and future health of its ICT status. It is economically very competitive and has a very well developed and sophisticated ICT infrastructure. Broadband con-

⁵⁹ Information Strategy for Education and Research 2000-2004 Implementation Plan. Ministry of Education, 2000.

⁶⁰ http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

⁶¹ <http://www.edu.fi/english/pageLast.asp?path=500;572;5365>

⁶² <http://www.minedu.fi/julkaisut/information/englishU/3/5.html>

nections are widespread and cheap, and there is high penetration of internet access in homes, schools and public venues. Digital literacy rates, based on four measurements of effective use of the internet, are high by European standards, particularly for 16-24 year olds. The gender gap in this area is low with 85% of women achieving the same level as men.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	54.69
No. of cell phone subscribers per 100	72.64
No. of personal computers per 100	39.61
No. of personal computers connected to the Internet	25.82%
Internet Hosts per 1000	102.25

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World(Country Profiles)

Education

Finland has a very high proportion of schools connected to the internet – 90% at primary level and 95% at secondary level. There are 11 pupils per PC at primary schools and 7 at secondary schools. However the digital literacy of teachers was surprisingly low at 54% in January 2001, a long way short of the EU target of 100% proficiency in IT skills amongst teachers by December 2002. Finland has a 99% literacy rate, 83% of the relevant age group is involved in tertiary education and Finland spends 7.5% of its GDP on education. Three times as many members of its workforce are engaged in work related training involving e-learning as some other EU member states. This is significant given the strong relationship between participation in work-related training and demand for e-learning tools. In 2002, 91% of employment in Finland was within companies that provided their staff with free access to the Internet (compared to 40% in Greece).

ICT and Government Policy

The Finnish population is ageing, and there is a strong incentive to involve older people in ICT in order to avoid a “digital divide”. In broad terms, Finland’s ICT policy is based on equality and accessibility through education and through product and service development. E-commerce and e-government are well developed, and Finland’s “Information Strategy for Education and Research 2000-2004” places strong emphasis on the consolidation of virtual learning environments, the implementation of new, interactive teaching and study methods and the promotion of Information Society skills for All.

The aim of the Government Information Society Programme launched in 2004 is to improve the competitiveness and productivity, to promote social and regional equality and to improve citizens' well-being and quality of life through effective use of information and communications technologies. The Information Society Programme is one of the Government policy pro-

grammes⁶³. One of the aims of this programme is to make better educational use of information and communications technology and improving the contents of Internet teaching (such as virtual university, virtual polytechnic and virtual vocational school) (eEurope 2005 and Finnish Ministry of Education).

Training & development market in Finland

Initial Vocational Training

Publicly-funded school-based vocational education and training is split into two levels:⁶⁴

1. *Upper secondary VET level*: this is targeted at 16-19 year olds upon completion of lower secondary education. Duration of studies is 3 years including 6 months on-the-job training. There were over 123,000 students in 2001 and 209 education providers in this sector.
2. *Polytechnic level*: seen as an alternative to universities polytechnics are targeted at 18-20 year olds with the aim of training highly skilled professionals for technical, planning and managerial positions. Polytechnic degree programmes can last up to 4½ years. There were 118,000 students in 2001.

Apprenticeship training lasts between 1 and 4 years and is heavily weighted towards practical training in the workplace (between 70% and 90% of total training time). Over 28,000 students were enrolled in apprenticeships in 2001. Apprenticeships are funded by contributions from the State, local authorities and enterprises.

Continuing Vocational Training, Adult Training and Training for the Unemployed

Publicly provided CVT consists of:

1. *Upper secondary vocational education and training for adults* that leads towards gaining a qualification and is organised in the form of apprenticeship training or institutional education and training.
2. *Additional vocational training for adults*, which is in fact preparatory training leading to a further – or specialist - vocational qualification. This may be delivered in any of the ways discussed in this section.

However, the most extensive form of adult education and training is company-based corporate training, in which there was a 56% participation rate among employees in 2000. This is funded privately and has been estimated to amount to 3.2% of the total wage bill in industrial enterprises and 1.9% in the private services sector.

In Finland, labour market training is included as part of the system for vocational adult education and training and consists of upper secondary vocational education and training, re-training, further and supplementary training. There were some 26,100 participants in labour market training in 2001 and four out of five of these were actually unemployed job seekers, the rest being either from outside the labour force or those in work threatened with unem-

⁶³ <http://www.infosoc.fi>

⁶⁴ <http://www.cid.harvard.edu/cr/profiles.html>

ployment. Data available from Eurostat's LMP database shows that €464 million was spent on training-specific measures for the unemployed in 2000 (equivalent to 0.35% of GDP).

Educational sector in Finland

The Finnish public school system is made up of compulsory and non-compulsory schooling. The official languages are Finnish and Swedish, and the public authorities are obligated to take care of the educational needs of the Finnish and Swedish speaking population according to the same criteria. There are two networks of educational institutions in bilingual municipalities, one for each language group, covering all levels of education. Municipalities are also required to organise education in Sámi in the Sámi-speaking areas. Care is also taken to ensure educational opportunities for the Romany and other minorities as well as for persons using sign language.

The compulsory schooling consists of the primary and lower secondary school and lasts for nine years. The non-compulsory schooling is made up of upper secondary and post-secondary education as well as of higher education.⁶⁵ The Finnish higher education system is made up of two parallel sectors: universities and polytechnics.

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	3,953 (2001)	477 (2001)	49 (2002)
Teachers	42,744 ⁶⁶ (1997)	7,320 ⁶⁷ (1999)	7,849 ⁶⁸ (2002)
Pupils	595,727 (2001)	129,343 (2001)	296,176 (2002)
Pupil:PC ratio	11 (2000)	13 (2000)	

There are 20 universities in Finland and almost 160,000 university students in all. Ten of these universities are traditional multidisciplinary universities and the remaining ten are specialised institutions. Three of the specialised universities are schools of economics and business administration, three specialise in engineering and architecture and the remaining four are art academies.⁶⁹ As the table shows there are 11 pupils per PC in the primary and lower secondary education system, and there are 13 pupils per PC in the upper secondary schools.

The incorporation of ICT into the Finnish education system reflects two main objectives. The first objective is to enable everyone, in accordance with the principle of equality of opportunity, to acquire the ICT knowledge and skills needed to study and develop their intellectual ability. Second, it is an objective to encourage the development of a real information society based on interactive knowledge.

ICT will be included in the basic curricula of educational establishments, which will become innovative centres for learning. The sectors of education and research will each operate in networks. Projects for network activities will lead to the establishment of a variety of research networks, virtual schools and universities, and to enhanced interaction between the educational sector and working life. Part of teacher training will concentrate on the development of virtual studies. The use of ICT will make these learning methods more flexible and lead to the

⁶⁵ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

⁶⁶ <http://www.edu.fi/english/pageLast.asp?path=500;4699;4847>

⁶⁷ <http://www.edu.fi/english/page.asp?path=500;4699;4840;4845>

⁶⁸ Includes only students in Universities.

⁶⁹ <http://www.eurydice.org/Eurybase/Application/frameset.asp?country=FI&language=EN>

development of new forms of open and distance education meeting the needs of a great many people.

The Finnish Virtual University and the Finnish Virtual Polytechnic (in addition to Virtual School co-ordinated by the Board of Education) are important actors in the Finnish E-learning sector. These national networks co-ordinate the co-operation of the Finnish universities and polytechnics, both in terms of e-learning content development and other issues such as technological interoperability, teacher training and virtual student mobility. The following web-sites provides further references <http://www.virtuaaliyliopisto.fi> and <http://www.virtuaaliamk.fi/channels/www/eng/etusivu.html>.

E-learning market size and characteristics

The e-learning market in Finland is a young market, but is growing rapidly. There are approximately two hundred companies who actively operate in the field. Most of these firms employ only a few persons. Only 25% of the businesses consider digitally enhanced learning or e-learning to be part of their core business. The field of e-learning is estimated to provide opportunities not only for content providers and service companies, but also for companies providing technology and tools.⁷⁰ In year 2002, according to Tieturi, the e-learning content market was estimated to be 9 mill EURO in Finland.

E-learning industry

Finland is among the Scandinavian countries where the e-learning concept is accepted and well developed. There is a versatile supply of network learning and supportive material for all levels of education from pre school level to universities and open universities.

There are about one hundred public sector organisations which develop and offer learning services based on digital technologies either for their own internal use or for open service use. There are also separate units within these organisations, which do their own development and service work. In the private sector there are about 150 companies and a number of business service companies that act as subcontractors. Their turnover is generally small, and they typically employ 2 - 6 persons. The number of sizeable companies/units with more than 10 employees is eight of which most are profiled in this paper.

There are attempts on the part of publishers to create a separate, additional market for electronic multimedia learning materials in addition to the annual €15 - 30 million currently invested in information technology and €65 - 80 million euros currently invested in learning materials. The multimedia e-learning content production market is networked and uses subcontracting of freelancers in order to deal with variable workloads. Some big IT service and application and smaller content and technology providers have withdrawn from the market during 2003 and 2004.

The e-learning industry builds bridges between public and private companies. Through such networks it is possible to strengthen the knowledge about and the skills to use the new e-learning industry. An example of such a network is the Tampere eLearning Cluster.

In the autumn of 2003, an online survey was conducted by the company Culminatum (www.culminatum.fi) in Finland resulting in the identification of some 250 companies participating in the e-learning sector. Many of the companies are listed on the following web-

⁷⁰ <http://www.swbusiness.fi/index.cfm?cd=72&depth=4&dept0=1&dept1=2&dept2=63&dept3=72&doc=1312>

sites: <http://www.finnishdigibusiness.fi/>. These three sites also acts a communities and portals for the various subsectors of the e-learning industry in Finland.

Tampere eLearning Cluster:

The Tampere eLearning Cluster is a partnership that promotes collaboration in the field of e-learning in the area of Tampere, Finland. Members of the cluster are actors in research, education and development of web-based learning. A part of the mission is public private partnership, however, the Cluster is primarily in place for presenting initiatives for local or regional co-operation. The partners are mainly public sector organisations and the focus of the co-operation is in e-learning research and the development of e-learning in universities and other institutions, in schools and workplaces. It is also a practical network for individual teachers, researchers and other personnel in the organisations. The e-skills come before e-learning and therefore the cluster is involved also in several regional information society projects. <http://www.eoppiminen.tut.fi/english/>

International suppliers

There are a number of international suppliers of further education and courses on the Finnish e-learning market. Foreign European, American, Canadian and Australian companies have gained easy access to the Finnish corporate and public market without actually setting up a representation in Finland. Some companies, however, set up representations in Finland or regional representations covering several countries. SABA, SumTotal, Luvit, Centra and Interwise as well as Blackboard and Sun are active in the market. In the University sector, WebCT is used by several Universities. IBM is active with its Lotus Learning Space and portal solutions and Microsoft Finland hired an e-learning sales manager in 2004 with the aim of addressing the schools market.

Blackboard

Blackboard is a company with an office in Finland. The company offers a complete suite of enterprise software products and services that power e-education programmes in institutions of higher learning, primary and secondary schools, as well as corporate and government organisations. Blackboard traces its technological roots to Cornell University (USA). Among the Finnish customers are Helsinki Business Polytechnic and SLK Finnish Business College.

Source: <http://www.blackboard.com/worldwide/fi/en/index.htm>

International suppliers of standard e-learning courses within areas such as certified or non-certified general IT or management courses are also active in the Finnish market. Some of these might have roots in foreign and especially American software companies.

Sun Microsystems

Sun Microsystems is an American world-wide company that develops software for the Internet. The company is represented in Finland. Among its services are designing, implementing and managing e-business portals. www.sun.com

E-learning content suppliers

A number of companies are specialised in the development of e-learning content and solutions for other companies and companies that are interested in using bespoke e-learning courses.

Others like Mikrolinna target the schools and educational institutions market. The Opit Service of the eWSOY publishing company is however the major player in the school sector. They provide both the platform and content for primary and secondary education. (Licence/pupil 17€.) For example the City of Tampere has in 2004 agreed a substantial development co-operation with eWSOY concerning materials to Schools (www.opit.wsoy.fi). Based on turnover Tieturi is the largest operator in terms of technology and IT training followed by companies like FCS Partners and Teleware.

Examples of Finnish suppliers of bespoke content:

Everscreen (www.everscreen.com) supplies businesses with e-learning and communications solutions. Its lengthy experience in the field forms the basis for its e-learning solutions. They are capable of finding solutions, which utilise innovation and creativity in a way, which serves the needs of the client firm and the end user efficiently. They realise both client-based productions and Simultan standard productions for IT training purposes. Everscreen became a subsidiary of SanomaWSOY in October 2001. At the same time Everscreen merged with the e-learning divisions of Docendo Finland and Docendo Sverige, however in the spring 2004 the Swedish Unit was sold of. The company has approximately 20 employees.

Viope Solutions Ltd. (www.viope.com) Viope Solutions Ltd produces eLearning solutions for computer programming in the student's own language. The solutions are developed for use in education organisations, in primary and high schools, and in private companies. The company also produces customised e-Learning environments.

Morning Digital Design Oy (www.morning.fi/en/what_we_do/elearning.html) originates from digital marketing solutions, but has developed competencies in developing e-learning solutions.

Mikrolinna Oy (<http://www.mikrolinna.fi/>) This company is a small specialist in the field for digital learning materials based on CD-ROM for learning mathematics. The products are aimed at primary school level and have been sold to hundreds of schools in Finland.

Tieturi Online <http://www.tieturi.fi/inenglish/> This company is one of the leading bespoke e-learning developers in Finland. It also provides standard online IT training courses. Tieturi also operates in Tallinn Estonia.

HUT Dipoli (www.dipoli.hut.fi) is a designer and producer of lifelong learning and professional development courses and programmes. The company offers courses and entire programmes covering a wide range of subjects. Making use of international networks, the technological know-how of the university staff, and the business experience of industries, the company seeks to support business management and technological development. The customers include the Finnish public sector. Similarly most Finnish Universities have a unit that develops electronic multimedia learning materials including that of Tampere University and several others.

E-learning technology suppliers

There are a significant number of companies supplying e-learning related technologies within the Finnish eLearning industry. They provide tools for managing e-learning content and e-learning activities (learning management systems) and tools for authoring learning modules.

Examples of E-learning technology suppliers:

R5 Vision (www.r5vision.com) specialises in the development of human capital and working skills. The company creates web-based working and learning environments and provides services to sup-

port versatile learning. Their customers include the steel company Rautaruukki, the Finnish Defence Forces and the Finnish National Fund for Research and Development.

University of Art and Design Helsinki (www.3.uiah.fi/index.html) has developed an innovative web-based learning environment, called Fle3. Fle3 is a server software for computer supported collaborative learning (CSCL). Fle3 is designed to support learner and group centred work that concentrates on creating and developing expressions of knowledge (i.e. knowledge artefacts) and design. Fle3 contains three learning tools and several administration tools. Among the users are the Faculty of Education, University of Tampere and the Education Department, City of Helsinki.

Sanako Corporation (www.sanako.com) has been in the educational market as a developer and supplier of technology enhanced solutions for learning environments for many years. Sanako has designed and deployed over 15,000 learning systems in schools, colleges and university centres in 90 countries world-wide. The Company's products range from analogue language laboratories, to hybrid and fully digital learning environments, to stand-alone educational software products. Known products are especially Tandberg Educational and Auditek branded products. The Company is located in Turku (Finland), Leeds (UK) and Miami (USA) and has eighty partner companies around the world.

Discendum Oy (www.discendum.com) develops learning environment platforms and applies them to implement customised Web learning services for educational institutions, companies, and other organisations.

HCI productions <http://www.hci.fi/> HCI Productions Oy is a small company specialising in Internet-based learning and performance solutions. The company offers tailored electronic performance and support systems, Virtual project platforms and WOPPI Campus, a learning platform.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with e-learning projects. These cover e-learning strategies, development planning, pedagogical and technical and technical advice in relation to e-learning design and implementation. There are companies combining the service with the development and selling of technology or content. Some companies publish their own periodical and offer courses in e-learning. Several suppliers of content or technology in the Finnish market also offer this dimension.

Examples of E-learning service suppliers:

Humap Oy (www.humap.com) recently took over the e-learning activities of Tieto Enator and is a significant player in the content development and consultancy services within digital learning solutions.

Tieturi (www.tieturi.fi) claims to be the leading supplier of IT, technology and project management training in Finland. Tieturi has been an eLearning service provider in Finland since 1998 when the first eLearning courses were delivered. The company provides IT-training and consulting services both for IT professionals and end-users in the company's training centres at four locations: Helsinki at Ruoholahti and Mannerheimintie, Tampere and Turku and Tallinn in Estonia.

Finnish E-learning companies in international markets

Sanako Oy is the only truly international Finnish company in the e-learning market. The firm generates almost all of its net sales of €14 million through exports. However, new ventures are growing rapidly.⁷¹

⁷¹ <http://www.swbusiness.fi/index.cfm?cd=72&depth=4&dept0=1&dept1=2&dept2=63&dept3=72&doc=1312>

Another company, Divace exports most of its products

Examples of Finnish E-learning companies in international markets:

Sanako (www.sanako.com) provides innovative, scaleable and user-friendly technological advanced solutions to both the corporate and the academic and the corporate sector. These solutions includes setting up virtual classrooms, virtual meeting rooms and language labs as well as creating tolls for e-learning and for professional development.

France

National policy and economic conditions

For the past five years the Ministry of Education has been implementing an active policy aimed at developing the use of Information and Communications Technologies (ICT) in school and higher education.

There are two objectives:⁷²

1. For the pupils and students to master a technical environment where those technologies are increasingly important
2. To diversify forms of teaching and learning in liaison with the reforms undertaken in the education system.

Furthermore, the French government has established the CNED (National Centre for Distance Education) in order to promote lifelong learning. CNED offers more than 3,000 distance education courses for all levels of education from primary school to professional training and personal development. There were 352,006 registered users in 2002 out of which 40,000 participated for continued professional training purposes.⁷³

ICT profile of France

Demographics and Network Readiness Status

France has a population of 59.2 million and ranks a rather low twenty-fourth in the Centre for International Development's Networked Readiness Index¹, a rating that belies its current state of accelerated development in ICT. France was slow to adopt the Internet due to the popularity of the Minitel network which was introduced in the early 1980's. This allowed its 16 million users in France to gather information, purchase goods, make travel reservations and conduct financial transactions and resulted in a strong disincentive to use the Internet. In 1998 use of the Internet by the French population stood at 2%. This rose to 10% by 2000 and according to figures for 2002, 30% of French households are now connected, roughly 4% of which are broadband connections. Sales of PCs were expected to rise by 3% in France in 2001 and fall by 4% in Europe as a whole. There appears to have been a huge leap in the number of Internet related businesses in France although sales over the Internet are still not a significant factor in France.

⁷² http://www.elearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=7&doclng=1&p1=1&p4=1

⁷³ <http://www.cned.fr>

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	58.01
No. of cell phone subscribers per 100	49.40
No. of personal computers per 100	30.48
No. of personal computers connected to the Internet	6.26%
Internet Hosts per 1000	19.90

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

France has an adult literacy rate of 99% with 51% of the relevant age group involved in tertiary education. With the economic downturn in recent years, the number of students at French universities is rising and students are studying for longer. Eighty-four per cent of secondary schools and thirty per cent of primary schools were connected to the Internet by 2002 with a ratio of pupils per PC at 6:1 in secondary schools and 25:1 in primary schools. Digital literacy rates amongst teachers are relatively low at 55%. Digital literacy in France as a whole is the third lowest in the EU and amongst 16-24 year olds, it is the lowest. Although forty per cent of French companies provide their staff with access to the Internet, only 6% of the French labour force use eLearning at work. This is roughly a third of the EU average. The French government spends 5.9% of the GDP on education.

ICT and government policy

The French government has made a huge commitment to the development of ICT in France over the past five years and radical changes have taken place. The government's main vehicle in accelerating France's integration into the 'Information Society' was an action programme called PAGSI, launched in 1998. This set out six focal areas for development, i.e. education, culture, business, local technological innovation, government services and regulation. € 1.4 billion was invested in this programme between 1998 and 2002. So far it has resulted in 78% of state services being on-line, the vast majority of schools being connected to the Internet and the number of public Internet access points in libraries, post offices, job agencies and town halls being increased from 1,603 in 2001 to 7,000 in 2003. France has also opened up its telecommunications sector to competition and made uniformity of services to all areas a requirement.

Training and development market in France

Initial Vocational Training

In France there are two main pathways for IVT among young people:

1. *IVT under the education system in vocational secondary schools*, which gives young people the opportunity to continue their general education while at the same time receiving initial vocational training that builds towards their first qualifying diploma. Programmes

last two years. This is predominantly public financed (over 90%). Total funding - including public and private - amounted to €13.266 billion in 2001.

2. *IVT under work contracts*, applies to young people aged 16-25 and can take two forms:
 - *Apprenticeship contract*: provides alternating periods of mentor-based on-the-job training with training offered in an Apprentice Training Centre. Since 1987, apprenticeships have been offered as a way of earning diplomas to the same level as under general education. At the end of 2001 there were 386,000 participants.
 - *First-time alternating work-study contract*: combine theoretical coursework in a learning institution with hands-on training in the workplace. These are designed to allow young people to achieve vocational qualifications, adapt to a job or type of job, or make it easier for them to enter/choose a field. There were around 225,000 participants at the end of 2001.

Apprenticeships are funded to a significant extent by enterprises through a payroll tax (0.5%). This amounted to €522 million in 2000. In addition to this there was public sector funding - at state and local level - of €1,475 million. Work-study contracts are again financed mainly by enterprises⁷⁴ and indirectly by the state in terms of exemptions on social contributions payable by the company. This amounted to €1,355 million in 2000.

Continuing vocational training, adult training and training for the unemployed

In France, enterprise-based training for employees is funded on the basis of mandatory contributions from both public and private sector institutions, and it is practically unique in its system for funding CVT. Contributions from private sector enterprises are 1.5% of total payroll costs (less for companies with fewer than 10 employees). Similarly, public administration is required to devote 3.8% of payroll costs to training plans and a further 0.2% to vocational training leave. Training can be requested and funded by the employer as part of a training plan or by employees through several training leave programs such as the union training leave program or the young workers' leave program. The most common programme is the Individual Training Leave (*congé individuel de formation* or *CIF*).

Training methods vary. Direct teaching is the most frequently used, but distance learning techniques such as correspondence courses (for example programmes offered by the National Distance Learning Centre or *CNED*) or eLearning are also used.

In the 2000, there were more than 45,000 training organisations offering services, including nearly 7,500 whose main business it is providing training services.

Training for job seekers falls into two main categories, i.e. internships and special employment contracts such as orientation contracts, training contracts, or adaptation contracts. Job seekers are eligible to participate in training programmes. Under certain conditions they may participate in training programmes while continuing to receive unemployment benefits such as back-to-work benefits (ARE-training) financed by Unédic, the joint organisation that manages unemployment insurance. In 2000, France spent 0.93% (€13.1 billion) of its GDP on active labour market policies of which €929 million was spent on training-specific measures.

⁷⁴ In fact work-study contracts are considered CVT in France. See section on CVT.

Educational sector in France

Education is compulsory between the age of 6 and 16 and is divided into three stages. All pupils attend the *école élémentaire* between the age of 6 and 11. Lower secondary schools stretches from 11 to 15 where all pupils attend the *collège*. At the age of 15 pupils gain access to either the general and technological *lycée* or to the vocational *lycée* in order to complete the compulsory education at the fifth year of secondary education. The universities, all of which are public with the exception of five catholic institutions, and higher public sector and private 'schools', some known as *grandes écoles*, provide higher education in France. There are several hundreds higher educational institutions in France. This figure can be partitioned into around 200 universities and technological universities and for the rest *écoles normales supérieures*, schools of higher education, some of which *Grands-Écoles*, etc.

	Primary schools	Secondary schools	Universities and colleges
Number of schools	33,981 ⁷⁵	11,309	677 ⁷⁶
Teachers ⁷⁷	364,000	431,800	87,000
Pupils	4,000,000	5,597,000	2,209,000
Pupil:PC ratio	23 ⁷⁸	14 in lower secondary 6 in upper secondary	18 ⁷⁹

There has been a significant development in the use of ICT in the French educational system during the last few years. In 1997, there were 100 pupils pr. PC in primary education, 26 in lower secondary education and 12 in upper secondary education. These numbers have been reduced as a result of a deliberate policy by the French government that also connects 50% of the primary schools (1997: 0,6%), 91% of lower secondary schools (11%) and 100% of upper secondary schools (31%) to the Internet. Furthermore, the institution Educnet, which has been established by the French Ministry of Education, actively promotes further use of ICT in education levels, including eLearning. Two percent of the students in higher education are involved in Internet-based distance learning either fully or partially. Thirty-five percent make use of electronic resources made available for teaching purposes. Six percent of the French students enrolled in regular university courses benefit from online tutoring.

E-learning market size and characteristics

E-learning is undergoing far-reaching changes, now offering contents and services for the French market. IDC, the marketing intelligence and advisory firm, forecasts that the eLearning market will be worth € 250 million in 2004, i.e., eight times more than in 1998, a trend similar to what is happening in most European countries.⁸⁰

There were 700,000 eLearning users in France in 2002 at all levels from primary education to professional post-graduate training. 350.000 of these used the public portal and learning portal from CNED.⁸¹

⁷⁵ Ministry of Education: Repères et références statistiques – 2003: <http://www.education.gouv.fr/stateval/rers/repere.htm#2>

⁷⁶ Eurydice 'The Education System in France (2001/2002)':

<http://www.eurydice.org/Eurybase/Application/frameset.asp?country=FR&language=EN>

⁷⁷ L'Éducation Nationale en Chiffres 2002/2003: http://www.education.gouv.fr/stateval/grands_chiffres/gchif_e.htm

⁷⁸ 2002: <http://www.educnet.education.fr/equip/>

⁷⁹ 2003: <http://www.educnet.education.fr>

⁸⁰ http://www.industrie.gouv.fr/FranceTech/anglais/cyber/cc_25f.htm

⁸¹ www.cned.fr

Research⁸² indicates that the eLearning market has been booming in recent years. Before 1998, only 6.8% of the companies had used eLearning, but between 2000 and 2002 54.4% of the enterprises used eLearning. Additionally 62% of the enterprises estimated that their budget for eLearning would increase in 2003. Only 5% estimated a decline. In the private sector, mainly big companies push eLearning forward. In 2001 66% of eLearning activities took place in companies with more than 1000 employees. It is primarily used for administrative training, language training, IT training and accounting training.

In 1997, the Rhone-Alpes Regional Council established the Rhone-Alpes eLearning Cluster (RRFC) in order to improve the access for all to training, of which people far from training centres, and to increase awareness on ICTs in the field of training.

Today, the RRFC is managed by both the Regional Council and the State and is part of a common regional strategy aimed at reinforcing the use of the RRFC as a key access point to eLearning.

The three main objectives of RRFC are :

- To raise awareness and train in ICTs
- To facilitate access to training modules
- To develop the eLearning offer at the regional level.

The technical tools available for the Cluster members are:

- a web portal (www.rrfc-ra.org) in where a catalogue of eLearning modules as well as members' contact details can be found
- a eLearning platform dedicated to the creation and dissemination of eLearning modules
- a technical hotline and assistance

The cluster's partners are :

- Rhone-Alpes Regional Council, founding partner
- The Regional State representative, main partner with the Regional Council
- XL/Competis, service provider in charge of the RRFC technical development (web portal, eLearning platform, etc) and the pedagogical assistance
- IDATE, consultancy in charge of the piloting and animation of the RRFC
- Around 40 Training institutes and organisations, for instance (the complete list is available on the web portal)

E-learning industry

The eLearning industry in France stretches across a wide range of businesses, public, private partnerships as and other types of partnerships. A number of private eLearning suppliers are offering standard eLearning products. These benefit for a great deal from an active national policy creating several networks that work as a frame for the eLearning industry. Furthermore, the French economy, which has many large corporations, creates the opportunity for the development of French enterprises within the various fields of eLearning.

⁸² OFEM, Le Préau & PriceWaterhouseCoopers 'Les entreprises et la e.formation en France – enquête 2002'

Demos (www.demos.fr) was established 32 years ago, Demos trains approximately 50,000 people a year and is a partner in the evolution of organisations, their people and their careers. This includes eLearning and other conventional training methods.

There exists no complete overview of the French eLearning industry, but the various associations that create networks among eLearning industries, public authorities, universities etc. indicate that the industry is quite extensive.

As far as market actors are concerned, the sector is characterised by traditional publishers that have also invested in multimedia, many new entrants, foreign publishers in the corporate and consumer segments. There is now a wide variety of educational materials: interactive and multimedia software, on CD-ROM and networks, interactive tests and exercises, community and collaborative tools, simulation engines and simulations. The spectrum of technology for education is widening and now includes also administration, management of resources, management of training provision, services to learners (students), management of documents, management of standards of competences and educational systems intelligence. Several French companies have gained a good market within their business (mainly edutainment, language learning and office automation learning) and some have started to export and internationalise their activity.

For training content dissemination, many organisations (CNED, Demos, Cegos, Formatel, and others) offer distance solutions. The solutions are available on a range of media such as a CD-ROM, the Internet or the telephone and in a variety of fields such as languages, management, electronics, etc. The organisations often work in partnership with universities for degree-awarding training courses. For instance, Formatel has partnered with UTC (the Technology University of Compiègne) and UNS (the Digital University of Strasbourg). The Paris, Nantes and Douai Ecoles des Mines (undergraduate and postgraduate engineering schools) have set up eLearning modules for student engineers, which can be accessed from abroad.

International suppliers

Like all other countries, France is exposed to the global market for eLearning. This means that there are eLearning suppliers offering eLearning products via the Internet. The world-wide web makes it possible to reach customers in France without even establishing a representation office. Nevertheless, France, as one of the big European countries and markets, hosts offices for several eLearning companies. Their presence in France is used as a steppingstone for the rest of Europe. Especially the possibilities of accessing the French-speaking markets outside France makes it worthwhile to set up an office.

Auralog (www.auralog.fr) develops and distributes software solutions and related services for foreign language learning. Auralog was recently awarded the 2001 European IST Prize for its technical excellence, innovative product content, potential market value and capacity to generate new jobs. The French office serves as an entry to the rest of the European French speaking markets. The company has worked with Accenture, Dassault Systems, Groupama and others in France.

There are international suppliers of standard eLearning content stretching from content suppliers and producers of Learning Management Systems to online language courses and other

courses offered to both individuals and enterprises. Furthermore, there are foreign universities, primarily American, offering the possibility of completing university degrees online.

Jones University (<http://www.jones.com/jiu.html>) offers college courses, certification programmes, Bachelor of Arts completion degree in Business Communication and Master of Arts degree in Business Communication, and a Master of Business Administration degree with seven areas of specialisation through interactive learning tools.

E-learning content suppliers

France boasts assets for the production and international dissemination of eLearning contents in a situation of fast-changing e-training production processes. The development of eLearning modules meeting the needs of learners from different places and in different situations presupposes ongoing and well-organised distance collaboration between many teachers and experts. The eLearning contents that suppliers offer the most often are language training (Telelangue, and others) as well as training in office automation (i-Progress, etc.), computer skills (Smartcanal, Anuman, etc.), sales, finance and management (Focus, CrossKnowledge, Cegos, etc.), or technical and industrial disciplines, etc. Some courseware publishers also offer versions in several different languages (i-Progress, Smarcanal, etc.).⁸³

Examples of French Suppliers of bespoke content:

iProgress (www.iprogress.com). The PROGRESSION® solution is eLearning directed towards those who work with computers. Its instructional approach is based on realistic scenarios and deals with examples taken from the business world. Furthermore, the company provides customised content. The PROGRESSION® solution has been adopted by over 300 major companies and government services around the world. Among those BNP Paribas and La Poste.

Focus (www.focus.fr). Producing the content Siomulateur Pédagogique, Focus provides both standard eLearning tools but also tailor-made solutions for a variety of companies. Among its customers you find ABB, France Telekom, l'Oreal and Toys 'R' Us.

Telelangue (www.telelangue.fr) (280 employees) offers language training using telephones and the Internet. It was established in 1980 and has had more than 5.000 companies as clients.

E-learning technology suppliers

There are a significant number of companies supplying eLearning-related technologies within the French eLearning industry for tool platforms for project management (interactive content, virtual classes, online tutoring and follow-up, collaboration, etc.)

Examples of E-learning technology suppliers:

Formavision (www.formavision.net) offers four LMS products and supplementary tools. They include library systems, class scheduler and payment systems.

Silologic (www.silologic.fr). The Pedagogical Content Manager (PCM) tool facilitates Internet access to

⁸³ http://www.industrie.gouv.fr/FranceTech/anglais/cyber/cc_25f.htm

learning contents to teachers and learners. Among the customers are Airbus, Météo France, Motorola and Schneider.

E-learning service suppliers

Another category of eLearning activities for companies is the introductory method of e-training courses, and the design of customised modules. To this end, several companies (Perspective 123, Arcom, Widil, Animedia, and others) have developed a profile for special services for eLearning. They provide overall training systems and design projects based on Internet and Intranet platforms and tools, which are often specific to each company. The Thot portal (<http://thot.cursus.edu>) has comparative reports to guide users in their choice of the many solutions of available platforms and tools.

Finally, France's prime movers in the industry are organised within the *Forum Français pour la Formation à Distance* (French Forum for Distance Education (www.fffod.org)) that publishes a newsletter.⁸⁴

Cegos (<http://www.cegos.fr/uk/>) The company works with the integration of new technologies of learning in enterprises. The company has assisted enterprises such as Air France, RATP and Renault in using eLearning in their organisation.

Animedia (www.e-animedia.com) assists companies in identifying their needs for eLearning, assists them with choosing among LMS and content products and directing the training sequences towards the employees. It was established in 1995 and has clients such as Crédit Agricole, FNAC, Ministère de la Justice and SNCF.

WIDIL Industries (www.widil.com) has the goal of making new information technologies work for people in a learning environment that closely matches their needs, i.e. in the workplace, at home, or in a training center. The French Industrial Association, Fraikin and Ecole Supérieure de Commerce de Troyes are among its clients.

French eLearning companies in international markets

There are several French eLearning suppliers acting on both the European and the global market. For several French companies, like Demos, the neighbouring French-speaking countries Belgium, Luxembourg and Switzerland serve as a steppingstone for their activities outside France. Here they establish a platform for subsequent expansion into German speaking markets but also into the UK or other countries. Some French eLearning companies, such as Cegos (www.cegos.com), iProgress, Smarcanal, etc., have expanded into the European markets and markets outside Europe providing eLearning products in several different languages. Furthermore, the CNED, CESI (Centre for Higher Industrial Studies) and higher education schools are actively increasing their new formulas for students beyond the borders.⁸⁵

⁸⁴ http://www.industrie.gouv.fr/FranceTech/anglais/cyber/cc_25f.htm

⁸⁵ http://www.industrie.gouv.fr/FranceTech/anglais/cyber/cc_25f.htm

Germany

National policy and economic conditions

Since 2002, the programme “Neue Medien in der Bildung” (New media in education) has supported the establishment of more than 100 projects with more than 500 individual partner organisations participating. They include universities and other higher educational institutions (so-called Fachhochschulen). The aim is to achieve a lasting and broad integration of new media as an effective vehicle for training, learning, work and communication in higher education. It is also expected that these projects will lead to a qualitative improvement of academic programmes on offer through the integration of technology supported elements. During the period from 2000 to 2004 more than €220 mill are allocated to these projects by the BMBF (German Ministry for Education and Research). A further €100 mill are estimated to have been allocated by the regions (The Bundesländer).⁸⁶ Each of the Länder have established their own on-line education server with variable degree of facilities and services, however most with good facilities for further development of eLearning. An example of this is the server for Schleswig Holstein (<http://www.lernnetz-sh.de/>).

The focus of the “New Media in Education” programme has been on the development, testing and broad utilisation of teaching and learning software in schools, higher education institutions and vocational training. Activities like “Schools Online”, “Marketplace for Schools”, “Internet Classroom” and other sponsoring services by industry are to contribute to solving the problem of providing schools with high-quality hardware and Internet connections. Schulen-ans-netz is a competence centre providing support to schools, schools authorities, teachers and parents for all aspects of ICT use in school education. It works on the fields of content, teacher training and technology. Schulen ans Netz <http://en.schulen-ans-netz.de> is a joint initiative by the Federal Ministry for Education and Research and Deutsche Telekom.

The service “Studieren im Netz” (Studying online), an information system helps students to find everything they need to know about the online study opportunities offered by Germany’s higher educational institutions.⁸⁷

All of Germany’s schools have been online since 2001, which means that a major objective of the “Innovation and Jobs in the Information Society of the 21st century” programme (1999) has been achieved.

The BMBF recognises the next challenges for education and research to be the need to generate, pass on, impart and acquire knowledge and translate it into practice. In addition, the determination of how an individual’s personality develops and to what extent that person participates in society and access to education will provide the basis for the development of that society. BMBF stresses that this will require innovative infrastructure for distributed, co-operative work in networks plus use of diffusion of digital teaching and learning software in schools, vocational training and higher education.⁸⁸

⁸⁶ www.medien-bildung.de

⁸⁷ www.online-studying.de

⁸⁸ Information Society Germany 2006, December 2003, BMBF

The German Education Server (www.eduserver.de) is an information portal maintained by the federal authorities and the sixteen states (the Lndern) of the Federal Republic of Germany). The eduserver provides access to information on Education System of the Federal Republic of Germany.

The eduserver makes high-quality information available through a system of databases covering such fields as: resources, glossary, institutions, people and competitions.

The Federal Ministry of Economics and Labour sets two milestones for the promotion of e-learning for SMEs and the public administration by allocating 4,6 mill. US\$ for the e-learning projects “Content-Sharing” and “Initiative for Quality in German e-learning” (Q.E.D.).

Both projects aim at improving the market transparency for vendors and buyers by tackling two critical issues: “Content Sharing” focuses on creating a market place for a smooth, nationwide exchange of learning content. A close co-operation between content developers and education providers is to facilitate the multiple use of e-learning offers, to reduce development costs and to help users benefit from lower sales prices.

Q.E.D. plans to develop and to promote innovative learning scenarios and quality standards. Its objective is to establish the quality brand “E-learning made in Germany” in order to improve marketing opportunities for German e-learning solutions and to minimise investment risks for small and medium-sized buyers and education providers. Reference models are to be developed for mobile learning and rich media content.

The project consortia are lead by the Rostock VIRTUS Institute and the University of Duisburg-Essen www.virtus-mv.de , respectively. Participating organisations include, among others, Fraunhofer-Gesellschaft, SAP, T-Systems, IBM Germany and the DIN German Institute for Standardisation. The German Aerospace Centre DLR acts as the project management organisation.

Both government-sponsored projects follow up on the Ministry’s lead project LERNET, which produced more than 150 e-learning solutions for 20 different sectors.

ICT profile of Germany

Demographics and Network Readiness Status

Germany has a population of 82 million, 68.1% of who are between the ages of 16 and 65. It ranks seventeenth in the Centre for International Development’s Networked Readiness Index.¹ Despite having a very large and dynamic telecommunications market, which is extremely competitively priced, Germany’s use of the Internet and mobile phone technology has not been as comprehensive as might be expected. Germany performs best in e-commerce at a B2B level where the country has taken a lead in innovative and venture capital led enterprises. E-government has been much slower to develop.

In reaction to the significant gender differences in ICT use Schulen ans Netz has set up two projects especially for girls and female teacher: <http://en.schulen-ans-netz.de/projects/lizzynet/index.php> and <http://en.schulen-ans-netz.de/projects/leanet/index.php>.

In measurements of on-line tenure as an indication of migration to broadband connection, Germany has one of the highest figures. According to an ISDIS survey conducted in November 2000, 20.3% of Germans use computers in their daily lives and 56.5% of the general population perceive computers to be important.

Year	2001-2002
Main telephone lines per 100	60.11
No. of cell phone subscribers per 100	58.58
No. of personal computers per 100	33.64
No. of personal computers connected to the Internet	7.38%
Internet Hosts per 1000	24.83

*Source: Center for International Development at Harvard University
Global Information Technology Report 2001-2002: Readiness for the
Networked World (Country Profiles)*

Germany has a very low number of public Internet access points which limits the possibility of broadening accessibility beyond usage within the home.

Education

According to information gathered in April and May 2002 for a report published in April 2003², there are real indications that Germany has closed the education gap in terms of IT knowledge. Although the country still falls below the EU average for digital literacy among women, it is among the top performers in measurements of the proportion of the labour force using eLearning. Germany had 56% of primary schools and 81% of secondary schools linked to the Internet in January 2001 with a commitment to have all schools connected by the end of 2001. There were also 53,000 training places available in ICT and media at secondary level in January 2001. Germany has a 99% adult literacy rate with 46% of the relevant age group involved in tertiary education and spends 4.6% of its GDP on education.

ICT and Government Policy

Given that the overall demand for IT expertise and skills within Europe was expected to grow from 10 million to 13 million between 1999 and 2003 and produce a skills shortage of 1.7 million, Germany put various measures in place to combat its own shortfall in this area. These included 'The Alliance for Jobs, Training and a Competitive Germany', an initiative launched in 1999 aimed at gaining an extra 250,000 workers in IT by 2005 through introducing training programmes in the medium term. In the short term, measures were taken to facilitate the migration of 20,000 foreign IT specialists to Germany.

Germany has also invested DM 50 mill. in a project called MEDIA@Komm designed to develop electronic business and legal transactions through introducing digital signatures and other measures. In addition the German government launched an action programme in September 1999 entitled 'Innovation and Jobs in the Information Society of the 21st Century' that coincided with the 'e-Europe' initiative. This was the basis for the 'Internet for All' 10-point programme announced by the German Chancellor in the autumn of 2000. This concentrates

on preventing a ‘digital divide’ in society through providing various financial and IT training incentives to the unemployed.

Training & Development market in Germany

Initial Vocational Training

Vocational education predominates within upper secondary level education in Germany. That is, upon completion of compulsory education at age 15, pupils have the option of moving into general education (via the *Gymnasien*), or into a variety of full or part-time schools providing general or vocational education including the *Berufsfachschule*, the *Fachoberschule*, the *Fachgymnasium*, the *Berufsoberschule* or the *Fachschule* or indeed other Länder-specific schools.

The dominant feature of the VET system in Germany though is the apprenticeship system (*Duales System*), in which around 60% of young people in Germany undergo vocational training, lasting 3 years on average. Training is carried out both in the workplace and in a vocational school (*Berufsschule*). The aim is to provide broad-based basic vocational training such that the participants may gain the qualifications and competencies required to practice one of the 350 or so recognised skilled occupations.

Given the nature of the VET system in Germany it is characterised by the close partnership between employers, trade unions and government, who determine the formulation of the goals and content of VET.

Continuing Vocational Training, Adult Training and Training for the Unemployed

Continuing general education has, since the 1970s, been the responsibility of the public sector. Subsequent efforts to expand continuing education brought about the realisation that to do so would require that the state, industry and the education institutions work together more closely. Consequently in the latter half of the 1980s, the Concerted Action Campaign for Continuing Education was established by the Federal Ministry for Education and Science. Therefore, this can generally be seen as a market economy system where a number of state and privately-funded bodies co-exist and there is growing emphasis on cooperation between all bodies involved in the delivery of continuing education.

Distance learning is also available to those in work and since 1979 courses offered by private organisations have required prior approval from the Central Office for Distance Learning (*ZFU*). This approval covers both the factual and didactic quality of the courses as well as the nature of agreements established between students and distance learning providers.

Training for the unemployed is funded by the public sector and expenditure on active labour market policies amounted to €18.6 billion in 2000, equivalent to 0.92% of GDP. Of this, funding for training-specific measures was €8.151 million.

Educational sector in Germany

In the Federal Republic of Germany, responsibility for the education system is determined by the federal structure of the state. Under the Basic Law (*Grundgesetz*) the exercise of governmental powers and the fulfilment of governmental responsibility is incumbent upon the individual Länder as far as the basic legislation does not provide for or allow for any other arrangements. Detailed regulations are laid down in the constitutions of the Länder and in sepa-

rate laws of the Länder on pre-school education, on the school system, on higher education, on adult education and on continuing education.⁸⁹

	Primary schools	Lower + upper secondary schools	Vocational Schools	Universities and colleges
Number of schools ⁹⁰	17,175 (2000)	17,022 (2001)	9,755 (2001)	120 (2001)
Teachers	159,935 (2000)	380,233 (2001)	110,984 (2001)	141,657 (2001)
Pupils	3,211,299 (2000)	6,084,195 (2001)	2,692,798 (2001)	1,351,817 (2001)
Pupil:PC ratio ⁹¹	23.3 (2001)	14.1 (2001)		

E-learning market size and characteristics

The market for further education and training in Germany was estimated at €30 billion in 2001.⁹² Of the total market for further education and training, it is expected that eLearning represented 2% in 2002⁹³, 15% in 2004⁹⁴ and 30% in 2005.⁹⁵ Another estimate from IDC suggests 20% of further education and training in 2005.

In contrast, the IDC in 2002 estimated the 2004 market for eLearning to total USD 230 mill. In other words, much less than the above estimates indicate. This can be explained by the vast amount of eLearning which is not traded, but developed in-house or which can be valued but does not require the transfer of funds from a buyer to a seller.

In terms of usage, research suggests that 46% of firms with more than 1000 employees used eLearning in 2001, but only 10% of their employees had used eLearning. The percentage of companies with between 50 and 1000 employees that used eLearning was 24% in 2001. The percentage of very small SMEs (5-50 employees) is estimated to not exceed 5% in 2001 and 2002.⁹⁶

In comparison, the percentage of the total population in Germany that has used eLearning was estimated by Emnid in 2002 at 11%.

The market volume for learning materials is still dominated by books and is estimated at an annual value of €500 mill. in 2001. In comparison, the market for software used in the educational sector was estimated at approximately €6 mill. in 2000. The main reason for the slow market development is the high production costs incurred by publishers compared with the very low expected sales volume which in turn can be explained by the slow uptake of PCs and competence development among teachers. However, this has improved over the years since, and it is expected that this market has experienced some growth since. Nevertheless, a study by the German eLearning company Unicmind.com AG⁹⁷ showed that not even one in four

⁸⁹ www.eduserver.de

⁹⁰ Eurydice: "The Education System in Germany (2001/2002)":

<http://www.eurydice.org/Eurybase/Application/frameset.asp?country=DE&language=EN>

⁹¹ http://europa.eu.int/information_society/eeurope/2005/index_en.htm

⁹² Mummert Consulting, 2002

⁹³ Cap Gemini Ernst & Young, 2001

⁹⁴ Mummert Consulting, 2002

⁹⁵ Cap Gemini Ernst & Young, estimate 2001

⁹⁶ MMB/KPMG 2001, MMB/BMWi 2000, BIBB 2001 MMB/AGI/IMK 2001

⁹⁷ The usage of eLearning content a study into the practice of 350 top German companies, 2002, <http://www.unicmind.com/unicmindstudie2002.pdf>

companies had a written statement referring to the use of eLearning in their strategy. Furthermore, only about half the participating companies indicated that they actually take advantage of the opportunity to continuously update the eLearning materials they use. As this study covered the top 350 German companies it is also surprising that only one in seven suggested that they had spent in excess of €1 mill on eLearning systems and content.

The eLearning market addressing the educational sector has undergone a substantial development over the last five years or so. A number of public private partnerships (PPPs) have been established at national and regional levels concentrating on the development of platforms for eLearning in schools and online resource aggregation in order to offer valuable digital learning processes. Examples of such PPPs are:

The Bertelsmann Foundation and The Heinz Nixdorf Foundation introduced a joint initiative called BIG (Bildungswege in der Informationsgesellschaft). They wanted to support innovation in the educational system covering new methods for teaching and learning using new media. In order to do this they created partnerships between schools, high schools and software industries with the aim of developing the competencies around new media.⁹⁸

A range of commercial facilities has also been established by learning material publishers, both as partnerships between multiple publishers (e.g. <http://www.b-o.de/>, a partnership of 15 leading publishers in Germany). Individual publishers have also developed online facilities for schools, teachers and learners (e.g. www.cornelsen.de with its facility for pupils called www.learnetix.de, its teachweb for teachers and facilities for parents and further education).

Another example is the www.schule-online.de partnership initiated by the publishing house Georg von Holtzbrinck including the publishers Schroedel, Diesterweg and Paetec in 2001. The company works together with the online-service AOL and the CollegeRadio from the Bayerischen Rundfunks (BR). On the Internet pages of AOL parents, teachers and learners, 18,000 members, can access the “Schule-Online” service from the publishers group. In addition to the learning materials, notes, results pedagogical guidance is given in how to introduce the resources.

The BR provides through its www.collegeradio.de weekly programmes directly from the schools that supports the programmes introduced by the publisher.

E-learning industry

It is difficult to get a full overview of the eLearning supplier market in Germany. Several studies have been conducted where numerous suppliers were offered to participate, but often most of them are very small operators and highly specialised. In the end there are 20 to 30 suppliers dominating the market. SAP has a strong presence due to the acquisition of a small specialised company and its compatibility with its own HR system. Hyperwave has developed market advantages through the possibility of linking up E-Learning with Knowledge Management.

⁹⁸ www.big-Internet.de

Sun Services (www.de.sun.com) trains more than 150,000 course participants at 200 training centres in more than 50 countries. At the German training centres in Berlin, Frankfurt, Hamburg, Hannover, München, Ratingen, Stuttgart and Vienna, more than 150 trainers teach more than 10,000 participants per annum. The training is run as classroom training by experienced teachers, optionally at the customer or other Sun sites. Sun Services Seminar offers cover the areas of Standard Training (eg. Java/Jini Technology, Solaris System-Administration), individual company training and technology based training (e.g. Online Training) apart from Educational Consulting Services around the development of IT-training projects.

Like Austria, the German eLearning industry players are more likely to provide both content and technology platform for its customers. A study conducted in 2002 suggested that 58% of the eLearning suppliers analysed provided both content and technological solutions to their clients.

Where as other markets are more focused on the end user consumer market, the German market players indicate that this market segment only represents between 10 and 20% of total sales. In other words, sales to companies and organisations represent the majority of the market for eLearning in Germany.

Cornelsen Verlag (www.cornelsen.de), a publishing house, was established in Berlin in 1946 and is one of the leading publishers for educational media in Germany today. Together with its subsidiaries, Cornelsen Scriptor and Cornelsen & Oxford University Press (C&O), the publisher develops and markets school books and educational media for almost all subjects and at all levels. Its list covers school books, specialist books, course books for vocational training and adult education, accompanying materials in their various forms, learning aids and pedagogical literature, as well as multi-media educational software and on-line services. Following the acquisition of the Austrian school book publisher VERITAS in 1995, Cornelsen has become a partner in the ALL GROUP (Romania) and in FRAUS PUBLISHING HOUSE (Czech Republic and Slovakia).

In 2002, German eLearning companies indicated that they mainly operate through individual partnerships with compatible companies.⁹⁹

The learning materials suppliers for the educational sector are dominated by large publishing houses as mentioned above.

International suppliers

Most international suppliers covering both the educational sector and the vocational training sector are present in Germany. Although the market in Germany has been slow to develop, there are now signs that the uptake of eLearning is progressing. International suppliers are recognising the significance of the German speaking markets led by Germany, but also covering Austria and Switzerland as well as minority segments in other bordering countries.

⁹⁹ Market research conducted in 2002 by Hightext Verlag into the eLearning provision of some 233 suppliers in 11 European countries

Skillsoft Deutschland (www.skillsoft.de). As a leading supplier of e-content (20,000 registered users of IT courses in Europe), in 2003, SkillSoft Deutschland established a partnership with SAP allowing Skillsoft to provide and integrate its eLearning products world-wide via the SAP Learning Solution. Through a certification programme it has been assured that all content from Skillsoft work in terms of technology and methodology. SkillSoft Deutschland, (before the merger with SmartForce in 2002 it was called Smartforce PROKODA GmbH) has cooperated with SAP for several years within the area of technology based training. With the certification of content integration, Skillsoft and SAP wishes to quality assure the learning solutions of their customers.

The first actors to penetrate the market have been the technology providers WebCT, Click2Learn, and others, the consultancies and IT companies already present on the market offering add-on eLearning services (IBM, KPMG, Microsoft, Cisco, etc). Subsequently, the IT related standard course suppliers have emerged, such as NetG, Skillsoft, etc. The publishers and international bespoke eLearning suppliers are now also emerging on the market.

WebCT (www.webct.com) is the world's leading provider of integrated eLearning systems for higher education. With a range of licensing options, WebCT is often chosen by institutions at all stages of eLearning adoption, whether they have just begun introducing eLearning on campus or are deploying eLearning institution-wide. In addition, WebCT offers around 1000 e-packs of content within different topics. In Germany, the company is represented by Lerneffekt GmbH and has achieved significant market shares among higher educational institutions.

E-learning content suppliers

A partnership consisting of 24 publishers called www.school-scout.de offers digital books and materials from twenty of the biggest school book publishers in Germany. It provides about 10,000 different titles and has more than 110,000 registered users. That makes the School-Scout the biggest actor on the educational market for digital materials.

The content suppliers operating in the corporate market and in vocational training typically originate from the Internet and multimedia development sector including companies like MIT Newmedia, [Bassier, Bergmann & Kindler](#), Xplain GmbH, Framfab, Divine and IMC.

There are also operators developing content on the back of systems introductions and content management systems. These include companies like Sapient, Benntech System Technik and Ray Sono.

Examples of German suppliers of bespoke content:

X-pulse (www.x-pulse.de) has more than 200 completed eLearning projects, and the company believes it is one of Europe's leading eLearning providers. X-pulse offers its own authoring tool suite ITIX™ that allows individual completion of interactive contents and with the help of ITIX™-Exchange, the editing of already existing material from other providers.

CBT+L (www.cbt-l.de) employs 25 persons. It is a consulting and services company for eLearning in connection with its programs E-Learning Publisher and the Education Manager. CBT+L consists mainly of didactically trained staff and has experience in adapting knowledge to efficient learning programs. CBT+L has developed solutions for large companies such as Allianz, AUDI, BMW Group, BOSCH Telecom, Commerzbank, EADS, Ernst Klett Verlag, HypoVereinsbank, IKEA Germany, Kai-

ser's-Tengelmann, REWE, etc.

MIT newmedia GmbH (www.mit.de) The core competencies of M.I.T is in eLearning as well as the combination of eLearning, eCommerce and eduCommerce. The company has a vast portfolio of eLearning projects in the transport and automotive sector with companies such as Audi, BMW, Honda Motor Europe (North) GmbH, DaimlerChrysler, Deutsche Bahn, Dunlop, Hamburger Hochbahn, Honda, Lufthansa.

Ray Sono (www.raysono.de) has a firm base in the German defence sector offering vast experience in simulation and training programmes. The solutions range from creation of supporting materials for vocational training programs all the way to company-specific tutorials. Ray Sono has realised these as CBTs, WBTs, or even as complex training systems which submerge learners in virtual worlds (VR), enabling them to train together as teams.

digital spirit (www.digital-spirit.de) develops learning content and infrastructures for computer-aided education and further training. The company uses a multi-level procedural model and has deployed many times. It considers technical and didactical questions as well as the economic and organisational dimensions of eLearning solutions. The model has been used in solutions for companies such as BMW AG, Deutsche Telekom, Dresdner Bank, Deutsche Bahn and Bombardier.

E-learning Technology Suppliers

The main national eLearning technology operators in Germany are SAP, IMC with its CLIX system and T-Systems. However, there are several small operators as well as content management suppliers with applications for the eLearning sector on the market. In addition, a number of open source solutions, notably Ilias www.ilias.de, OpenUSS, Webassign, Virtuelle Universität and others are active particularly in the higher educational segments.¹⁰⁰

Examples of eLearning technology suppliers:

SAP (www.sap.com) concentrates its eLearning solutions on providing platforms for "Blended Learning" solutions. The strength of its platform is the integration with human resource administration in the SAP ERP systems. The SAP solution helps organisations administrate and coordinate both online and off-line education and training activities as well as the development and distribution of learning materials.

IM-C's (www.im-c.de) Learning Management System CLIX[®] received the certificate of the Advanced Distributed Learning Initiative (ADL[™]) for SCORM[™] as one of the first European eLearning vendors in nov. 2003. imc is a leader in the market for learning management solutions, as the analysts of MetaGroup showed in a study in early 2003. Recently, SAP acquired 10% of the share capital in IM-C with the aim of integrating MySAP with the CLIX learning platform of IM-C.

T-systems Multimedia Solutions GmbH (<http://www.t-systems-mms.com/>) is one of the largest e-business solutions suppliers in Europe. E-learning solutions is one of many e-solutions that the company offers. It had a turnover of € 34 mill. in 2003 and approximately 330 employees. T-Systems Learning Solutions offers an LMS called 3.0 Corporate Learning.

Lerneffekt GmbH (www.lerneffekt.de) supplies the LMS product WebCT and has a whole host of German, Austrian, Swiss and East European educational institutions and companies as their customers.

¹⁰⁰ <http://www.campussource.de/software/#webassign>

E-learning service suppliers

The eLearning service suppliers in Germany are dominated by the application service providers and the consultancy companies. ASP solutions cover virtual class room facilities and learning management systems, and consultancy covers IT didactical advice and content structuring.

There are also several content suppliers in the form of publishers providing content for eLearning solutions.

BOV Qualifications AG (www.bov.de) has established a learning platform in collaboration with bit-media CC where the online part of its blended learning solutions is carried out. It is a partner of the major infrastructure provider German Telekom Global Learning.

The portal **bbw online** (www.bbwonline.de) contains the current eLearning offer from the vocational education and training centre of the Bayerischen Wirtschaft (bfz) gGmbH. The development department has developed multimedia learning solutions since 1995 that are well coupled to workplace based learning.

T-Systems (www.corporateLearning.de) is one of the larger host and server facilities for eLearning platforms in Germany. It provides hosting for the TÜV Academy platform, Berlitz Online and VHS Virtual which is the online portal for several German Volkshochschulen (VHS).

www.ihk-online-akademie.de is the national eLearning marketplace for all German Industry and chambers of commerce. Under this umbrella the offers are presented to customers. In addition, learners will find information around the vocational training themes with links to relevant data and research.

German eLearning companies in international markets

A significant number of German companies have international eLearning activities. Hyperwave combines its knowledge management products with eLearning capabilities and have established markets in South Africa, Australia and the USA. In addition, the company is active with representations and offices in several European countries including Austria where the company has its roots in the academic world of Graz. The turnover reached € 21,5 mill. EUR in 2002 and Hyperwave employs 160 people.

With subsidiaries in several countries and through international licensing agreements, the products of Digital Publishing are now available in 30 countries world-wide. With more than 2.5 million copies sold, it is among Europe's best selling educational software and has turned Digital Publishing into a market leader for interactive language learning software. Currently, the company is one of the most successful and fastest growing European educational software producers.

Greece

National policy and economic conditions¹⁰¹

The Greek Ministry for Education and Religious Affairs has launched an ‘**Operational Programme for the Information Society**’ for the period 2000-2006 which extends previous initiatives, and complements its general measures for providing schools with equipment and facilities, linking them in a network and developing ICT in education. The plan has two general aims: to offer service and better quality of living to citizens and to contribute to general economic and human resources development.

The strategies are:

- 1) Providing a network of all primary, secondary and special needs schools and administrative units with ICT facilities, including hardware and suitable audio-visual equipment; finalising and modernising the national network on education (EduNet), as well as its infrastructure and services, so that all schools can access the network by the end of 2001, and installing an intranet linking all schools by 2006.
- 2) Ensuring rapid Internet access to teachers and pupils and continuing to improve the Greek University Network (GUNet) and the higher education network management centres.
- 3) Setting up and/or modernising computer laboratories in tertiary education.
- 4) Increasing the establishment of public information centres via a network for young people in various sectors of society.
- 5) Undertaking expenditure on the eLearning infrastructure under a plan covering the whole education system.

The research centre focusing specifically on educational research is the Educational Research Centre.¹⁰² The Education Research Centre reports to the Ministry of National and Religious Affairs and performs research and participates in research programmes. Some of the current research projects include imprinting the educational system; PISA 2003/OECD; Higher Education Evaluation and Educational Intervention for the production of educational material.¹⁰³

One of the main priorities of the Greek government within the framework of “Information Society Operational Programme” is to develop educational software and digital content for its exploitation into schools. Eight more educational software packages are being localised in Greek, seven more Greek educational packages and fifty packages of educational activities are being developed. In addition, three educational portals are being developed: one for educational matters and resources; one for the Greek language; and one for youth, while telematics services are being developed for the school and academic networks. Finally, library resources are being digitised.¹⁰⁴

The Ministry of National Education and Religious Affairs has developed an educational portal¹⁰⁵ providing a virtual meeting space and support agency for the entire educational community. The portal aims to provide access to information sources and databanks for students and

¹⁰¹ http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

¹⁰² <http://www.kee.gr/>

¹⁰³ INSIGHT, knowledge base for new technology and education, country report - Greece

¹⁰⁴ INSIGHT, knowledge base for new technology and education, country report - Greece

¹⁰⁵ <http://www.pekp.gr/>

teachers in primary and secondary education, quality educational material to students and teachers in primary and secondary education, support educational practice in primary and secondary education, develop an educational e-community and familiarise students and teachers with Internet tools and applications.¹⁰⁶

ICT profile of Greece

Demographics and Network Readiness Status

With a population of 10.6 million and a Networked Readiness Status ranking of 31st in the Centre for International Development's Index¹, Greece is poised to accelerate its ICT development with the help of EU funding. According to 2002 figures, roughly 17% of Greek households were connected to the Internet with about 1% of these being broadband connections, the lowest figure in the EU. However, 58.5% of the population believed in 2000 that using a PC on a daily basis was important. Although access to the Internet at work is also at a low level, where it exists, it is relatively heavily used. Access for those working in education, whilst still at a low level, compares well with more advanced members of the EU. Forty per cent of Greek establishments gave their staff access to the Internet. E-commerce is still in an embryonic stage due to low Internet penetration, minimal use of credit cards, worries over online security and general lack of purchasing power amongst those using the Internet. Business to Consumer online sales stand at 2% of total sales compared with 14% in Finland and 8% in the UK, whilst Business to Business online sales make up 4% of the total sales figure in Greece compared to 26% in Finland and 7% in the UK. In a measurement of regular US and European Internet users' attitude to e-government carried out in 2002, Greece had the second most positive rating next to Denmark. Mobile phone penetration is high and between December 1999 and October 2000 the percentage of the population using cell phones rose from 33% to 50%.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	53.16
No. of cell phone subscribers per 100	55.90
No. of personal computers per 100	7.05
No. of personal computers connected to the Internet	14.75%
Internet Hosts per 1000	10.39

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

In 2001-2002, only 1% of Greek primary schools and 38% of secondary schools were connected to the Internet, giving a ratio of 1097 pupils per PC in primary schools and 31 per PC in secondary schools. In 2000, only 6% of teachers were digitally literate. Greece has the sec-

¹⁰⁶ INSIGHT, knowledge base for new technology and education, country report - Greece

ond lowest level next to Poland in Europe and the USA of digital literacy within the population as a whole and this applies to the 16-24 year old age group. The gender gap is also very wide with only 43% of women attaining digital literacy when compared to men, well below the EU average of 61%. However, the digital divide narrowed considerably between 1997 and 2002. Twenty-three per cent of public administration workers were trained in ICT in 2001 but only 6% of the labour force used eLearning at work in 2002. Greece has an adult literacy level of 97.2% and 50% of the relevant age group is involved in tertiary education. Greece spends 3.1% of its GDP on education.

ICT and government Policy

Following the launch in February 1999 of the Greek government's strategy for entry into the 'information society', which covers ICT policy between 2000 and 2006 there have been tangible advances in e-government and plans are in place to integrate ICT into education, health, transport and business. Greece has made achieving connectivity to public health facilities a priority with a target of 2006 for blanket coverage. By 2003, the Greek government hoped to have schools and universities connected to the Internet and have students and staff trained in ICT as well as to develop educational materials online, but this goal is still some way off. The Ministry for Development has initiated the 'Go Digital' and 'Get Connected' programmes aimed at getting a larger proportion of SME's connected and developing a stronger e-commerce environment supported by R&D and ICT education and training initiatives. The main difficulty of low Internet penetration is being addressed through the Hellenic Commission on Telecommunications and Postal Services' (EETT) continued liberalisation of the telecommunications sector. The lower cost of fixed-line, dial-up and ISDN connections is expected to increase Internet penetration over time.

Training & Development market in Greece

Initial vocational training

Upon completion of compulsory education, young people can undertake vocational training through any one of three routes:

1. School-based technical vocational education and training at technical vocational schools (TEEs), which are mainly the responsibility of the Ministry of Education;
2. Alternating technical vocational education and training at apprenticeship TEEs, belonging to the Greek Manpower Employment Association (OAED);
3. One year post-lower secondary initial vocational training in areas covered by the Institutes of Vocational Training (IEKs), operated predominantly by the Organisation for Vocational Education and Training (OEEK).

School-based vocational training (TEEs)

There are just over 600 TEEs in Greece and 448 of these are under the direct responsibility of the Ministry Education, a further 85 belong to the private sector and the rest to other ministries. TEEs operate on the basis of two independent cycles, the first lasting two years and the second for one. The main focus is on work-related subjects though there is significant general education element too, especially in the first years. In 2000/2001 there were around 124,000 students in State TEEs (i.e. those under the Ministry of Education).

Apprenticeships

There are 52 apprenticeship technical vocational schools in Greece. Again they are run on two independent cycles, but with the first cycle lasting 3 years with the first year in full-time education. Years 2 and 3 of the first cycle are spent mainly in the workplace before returning to full-time school for the one year of second cycle.

Post-secondary non-tertiary education (IEKs)

There are 213 IEKs in total with 138 run by the OEEK and a further 41 run privately but under the supervision of the OEEK. The rest are run by the OAED. IEK courses are more work-oriented, have close links to the needs of the labour market and, as such, are designed as a result of cooperation between the state, employers and employees. Most students are graduates of the *Lykeio* (general upper secondary education) and are aged between 20 and 30. In 2000, just over 46,000 students attended IEKs and 76% of these were in state-run IEKs.

Continuing vocational training, adult training and training for the unemployed

There are two main routes for training of employed and unemployed persons in Greece:

- Vocational Training Centres (KEKs), are run either by the state or privately (both for- and non-profit) and are officially accredited via assessment by the National Accreditation Centre (EKEPIS). They are financed by either the Ministry of Labour or the ESF. In 2002-2003 there were 35,000 training positions in 577 KEKs nation-wide. In addition to this there are a further 40 KEKs specialised in the delivery of training to the disabled and other disadvantaged groups.
- Vocational training institutions run by the OAED, but without accreditation from EKEPIS. There are 52 of these centres in Greece.

In 1996 a fund for employment and vocational training (LAEK) was set up and is financed privately through levies on employers/employees totalling 0.81% of the wage bill (of this 0.45% is targeted directly at training). In 2000 around 108,000 employees participated in LAEK-funded training.

Training for the unemployed

Vocational education and training for the unemployed is the responsibility of the OAED, Ministry of Labour and Social Affairs and regional authorities. In recent years there has been increasing demand for training measures for the unemployed and this need is met largely as a result of EU funding via the three Community Support Frameworks (1989-2006).

Data for the year 2000 from Eurostat's Labour Market Policy Database indicate that Greece spent some € 3,849 million on active labour market measures (0.63% of GDP), of which € 929 million was spent on training-specific measures.

ICT in education and training¹⁰⁷

Progress has been made in recent years in expanding the use of IT in education. By end of 2002, all secondary schools would have computer labs and the pupil/PC ratio was as high as 13:1 in senior high schools, but still lagging in the primary sector (47:1). The target is for 10:1 in primary schools by 2006. Internet access is available in all secondary schools and full ac-

¹⁰⁷ Information taken from the Greek National Action Plan for Employment, 2003, Guideline 4: *Investments in Human Capital, the Knowledge Economy and the Information Society*.

cess for primary schools is again targeted for 2006. Investments have also been made in teacher training, where some 75,000 in both primary and secondary levels has undergone further training in this area.

Efforts to reduce the skills gap have resulted in programmes under the 3rd CSF to help train more people in ICTs. These include:

- Training programmes for managers and businessmen in the development/production of digital content and services on the internet;
- Programmes for training instructors in priority areas such as new technologies, IT skills and the use of more flexible forms of education;
- Co-funding of business plans for the development of E-learning environments.

Educational sector in Greece¹⁰⁸

Primary and lower secondary school education is compulsory, providing the pupil is not more than 16 years of age. Attendance at primary school is for six years. Pupils who are promoted out of primary school receive school-leaving certificates necessary for registration in lower secondary school, which the pupil is obliged to attend for another three years.

Secondary education is provided in two successive levels. The first includes lower secondary schools (gymnasia), the second (non-compulsory) includes unified upper secondary schools (eniaia lykeia or EL) and technical vocational educational schools (TEE).

The graduates from unified upper secondary schools and from the 2nd grade of technical vocational educational schools can be admitted to higher education.

Non-formal adult education is provided in the Adult Education Centres operating under the supervision of the Prefectural Adult Education Committees (NELE) in the vocational training centres run by the General Secretariat for Adult Education, and in special areas (e.g. correctional institutions, institutions for persons with special needs, regions of gypsy settlements, etc.).

Regarding eLearning and ICT, the integration of computer labs, computer supported teaching and connections to a general school network are some of the topics in recent reforms of the primary and lower secondary schools.¹⁰⁹

¹⁰⁸ <http://www.eurydice.org/Eurybase/Application/frameset.asp?country=GR&language=EN>

¹⁰⁹ 'SUMMARY SHEETS ON EDUCATION SYSTEMS IN EUROPE, Greece',
http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

The academic year 2001-2002	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	7,992	1,775	34
Teachers	88,705	40,705	25,092*
Pupils	981,142	374,900	445,154*
Pupil:PC ratio ¹¹⁰	1:67	1:16	1:5

**For the technical institutions: the academic year 2001-2002, for the universities: the academic year 1999-2000*

E-learning market size and characteristics

The Greek market follows the European trend that one and the same provider offers both content and technology, as that is the case for almost half the existing companies.

Among the great number of companies on the European eLearning market, the technology sector is only visible as a small segment. The share of technology providers is, on a European average, 14%. Greece, along with Denmark and the Netherlands, has a market where the technology providers with about one-quarter of the market have a more prevailing position compared to the European average.¹¹¹

The Greek educational market is very much affected by Ministry of Education's plan, as this underlines the relevance and the readiness for the use of eLearning in connection with traditional teaching.

E-learning industry

The eLearning industry in Greece stretches across a wide range of businesses, from public educational institutions to private suppliers of eLearning content and technology. The services are standardised products as well as products made to be customised for the specific user, be it a commercial company or a primary school.

Compact (http://www.compact.gr/eng/we_are.asp) was founded in 1995 by young professionals in information technology, who shared the vision of creating a company that would change the status quo in the sector of educational services. Today, after seven years of firm and decisive steps, Compact holds the foremost place among the other companies that offer educational services in Greece.

International suppliers

International suppliers of eLearning courses are highly present in the Greek market, primarily through Greek companies selling their products rather than through establishing an office of their own.

The American company **Blackboard** (www.blackboard.com/worldwide/gr/en/index.htm) is a player in the Greek market through the Greek reseller **Elidoc**. Blackboard offers enterprise software products and services that power eEducation programmes in institutions of higher learning, primary and sec-

¹¹⁰

http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computers_perp_primary.gif

¹¹¹ <http://www.ibusiness.de/shop/db/shop.4018jg.html>

ondary schools, as well as corporate and government organisations.

In 1997, the Greek company **Compact** (www.compact.gr/eng/our_course.asp) was granted exclusive distribution rights in Greece, Cyprus, and Turkey over the products from the American company SmartForce one of the world leaders in eLearning.

Kestrel Information Systems (www.kestrel-is.gr/projects/learning.htm) signed an agreement with the English company Ossidian in March 2003 to exclusively promote and sell its products in Greece. Ossidian specialises in developing eLearning courses for telecommunications network operators and their hardware and software suppliers.

Schools across Greece are now using the **Click2learn** company's highly acclaimed desktop e-Learning authoring software ToolBook, to introduce students to the benefits of multimedia, eLearning and electronic books. ToolBook was supplied to the Ministry of Education in Greece by Click2learn partner Agisoft Hellas as part of a major government project to get IT into schools. Students in over 600 Greek schools are now using the software to create multimedia presentations of their work. Agisoft is the certified reseller of Click2learn products and services for Greece and Cyprus. Agisoft Hellas was established in 1994 and specialises in designing multimedia and e-Learning applications.

¹¹²

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies and companies that are interested in using eLearning courses. These companies provide a variety of courses including custom-made courses, platforms and standard products in system development. However, these players are not very dominating in the Greek market, as it seems to be international suppliers that create the larger part of the content of eLearning programmes.

Examples of Greek Suppliers of bespoke content:

PLIROFORIKI TECHNOGNOSIA (www.multiland.gr/about.htm) is among the leading European publishers in the educational market. PLT's Educational Multimedia Software series includes multimedia titles that support school curriculum, as well as generic educational themes, combining in most cases practise with entertainment.

E-learning technology suppliers

There are companies supplying eLearning-related technologies within the Greek eLearning market. Products include tools for managing eLearning content and eLearning activities (learning management systems) and tools for authoring learning modules.

Examples of E-learning technology suppliers:

Through **DOCENT** software, represented by **E.DIS.I.NET** (www.edisinet.gr/presenting_elearning_eng.html), people have the opportunity to create their own on-line educational centre, according to their needs. Docent is internationally established as the most complete solution for Learning Management (LMS), and on-line courses. In E.DIS.I.NET the goal is to help design and create individual on-line educational centre, as a complete solution for quick, effective education. For that there is 1,200 courses, which can be easily incorporated to individual educational schemes.

¹¹² http://home.click2learn.com/en/news/pr_0211111_GreekSchools.asp

Coming from a training business background, **Eurocom Expertise** (www.eurocom.gr/Services/dev/page110.asp) was one of the first Greek companies to engage in distance learning technologies and to acquire a profound understanding of eLearning requirements. The company has developed and implemented a web-enabled integrated framework, called Computer Aided Training Environment (CATE). CATE is a Web Based system that models the management of an educational organisation and can be fully customised to the specific needs of an organisation. It enables the administration of course offerings, trainers and trainee groups, classrooms and other training resources.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. These cover eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. There are companies combining the service with the development and selling of technology or content.

During the last few years **Space Hellas** (www.spacehellas.gr/en/products/customised_solutions/e_learning.htm) has expanded in the eLearning field, providing to companies and organisations, technology and know-how, products, services and technical support for eLearning solutions. It should be noted that Space Hellas does not develop itself educational contents, but it provides a path for it in order to "reach" each trainee fast and easy, wherever he might be, through eLearning applications. Space Hellas undertakes the network design and study, the design and installation of the various computer systems (hardware & software), the logical structure of the educational network, the trainers and trainees, organisation as well as the updating of the trainers with regards to new technologies.

Greek eLearning companies in international markets

Europedia (<http://www.europedia.gr/distance.php>) is a virtual university offering bachelors and masters degrees via distance learning or eLearning, having Greek, Cyprus and English offices.

PLIROFORIKI TECHNOGNOSIA is among the leading European publishers in the educational market. PLT's Educational Multimedia Software series includes multimedia titles that support school curriculum, as well as generic educational themes, combining in most cases practise with entertainment. Recognised by professionals, PLT's educational software products have been adopted by more than 100 companies or training organisations in Greece and exported to a significant number of countries all over the world: France, Netherlands, Belgium, Italy, Saudi Arabia etc.¹¹³

¹¹³ <http://www.multiland.gr/about.htm>

Hungary

National policy and economic conditions

The national aims and strategies in Hungary regarding ICT in the educational sector are to improve education at all levels, improve the skills, which all people now need to live in the information society and support the teaching and learning methods at all levels of the education system. Furthermore, the national objectives are to encourage the international exchange of knowledge and experience and to make national cultural and scientific capital accessible and share it. These objectives are to be reached through the provision of basic computer equipment and network connections in the primary and secondary schools and through the transmission of content via a web-site. Likewise, the objectives are to be reached through the improvement of Internet connection facilities in higher education institutions under the National Information Infrastructure Development Programme.

One of the initiatives that have been implemented is the development of e-learning materials. The objective is to use electronic teaching materials to improve the quality of open and distance learning courses. The initiative includes partners from the Ministry of Education, the Prime Minister's Office and the public foundation Apertus. The initiative targets higher education, vocational training, adult education and in-company training. The measures that are being used to promote and implement the initiative include call for tenders to develop e-learning materials and e-learning books and the motivation of public and private education institutions to use e-learning methods.¹¹⁴

At present, the Hungarian educational system is undergoing a period of re-definition and eventual reduction of learning content. The system of national examinations is also being scrutinised. Changes at the secondary school leaving system and university entrance examination system are underway. The core of changes lies in a new paradigm: education for life skills. A content development policy should ensure the provision of reliable learning materials based on teacher experiences and needs.

Major national efforts co-ordinated by the Ministry of Informatics and Telecommunication (<http://www.ihm.gov.hu>) include the e-World: digitalisation of treasures of Hungarian cultural heritage and international art works housed in public collections, e-Generation, provision of content for children and youth; and e-Chance: expansion of community Internet centres.

The involvement of teachers in the process of software development and implementation is a key feature of the Hungarian content policy.

There is a massive content development process going on in Hungary. The main programme is called Digital Knowledge Database. The Ministry of Education has announced five calls for tender. The idea is similar to the Celebrate project, carried out by the European Schoolnet, with the final aim to have all the core materials of each subject in digital form, including levels 7-12 (age 12-18).¹¹⁵

¹¹⁴ http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

¹¹⁵ http://insight.eun.org/eun/en/Insight_Policy/sub_area.cfm?sa=2326

ICT profile of Hungary

Demographics and network readiness status

Hungary has a population of 10 million and a Networked Readiness ranking of 30th in the Centre for International Development's Index.¹ The country's ICT infrastructure is relatively advanced and mobile and fixed line telephone penetration is high compared with its neighbours in Eastern Europe. Although the figures for Internet users per 100 inhabitants are low, actual usage may be higher than indicated. It has been suggested that as many as 2.5 million Hungarians use up-to-date ICT equipment somewhere, whether it is at a friends' house, at work, at school or through public access venues.

Hungary is made up of a large number of small villages: 1,800 with less than 1,300 inhabitants and 2,500 with less than 3,000 inhabitants. A network of 'tele-cottages' has been formed since 1993 to provide access to the Internet, e-mail, an Intranet to other tele-cottages, links to databases and public information. Hardware, such as fax machines, copiers and terminals for distance working, is also available. Local government usually provides office space typically at a school, library or community centre. In June 1999, there were 100 tele-cottages in Hungary and 500-800 were planned for 2004. There is low PC ownership generally and low usage at home and at work, partly due to high telecommunications costs.

Hungary was due to issue 3G mobile licenses by the end of 2003. In a 2001 survey of 300 Hungarian companies with 50 employees or more, 80% had Internet access and a quarter had Internet access from all terminals at their premises. The number of employees with access to the net was expected to increase from 10% in 2001 to 18% in 2002. The C3 Centre for Culture and Communications, which provides e-mail and Internet access to 1,000 non profit-making organisations, 100 schools and hundreds of libraries, set up four Internet terminals in public locations in Budapest in December 1998 and within five months they had had 1,675,819 hits. This was seen as a clear indication of high interest and led to moves to find investors to set up further terminals.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	37.09
No. of cell phone subscribers per 100	29.33
No. of personal computers per 100	8.51
No. of personal computers connected to the Internet	12.00%
Internet Hosts per 1000	10.20

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Sulinet (Schoolnet) <http://www.sulinet.hu/tart/kat/n>, Hungary's National Information, Communication Technology and eLearning Programme, was set up by the Hungarian government in 1996 and given a cash injection of USD 15 million by the government in 1997. All secondary schools were connected by 1998 and 35% of primary schools by 2003. An ambitious teacher-training programme is planned, and Sulinet is in the middle of a two year 10 million Euro content development programme concentrating on eLearning. The Hungarian government has arranged tax incentives to encourage teachers and parents to purchase computers and Sulinet plans to have broadband connections to all schools by 2005 and to have one PC for every five secondary school pupils by 2006. Sulinet is complemented by the older 'Hunger-net', a national network also financed by the government that connects academic institutions and public libraries and grew out of a more basic file exchange network set up in 1988. This went international in 1990 and now connects 500 member organisations via a national 'backbone'. Hungary trains 20,000 students in IT at tertiary level every year and has 500 graduates in computer technology annually. There is an adult literacy rate of 99.3%, 34% of the relevant age group is involved in tertiary education and the Hungarian government spends 4.6% of GDP on education.

ICT and government policy

The national strategies adopted for the development of ICT in Hungary are very much driven by EU standards and priorities. Hungary's relatively advanced infrastructure and enlightened attitude to ICT has provided a sound basis for future development. Government policy is focusing on e-commerce and telecommunications on an immediate basis but the 'Information Society Strategy' identifies seven programmes for development of ICT over a three or five year period, including e-government, education, social, cultural and economic action plans. In 2000, Hungary established the Office of the Governor's Commissioner for ICT which is in charge of developing this strategy, the main thrust of which is to develop the ICT infrastructure as quickly as possible to maximise Hungary's economic advantage and to guarantee its future inclusion as an 'Information Society'.

Educational sector in Hungary

The Hungarian public school system is made up of compulsory and non-compulsory schooling. Compulsory schooling starts when the child reaches the age of 5, at which point the child is obliged to attend nursery school and participate in the preparatory education for primary school. The compulsory school ends when the pupils are about 18 years. The compulsory schooling consists of primary and secondary education. These institutions are free of charge in the Hungarian educational system. Non-compulsory schooling includes some upper secondary schools, vocational training, universities and colleges. The Hungarian higher education institutional system consists of universities and colleges. Since 1998, attendance at these institutions has been free. Students attending higher education not financed by the state do, however, pay expenses and other fees.¹¹⁶

¹¹⁶ http://www.eurydice.org/Documents/struct2/frameset_EN.html

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	3,696 (1999/2000)		89 (1999/2000)
Teachers	82,829 (1999/2000)		21,249 (1999/2000)
Pupils	960,601 (1999/2000)	511,146 (1999/2000)	278,997 (1999/2000) ¹¹⁷
Pupil:PC ratio		36 (1999) ¹¹⁸	

E-learning market size and characteristics

The e-learning market in Hungary is an emerging market. Together with other new member countries, the country is still in the developing stages.

As to the present state of eLearning in Hungary, significant experiences have been accumulated in harmony with general tendencies especially in the internal training of the multinational companies (some of them being eLearning technology developers, others ICT distributors like Oracle, IBM, Cisco etc.) and in the area of higher education. The spread of eLearning is not yet extensive. eLearning initiatives have become crucial in the internal training of leading companies using one of the known foreign Learning Management Systems (Matáv, banks and other financial organisations etc.).

It is estimated that 30,000-35,000 people are trained through eLearning systems in Hungary yearly (internal training activities of multinational companies, vocational training: Cisco Academy, IT professions, adult training etc.). The number of those who are trained in courses including eLearning elements is about 150,000-160,000 thousand (at secondary schools under the so called "SchoolNet" Programme; in vocational training about hundred courses supported by the Apertus Foundation for Open Training and Distance Learning; in higher education, Dennis Gabor College, St. Stephan University; in adult training: ECDL).

Public education is nearly untouched by eLearning methods: about 4500 primary schools and about 1500 secondary schools with 1.5 million pupils and thousands of teachers have so far not been able to benefit from eLearning offers, but the content development programme is designed to change that.

E-learning industry

There are no public/private partnerships in Hungary and the eLearning industry seems to be extremely small, but has potential to grow.

Multinational companies which play a decisive role globally in eLearning (IBM, Oracle etc.) as well as medium sized companies which distribute different technologies (e.g. Learning Management Systems: WebCT, Blackboard etc.) are present on the Hungarian market. The most significant players in eLearning are:

- **Developers, service providers:** Matáv Training Centre, Synergon Co., Eduweb Ltd., Mimoza Ltd., IBCnet Ltd., Sabedu Ltd., Krea Ltd., Számalk Co., HLC Ltd., National Textbook Publishing Co., Encyclopaedia Humana Association, MCONet, Educatio

¹¹⁷ <http://www.eurydice.org/Eurybase/Application/frameset.asp?country=HU&language=EN>

¹¹⁸ <http://www1.moe.edu.sg/press/1999/pr991122.htm>

- **"Buyers" of e-learning include :** Dennis Gabor College, St. Stephan University; schools and organisations of vocational training (CISCO Academy, ECDL etc.); leading companies and organisations of adult training (Matáv, Hungarian Post Office, Hungarian Airlines, banks etc.)¹¹⁹

International suppliers

The Internet makes it easy for international providers of eLearning to gain access to the Hungarian market. These suppliers are mostly from Western European countries, the US, Canada and Australia. Most of the companies that supply the Hungarian market do not set any physical representations up in the country, but operate either through representations in another country, covering the region, or through web-sites in the Hungarian language.

Hewlett-Packard Company (<http://welcome.hp.com/country/hu/hu/welcome.html>) is US-based in, but offers eLearning to 162 countries world-wide. In Hungary, the company supplies its customers with eLearning courses over the Internet. The company's web-site is also developed for the Hungarian market and provides a web-site in Hungarian.

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies and companies that are interested in using bespoke eLearning courses. These companies provide language-training courses, marketing courses, working environment courses etc. Including custom-made courses, platforms and standard products in system development. It has not been possible to identify any eLearning content suppliers in Hungary. There appears, however, to be an Hungarian association of content suppliers (<http://www.matisz.hu/>)

The Arvato systems Hungary Ltd. (www.arvato-systems.hu) was established in 1991 with the aim of providing high quality services filling the gaps due to the increasing demands of the market of information technology. The company offered a full-scale service including consultancy, purchase and installation of SW and HW, training and maintenance. The company provides LeOn, an education and learning management system which has been sold to one client and will present the basis of further development through a European project called IKTA.

Bentax Kft. (www.bentax.hu) was established in 1992 specialises in the development of CD-ROMs for educational and other purposes. The company has produced several eLearning products with the aim of teaching multimedia, mathematics and informatics.

SZTÁV Professional Extension Training, Retraining, and Enterprise Supporting Company Limited by Shares (SZTÁV Ltd.) (www.sztav.hu) is considered to be the most substantial professional training company in the Hungarian market for 30 years. It provides eLearning modules as part of its large range of courses.

E-learning technology Suppliers

There are very few companies developing eLearning-related technologies within the Hungarian eLearning sector and only very few are profiled below. However, several of the international technology providers are represented in the market.

¹¹⁹ http://www.acten.net/cgi-bin/WebGUI/www/index.pl/business_factsfigures2

Internet Business Center (IBC) Network (<http://elearning.ibcnet.hu/>) is a distributor of IntraLearn e-learning software and programmes. The company has achieved relevant references in the Hungarian market.

Doctus (<http://www.doctus.info>) The Doctus development team has a dozen years of experience in business consulting and training related to Knowledge Management, Decision Making and Leadership. The members of the team are: Business experts, Knowledge engineers and Mathematicians. The team has developed a knowledge management and learning platform based on semantic E-Learning Agents - Supporting eLearning by Semantic Web and Agent Technologies. They are now selling the tool in Hungary.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy on eLearning projects. This is an area where several companies have emerged in the market place. Some of these are profiled below.

OBS Open Business School Hungary (<http://www.obs.hu/eng/bem.htm>) is the main business school in Hungary since 1989. It delivers British based management courses, DMS and MBA education using advanced distance learning systems and methods.

Synergon Education (www.synergon.hu) generally supports its clients with business information systems. The company develops eLearning systems and study materials in topics that correspond to the customers' needs, and it has an impressive list of references. In developing distance learning packages Synergon takes into account the Hungarian and international standards in order for third party study material to be added later if needed. Among its products are the SYNEDU™ (a simple learning management system) and SYNEDU™ Phoenix 2 (a more advanced LMS). Synergon Education has been offering IT education for nearly eight years. Over this time more than 12,000 users have been qualified to different levels in the field of information technology. The training offers cover technical, IT professional and end user courses. The courses can be carried out in teams or in private consultation in Hungarian or in English, supported by e-learning solutions.

Tavoktatas (<http://tavoktatas.lap.hu/>) represents a comprehensive Hungarian language eLearning portal.

Ireland

National policy and economic conditions.

After many years of outstanding economic growth, the rate of growth in Ireland's economy has slowed significantly in the last two years. This has been both a result of the global economic climate, which has reduced inward investment and multinational employment notably in the ICT sector, and partly reflects the impact of previously very high growth rates. Education and training systems were an important beneficiary of the high growth in the 1990s with significant expansion in quality and quantity of provision. With the expansion of the ICT sector (estimated to employ 90,000 in 2001 and account for 11.6% of GDP in 2000) and the integration of technologies into other sectors (financial services, telecoms and healthcare), there was a huge expansion in indigenous as well as global software firms. The industrial development agencies put considerable emphasis on the development of software and media industries including eLearning. So in addition to the growth of eLearning among user populations, there has been concentrated effort on growing eLearning enterprises for both domestic and particularly export markets.

The economic slowdown has impacted on both these developments – there is less state funding for ICT investment in the education and training sector, the growth of new industry start-ups has slowed so the demand for training has been impacted and a number of eLearning firms have reduced their presence in Ireland – notably Smartforce, founded in Ireland, formerly one of the world's largest eLearning enterprises, merged with Skillsoft in 2002 and now only employs 300 in Ireland. NetG, which had its R&D facility in Ireland, closed it in November 2003 and a major project proposed for developing a new eLearning initiative across the HE sector in Ireland is on hold. However, there remains a strong commitment across the education and training sector to the adoption and integration of technologies. On the more positive side there are new initiatives emerging in FAS, the Training and Employment Agency, and in 2003 the Country's only fully online third level institution, Hibernia College¹²⁰, had its first graduate programme formerly accredited and is currently supporting its first cohort of students (primary school teachers).

ICT profile of Ireland

Demographics and network readiness status

Ireland has a population of 3.8 million and a Networked Readiness Index ranking of nineteenth in the Centre for International Development's survey.¹ Ireland is the world's second leading software exporter, is a European leader for telephone call centres and has experienced huge foreign investment in recent years with many technology multi-national companies using it as a base. The telecommunications industry is very advanced with a national fibre-optic network to 120 towns completed in 2001. Plans to incorporate Europe into a new transatlantic cable designed to greatly improve bandwidth will use Ireland as the linking point. Mobile phone use amongst the general population rose from 35% in December 1999 to 50% in October 2000 and stood at almost 67% by 2001/2. About 52% of Irish households were connected to the Internet in 2002 with only about 2% having a Broadband connection.

¹²⁰ <http://www.hiberniacollege.net>

Telecommunications infrastructure

Year	2001-2002
Main telephone lines per 100	42.62
No. of cell phone subscribers per 100	66.75
No. of personal computers per 100	36.46
No. of personal computers connected to the Internet	8.13%
Internet Hosts per 1000	29.63

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)¹²¹

Education

Digital literacy amongst the general population in Ireland is comfortably above the EU average and only just above for 16-24 year olds. The gender gap in Ireland is the narrowest in comparison to both the EU and the US with roughly 87% of women being digitally literate compared to men. Despite the fact that more than 96% of Irish companies had Internet access at the end of 2000, only 14% of the labour force use eLearning at work. Ninety per cent of secondary schools and eighty per cent of primary schools were connected to the Internet in 2000 giving a ratio of 13 secondary school pupils per terminal and 18 primary school pupils. Seventy-five per cent of teachers were digitally literate and sixty-six per cent of public administration workers were trained in ICT. The Irish government has succeeded in creating a good and steady supply of workers skilled in ICT through heavy investment in the early eighties in technical institutions and tertiary education. There are also many research programmes at university level linked into a network of US universities via a special fibre-optic line. The adult literacy rate is 99% and 45% of the relevant age group is involved in tertiary education. Ireland spends 4.5% of its GDP on education.

ICT and government policy

In 1998, the Irish government commissioned the Information Society, a private/public partnership, to create a framework for the future development of ICT in Ireland and make recommendations on how it would be delivered. The Information Society pinpointed infrastructure, local e-commerce and research as priority areas. Consequently, work was completed in 2001 on the fibre-optic network providing a faster link to over 120 Irish towns. Also in 2001, the e-Business Act provided legal support and additional security to businesses via digital signatures. Further encouragement to e-commerce is to be given through transferring the Government's procurement and business transactions to the web – a significant move as this constitutes an estimated 50% of the nation's purchasing power. As already mentioned above, many Irish university research programmes have been linked into a network of American universities and the National Development Plan 2000-2006 has allocated 2.5 billion Euro for research, technology development and innovation.

¹²¹ <http://www.cid.harvard.edu/cr/profiles.html>

Education and training systems in Ireland

There are approximately 1 million persons participating in education and training in Ireland. There are 44,000 teachers and 120,000 students take state examinations each year.

There are seven universities in the Republic of Ireland, 14 Institutes of Technology, 8 Colleges of Education, three other state supported higher education colleges and many private and professional association providers of higher and further education and training. Most universities and a large number of the Institutes of Technology have dedicated eLearning divisions. There is one wholly online college - Hibernia College an accredited third-level education institution, offering post graduate, graduate and professional education programmes.

The Higher Education Authority is the planning and development body for higher education in Ireland. HEAnet is Ireland's National Education and Research Network, providing Internet Services to over 130,000 students and staff in Irish Universities, Institutes of Technology and other educational and research organisations.

The CHIU – the Conference of Heads of Irish Universities is a corporate body comprising the Heads of the seven Irish universities as members. It promotes university education and research through formulating and pursuing collective policies, strategies and programmes and has an important role to play in national adoption of learning technologies in higher education.

Vocational training is primarily the responsibility of FAS, the National Training and Employment Authority. It provides training for the unemployed, and apprenticeship training as well as other training for the workplace.

Technology in schools

In 2001, the government issued a three-year action plan for education in Ireland that included plans for the use of technology in primary and post primary schools.¹²² At that time, the average ratio of pupils to computers was 19.6:1 in primary schools and 10:1 in the post-primary sector. This equates with an average of 14 pupils per computer. Although this did not compare favourably with the European average (11 pupils per computer), it represented a significant increase over the previous three years. The plans included capital grants, funds for support services especially teacher training, a focus on the development of schools plans to meet individual school needs, the development of web resources, partnership with social partners, industry and broader community and priority for special needs.

The 2001 report from the National Policy Advisory and Development Committee for ICTs in Schools¹²³ noted that almost 98% of schools had connections to the Internet providing access for 97% of all post primary pupils and 79% of primary students. The same report notes that in 2000 71% of post primary teachers and 93% of school principals were using ICTs. In the primary sector, 67% of teachers were using ICTs and 83% of principals. Software used included word processing, spreadsheets and administrative applications. Primary school teachers used curriculum content software more than their post-primary colleagues. The categories of cur-

¹²² Blueprint for the Future of ICT in Irish Education. Three-year Strategic Action Plan 2001-2003.

<http://www.ncte.ie/AbouttheNCTE/ICTPolicy/d247.PDF>

¹²³ Impact of Schools IT2000. Report and recommendations to the Minister for Education and Science.

http://www.ncte.ie/npadc/ncte_report.pdf

riculum software most commonly used by primary teachers were age-appropriate word processors, reference software, problem-solving and educational games.

A majority of teachers have had ICT training, most through Education Centres providing training in courses developed by NCTE (National Centre for Technology in Education). However, the report concludes that a majority needs more time for training and practice. Interestingly, while School Principals consider ICT of very useful or vital importance, a majority of teachers see ICT as a useful tool somewhere between quite useful and limited. Engineering and other technology related subject teachers tended to view it as more useful than those teaching Arts and Humanities. This may reflect a conservative tendency among the teaching profession as well as the low ratios of computers to students previously noted. Recent protests at the approval of an online graduate programme for teacher training suggests that there remains some level of resistance to technology among teachers.

In relation to teacher training, it proposes wholesale integration of ICTs into education systems, recommending that 'all curriculum innovation and development, professional development of teachers and school support systems must incorporate, where appropriate, the methodologies for the use of ICT in the teaching and learning environment.' And that 'professional development, where possible, should take place on an in-school basis.'

In terms of infrastructure, it calls for safe and secure Internet access for all students, with 'networked computers, multi-user connectivity and a minimum pupil-to-computer ratio of 5:1 in all schools' with special education receiving a more favourable pupil-to-computer ratio. Finally, it recommends that 'broadband connectivity to the Internet at no or low cost must be provided on a multi-user basis to all schools and that community use of this facility must be encouraged and facilitated.' As might be expected it urges continuing funding for resources to support the development of resources including those in the Irish language. In terms of sustainability, it proposes 'the establishment of an ICT Industry Advisory Group to advise on future technology infrastructure options and on continuing private sector support to the ICT In Schools Initiative for the primary and second-level education sector.'

The Department for Education and Science 'Statement of Strategy 2003-5' follows these recommendations to some extent with an emphasis on teacher skills, innovative projects, continuation of infrastructure investment and the development and re-launch of ScoilNet¹²⁴ into an education portal. It proposes the further development of policy 'on the integration of ICTs into learning, teaching and assessment procedures, including the development of software and multimedia resources in support of learning.'

Schools software

Most of the curriculum related software that has been evaluated on the NCTE site is commercially produced and mainly but not exclusively from outside Ireland (UK and USA). The resources on the ScoilNet site are also predominantly from outside Ireland – again, mainly UK and USA. RTE (the national Broadcasting Authority) and NCTE have a Digital Learning Partnership and are piloting post primary programmes in arts and sciences. Interestingly, the resources on the privately sponsored www.skool.ie have been developed specifically for the junior and senior cycle curriculum although there are also links to external non-Irish sources.

¹²⁴ <http://www.scoilnet.ie/>

Technology in the further and higher education sector.

The policy issues that relate to ICTs in Further and Higher Education are explored in 'The University Challenged: A Review Of International Trends And Issues With Particular Reference To Ireland'¹²⁵, and include the need for 'Systematically extending the range of opportunities for higher education to all sectors of the Irish community able to benefit from them.' It notes, 'For universities, the challenge now is to show a readiness to work collectively as a system, in tandem with the institute of technology sector, and the secondary schools. Targets should include part-time study including work and home based study by distance education; and further diversifying the curricula, teaching and assessment procedures; and developing online learning on a national, co-operative basis...Preparing and supporting the academic profession for the challenges of growth, diversity, technology-based learning, applied scholarship and international competition.' It references 'the 'greying' of the academic staff in Ireland in common with most other comparable countries, and the need to meet challenges posed by among other things 'the spread of technology based learning.' It proposes that 'Facilities are needed not only for on-campus study but for study in the country of origin and they might include a mix of distance education provision and joint teaching to a high standard with a country of original institution or agency'.

The recent 'New Connections Action Plan'¹²⁶, proposes 'To invest systematically and strategically in the development of a collaborative national e-learning framework across the education and training sector at further and higher levels to ensure flexible adult access to lifelong learning, building on initiatives to date and best international practice'. In 2002, the Higher Education Authority issued a Call for Expressions of Interest to support the planning and implementation of a national eLearning service in Ireland. At the time of writing, no further developments have occurred in relation to this initiative and it appears to have been indefinitely postponed.

Most universities and a number of Institutes of Technology offer some programmes at least partially online. Oscail,¹²⁷ the National Distance Education Centre provides a great deal of its courseware and student support online and the M.Sc. in Internet Systems offered by Oscail since 2000 is offered completely online.

Technology in vocational training

In 'Learning for Life: White paper on Adult Education' published July 2000, the Department Education and Science proposed to 'encourage the development of partnerships/consortia of education/training and industry interests' in support of workplace learning and in the context of 'the emergence of the workplace as a learning organisation'. In this context they envisaged 'flexible education and training options will be progressed'. FAS, the National Training and employment Authority has for many years experimented with the use of technologies in learning and is now using them in new training provision for workplace learning. They are beginning to extend this into initial training including apprenticeship programmes. FÁS Net College¹²⁸, which provides accredited and non-accredited online courses in ICT, technical and business subjects had 7,500 course registrants in 2003.

¹²⁵ The University Challenged. A review of International Trends and Issues with particular reference to Ireland. Author Malcolm Skilbeck, Published by the HEA 2001 <http://www.heai.ie>

¹²⁶ New Connections. A Strategy to realise the potential of the Information Society. March 2002.

¹²⁷ <http://www.taoiseach.gov.ie/upload/publications/1153.pdf>

¹²⁷ www.oscail.ie

¹²⁸ <http://www.fas-netcollege.com/>

There has been a strong focus on ICT training for the Irish workforce and the FASTRACK IT initiative, run by FAS, provides courses created by NETg, Microsoft and Lionet. The European Computer Driving Licence has become one of Europe's most accepted end-user IT skills certification systems and has its roots firmly planted in Ireland where the ECDL Foundation still has its head office.

Private providers

A list of eLearning providers operating in Ireland supported by Enterprise Ireland and published in July 2003 lists 12 off the shelf content providers, 6 bespoke content providers, 1 enterprise system provider, 2 authoring and development tools providers, one offering delivery and collaboration tools and one 'services' company. However, the descriptions of these organisations suggest that many of them do not solely fit into a single category. These are all Irish founded companies and primarily exporting although at least one (Smartforce) was recently merged with another international eLearning company (Skillsoft) and while it retains its R&D function in Ireland, its centre of operations is now in reality based in the USA. Another is jointly headquartered in Ireland and USA.

Specialisms described in the marketing information for these organisations suggest that 3 supply to the pharmaceutical sector, 3 to the finance sector, 5 provide IT training, 2 supply to the telecommunications sector and a further 2 to the software sector, 1 is targeting language training, 3 offer training in regulatory requirements/ compliance', 1 offers specialist services to sports and media industries and 2 are generic. There is a strong presence of ECDL courses on offer. Only 1 targets schools and one is a localisation specialist.

Example of Irish E-learning company providing localisation for eLearning:

Founded in 1996, Transware is a localisation company with its technology and development operations in Dublin, Ireland. Transware provides multilingual localisation and internationalisation services to education and training software providers, working alongside eLearning developers to ensure local user needs are met. Internationalisation is the process by which software, web sites, products, packaging and other documents are designed or built such that they become "language agnostic."

The size of the Irish eLearning industry

Enterprise Ireland values these enterprises (turnover) at €300 million in 2003, a figure unchanged since 2002. Together they employed about 800 at end of 2003, representing a substantial fall over the previous two years. However, the agency believes that this is now moving upwards again. It is important to note that this figure represents only a small proportion of eLearning activity in Ireland – only Irish owned private enterprises that are clients of Enterprise Ireland and with export potential/activity.

Example of Irish E-learning company providing ECDL training:

The Electric Paper Company Limited (<http://www.electricpaper.ie/aboutep/default.asp>) was founded in Dublin in 1987 and was one of the first companies to provide technology supported learning for the ECDL qualification. It was recently acquired by the Third Force plc and in October 2003 was ranked as one of the top 20 fastest growing technology companies in Ireland. ThirdForce plc is listed on both the Developing Companies Market (DCM) in Dublin and Alternative Investment Market (AIM) in London, with a current market capitalisation of approx EUR26 million. It is building a global business as a provider of e-Learning products to the wider population. The company aims to achieve its goal through a combination of acquisitions and organic growth. The acquisition of Electric Paper, completed in First

Quarter 2003, is the first step in this process.

There is evidence of many other providers in Ireland. For example, all universities and many Institutes of Technology have virtual learning environments (VLEs). Blackboard is in use in most of the universities in Ireland and WebCT is also widely used in Institutes of Technology and in FAS and WBT Systems' platform TopClass was developed largely in Ireland, much of it with the support of European research funding. Many of the consultancy firms offer eLearning services – often in collaboration with ICT companies.

Example of Irish E-learning Company providing LMS/LCMS:

TopClass from WBT Systems is an integrated LMS (Learning Management System) and LCMS (Learning Content Management System) that enables rapid flow of content from original source to repository, all in an open, standards based architecture. The web-based e-Learning platform has over two million users world-wide across organisations in the financial services, pharmaceutical, telecommunications, government, manufacturing, energy and higher education sectors. Established in 1995 as a spin-off from University College Dublin's Department of Computer Science, WBT Systems is headquartered in Dublin and employs over 50 people in Ireland and has offices in North America based in Waltham, MA and in the UK (London) and Germany (Düsseldorf).

In terms of content, at schools level, Granada Learning appears regularly in the list of evaluated software in the NCTE site. Intel Ireland supported by the Irish Times newspaper have created www.skool.ie, which provides extensive free resources specifically related to the curriculum and covers examinations/revision support at both Junior and Senior cycle. It also includes links to external sites. IBM through programmes such as Kidsmart, Wired for Learning and Mentorplace have been working with schools in Dublin and specifically targeting the 'digital divide' in Dublin schools.

Example of Irish E-learning organisation providing schools content:

skool.ie is a collaboration between AIB Bank, The Irish Times, and Intel® Ireland in association with other leading corporate supporters. It supports the Irish Junior and Senior Cycle curricula, and claims to be the first resource of its kind designed specifically for Irish students and teachers. It uses the expertise of the top teachers in their fields, as well as key members of the syllabus and examination boards for the sourcing and development of content. The website provides resources to help students learn, to revise for their Exams, and to enable students and teachers to explore the wider world of education. The site's owners state 'we are engaged in a comprehensive programme of interactive courseware and supplementary material development exclusively for skool.ie. New courses, as well as special features, will be regularly added to the site.'

At a corporate level, Intel Ireland's Learning Solutions offers design, development and delivery of e-Learning solutions for internal and external clients and works within the Health, Business and Education sectors. As already mentioned, Smartforce (now part of Skillsoft) is an Irish company and strong player in the corporate sector. NetG is also a corporate supplier, and until recently (November 2003) had its Innovation and Development Centre based in Limerick in Ireland. A number of firms offer sector-targeted programmes in the financial, healthcare and regulatory sectors as well as telecommunications and ICTs. Indigenous companies such as those supported by Enterprise Ireland also primarily work in the corporate sector although many of them are focused on the higher growth opportunities from exports than the relatively small Irish market. With the exception of multinationals, where purchasing decisions are

likely to be made corporately, most sales opportunities are restricted to the small number of reasonably large firms, the public sector and the small proportion of SMEs that might use eLearning. (A 2001 survey found that one in eight SMEs use eLearning). Major consultancies also involved or looking for eLearning business in Ireland include Bearing Point (formally KMPG Consulting), Deloitte and Touche, Accenture, and PA consulting.

Examples of Irish E-learning companies in international markets:

Skillsoft (www.skillsoft.com) claims to be the world's largest eLearning company and combines two enterprises – Smartforce and Skillsoft –merged in 2002. They have a customer base of 2,500 companies and over 4.5 million registered learners. They have been in existence for 18 years (Smartforce) and are present in 65 countries world-wide. The SkillSoft e-Learning Advantage offers a learning infrastructure that provides training for individuals and entire organisations and includes content, technology, and services. In the 9 months ended October 2003, it generated revenues of \$138.7 million.

Other examples of eLearning services already in operation in Ireland are linked to initiatives addressing the overall establishment of a knowledge society and the development of a strong national multimedia sector. The Digital Hub initiative is already using some of its budget to develop eLearning services. Part of this initiative includes the establishment of Media Lab Europe, a third level research and education centre already located in the Digital Hub and the Liberties Learning initiative. With private sponsorship, the Liberties Learning Initiative (LLI). LLI is delivering digital media education programmes and acts as a test bed for innovative community learning projects. The overall focus of the programme is digital literacy providing the local community (including schools) with an opportunity to acquire the skills needed to live in a digital age and to work in the digital media industry, under development in the locality.

Northern Ireland

Schools

Full time education systems are the responsibility of the Northern Ireland Department of Education. There are 1,280 schools, 330,000 students and 20,000 teachers within the state system. A huge eLearning initiative (USD 97 million) was launched in 2003 as part of the Education Technology Strategy for Northern Ireland. Called C2K, Classroom 2000, provides schools with a core service which includes:

- An infrastructure of school-based, networked computers connected to the Internet
- Access to a wide range of education technology content and services to support the Northern Ireland Curriculum and professional development of teachers
- An integrated suite of services for the school's administration and management
- Connection of all schools' networks into a single education network across Northern Ireland with tools to facilitate the development of on-line teaching and learning resources

The managed service comprising some 40,000 networked computers, together with a rich mix of educational content and services will be provided through an integrated and supported service, installed, maintained and upgraded by specialist providers. By the end of 2003, three year managed service contracts were in place for all 905 primary schools. This service has

provided and supports some 15,600 desktops and a range of peripherals deployed in local area network systems and distributed throughout classrooms. The implementation programme for post primary and special schools will be completed by May 2004 at which point the service will have delivered some 23,000 desktops and a range of peripherals supported over a five-year period.

An interim broadband programme is in place delivering 2MBPS connectivity to post primary schools, and all primary, post primary and special schools will have broadband connections by February 2004. C2k has procured licences for a wide range of educational software applications for hosting on the local area network infrastructure. The primary school systems have access to some 80 educational software titles, principally from leading providers such as Granada Learning and RM. In post primary schools some 120 educational software titles will be hosted on the managed networks. Within one year of service implementation, this may be extended to 200. In addition, special schools will have access to the primary school range of software plus 27 titles specific to SEN requirements. All titles have been selected through a process of rigorous consultation with teachers and educationalists in terms of their relevance to the NI Curriculum. C2k will deliver a single education network across Northern Ireland by February 2004. Technological developments are monitored and, where appropriate, piloted in partnership with the ICT industry and BECTA to identify an appropriate roadmap for service development.

Higher and Further Education

The universities and many of the FE Colleges have eLearning initiatives in place and already operate VLEs. Campus One is the online campus of the University of Ulster, providing a wide range of online courses in the non-accredited and accredited postgraduate programmes. Other eLearning activities include the Institute of Lifelong Learning at Queen's University Belfast, and participation by NI universities in the UK eUniversity initiative.

Vocational training

The University for Industry (Ufi) operates in Northern Ireland (as part of the UK) providing **learn^{direct}** services. The Learning and Skills Development Agency Northern Ireland is responsible for supporting 16-19 year old training across the province. Under one of their curriculum development projects (ICT), they have recently been piloting the use of technologies in colleges to gather information on the challenges and usage among teachers and students. Their business plan (dated April 2003), states a commitment to utilising technologies to link teachers, institutions and others in new ways, build new sources of learning and staff development materials, and build online networks and events.

Professional training

There are a small number of eLearning companies operating in Northern Ireland, but most provision comes from Great Britain and other countries. The C2K schools project is being supplied by services and technology from Hyperwave AG and HP Services.

Example of Irish E-learning Company providing schools content:

Based in Belfast, **Aurion Limited** (<http://www.auriononline.co.uk>) is an educational multi-media company specialising in the design of interactive learning programmes and training support tools. Their clients include both public sector and private sector organisations across the UK and Ireland, much of it in the healthcare sector.

Italy

National policy and economic conditions¹²⁹

Italy has a 'Programme for the Development of Teaching Technology' and an 'Italian Action Plan for the Information Society' that help outline some of the main aims and strategies for the use of ICT, the target primarily being the use in education.

The aims are to improve the quality of teaching and learning; to enable students to acquire a sound grasp of ICT and use it in their work; to train teachers to use ICT and apply it to their work; and to boost the theoretical knowledge of ICT.

The strategies are:

- 1) to provide schools with appropriate infrastructure (targets: one computer for every 10 pupils and an increase in the allocation of peripherals and audio-visual technology; to maintenance and annual renewal of 25% of the equipment by 2001; to provide the schools with technical back-up from specialised teachers or outside experts);
- 2) to connect all schools to the Internet (target: daily access of at least six hours for 250 days a year, with a bandwidth suitable for multimedia teaching applications);
- 3) to establish networks and boosting services (objectives: cabling schools and setting up networks within each individual school; providing all schools with organised services so that they can also access the external network via a server or router, as well as an efficient phone link; providing teachers with services, course material and equipment for their own training; intensifying work already begun through the extensive pooling of experience and the development of teaching materials/equipment, resources and co-operation among schools);
- 4) to encourage the development and use of educational multimedia products (objective: establish school and local software libraries for collective and/or individual use);
- 5) to incorporate the study of ICT into curricula (inclusion in other subject areas at all levels of education, and its introduction as a special compulsory subject during the first two years of secondary school) and explaining how ICT can be effectively integrated into each of the disciplines concerned;
- 6) to train and advise teachers (objective: providing training and advice on the use of ICT in education).

Italy has launched several initiatives in the last couples of years, with the objective of integrating ICT at all levels of the educational world. The participants have been ministries, universities, research groups, but also private companies. In April 2004, the Italian government passed laws that set guidelines for the investment and specification of learning technologies. The legislation approved in Italy concerns the criteria to be adopted with regards to e- learning investments in public and private Universities. The legislation was approved on the 17th of April 2004. The legislation sets criteria for description of courses, facilities for identification of learners, tutor support, sets structures for specification of learning platforms, including adherence to standards (SCORM).

¹²⁹ http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

ICT profile of Italy

Demographics and network readiness rating

Italy has a population of 57.5 million and is rated 25th in the Centre for International Development's Networked Readiness Index.¹ Italy's population has one of the highest ageing rates in the world due to an increased life expectancy coupled with a very low birth rate. According to figures for 2000, twenty-one per cent of the population were connected to the Internet, the vast majority of whom (91%) were seeking information on-line as opposed to 72% using e-mail and 10.6% using electronic commerce. Italy has an enormous gap between the percentage of the population who perceive the ability to use computers daily as important (77.9%) and actual Internet penetration which stands at only 21.6%. The ratio of women on-line users to men was higher than the EU average at 37%. Mobile phone penetration in Italy is very high, giving potential access to the Internet without investing in hardware. This is one possible interpretation of Italy's high expenditure on telecommunications, gauged in 1999 as one of the highest within the EU, compared with having one of the lowest expenditures on IT hardware, software and services. Main line telephone connections were still largely controlled by Telecom Italia in 2000, although competition has grown since then. Digital literacy, as at 2002, was relatively low particularly for younger age groups.

Year	2001-2002
Main telephone lines per 100	47.38
No. of cell phone subscribers per 100	73.72
No. of personal computers per 100	13.94
No. of personal computers connected to the Internet	12.76%
Internet Hosts per 1000	17.79

Figures taken from Centre for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Italy has an adult literacy rate of 98.4% with 47% of the relevant age group involved in tertiary education. Ninety per cent of Italian secondary schools and seventy-five per cent of primary schools are connected to the Internet with the number of pupils per computer being thirty-five at primary level and fifteen at secondary level. Sixty-three per cent of Italian teachers are digitally literate. The Italian government, which spends 4.7% of its GDP on education, has been making efforts to promote the use of ICT and multimedia facilities in schools over the past few years as part of its Programme for the Development of Education Technologies, launched in 1997. Italy is slightly above the EU average in terms of the percentage of the labour force using E-learning and 41.9% of Italians use a computer for work. However, only 29% of central administration personnel are trained in ICT, one of the lowest figures for the EU.

ICT and government policy

There is no comprehensive national strategy but the e-Government Action Plan, which focuses on providing some services via public administration web-sites, is one of several government initiatives in this area. The telecommunications system was liberalised in 1998 and the effects of this are becoming evident with 200 licences for fixed line services having been

awarded. A new Ministry for Innovation and Technology was recently established with a remit to modernise Italian government via a range of ICT policies and projects. In 2000, the federal government and public administration procurement processes were switched to an on-line system in the hope that this example would encourage technological development and innovation. An electronic Tax Return Service came into effect in 1999 which has been very successful. E-commerce has yet to take off in Italy and ICT development is patchy.

Training & Development market in Italy

Initial vocational training

The Italian education and training system has undergone reform in recent years, which has included the following changes:

- A right to education for 12 years and an obligation to remain in education or training up to the age of 18
- Developing use of multimedia technologies and IT literacy for as many teachers and students as possible
- Allowing students aged 15+ to undergo work experience in social, cultural and productive areas
- Ensuring a link between the last year of high school and university and higher technical education.

Under this new system the upper secondary schools (*Licei*) and education and vocational training system are run as parallel pathways with equal value and which allow students to transfer easily between the two.

Vocational *education* is supplied within the educational system, while vocational *training* is the responsibility of the Regional Authorities. Of the 2.57 million students in upper secondary education in 2000/01 some 536,000 were in vocational schools, or *Istituti Professionali*.

Apprenticeships

Young people aged 15+ may alternatively opt to enter the labour market through alternating tools such as apprenticeship and training-employment contracts (*mixed-cause* contracts). Apprenticeships involve 120 hours per year of off-the-job training. Participants in training/employment contracts can either acquire high and intermediate vocational skills over a 2-year period or can undergo a 1-year job insertion programme. In 2000 there were around 436,000 apprenticeship contracts and 316,000 training/employment contracts.

Post-secondary non-tertiary education

Further post-secondary vocational training paths may be followed by those students with specific vocational skills having a high theoretical, technical, technological or managerial content. In recent years the supply of such training has expanded greatly with the creation of Higher Technical Training and Education pathways (*IFTS*¹³⁰), which are characterised by strong integration among the various actors involved. In 2000/01 there were 413 IFTS courses available for 6,413 students.

¹³⁰ Istruzione e Formazione Tecnica Superiore

Continuing Vocational Training, adult training and training for the unemployed

Broadly speaking this area of the training market may be divided into:

- Continuing education and training for all citizens
- Continuing training for those in the labour market

Funding comes from a variety of sources including the ESF, a fund for vocational training for both in-company and individual training pathways (under Law 236/93), provision of financing for training leave and the Interprofessional Joint Funds for Continuing Training, managed by the social partners and organised at regional/local level.

According to Eurostat's second survey on continuing vocational training some 24% of enterprises with 10 or more employees carried out training in 1999. This is estimated to be equivalent to 1.952 million industrial and service workers in companies of this size. Total training expenditure amounted to 2.8% of wage costs.

In addition to this training provided under Law 236/93 involved over 315,000 workers between 1997 and 1999.

A more recent phenomenon has been the creation of Territorial Centres for Permanent Adult Education, where much of the training is focused in IT and languages and where some 700,000 adults were expected to participate in 2003.

Training for the Unemployed

In 2002 total public sector expenditure on active labour market measures amounted to just over 5 billion Euros (0.44% of GDP) and of this 1.329 billion Euros was targeted at training-specific measures for the unemployed.¹³¹

ICT in education and training

In 2002 a national development plan was launched to encourage the implementation of an electronic society and among the aims of this plan was the expansion of IT culture in schools. This would be in addition to earlier efforts to meet EU targets of internet access to all schools by 2002 and a ratio of 1 standard PC to 10 pupils by 2004. Over the period 2001-02 200 million Euro were set aside for this purpose. By early 2002 80% of schools had internet access and PC/pupil ratio was 1:18¹³².

At the same time online services for e-learning-based training were being implemented through a remote training project involving 60,000 newly-trained teachers. A further 180,000 teachers were to be involved in another project in 2002-03 providing IT training at a cost of 75 million Euro.

An online remote training system - *FADOL*¹³³ - has been set up by the Ministry of Labour and Welfare Policies to re-qualify those responsible for the professional training system. By early 2002 22,000 trainers had used the system in which there were 25 types of courseware available providing 1,000 hours of training. A further 50 million Euro was earmarked for the FADOL project in 2002 in order to help differentiate the system by user group and so include

¹³¹ Eurostat, Labour Market Policy Database, 2000

¹³² Information taken from Italian National Action Plan for Employment, April 2002.

¹³³ Formazione A Distanza On-Line

apprenticeships, corporate training, permanent training structures, informal training and training in arts and culture.

Educational sector in Italy

Compulsory education starts at present at six years of age and finishes at 15, including five years of primary level education, three years of lower secondary school (scuola media) and the first year of the upper secondary level.¹³⁴

The education system includes at present what follows:

- ‘scuola dell’infanzia’ (non-compulsory) for children between 3 and 6 years of age
- primary education for children between 6 and 11 years of age
- lower secondary education for children between 11 and 14 years of age

Upper secondary education includes different types of schools. Generally speaking, it is attended by students between 15 and 19 years of age.

Access to both university and non-university higher education is reserved for students after passing the State examination. Vocational training courses are run by local authorities and can be attended by people aged 15 to 25 and in some cases older. In Higher Education, a recent significant element of innovation is related to the introduction, in the 2003 Financial Act, of the possibility to create Open Universities in Italy, allowing students to graduate without physically attending courses.

The lower secondary school leaving certificate ‘diploma di licenza media’ is needed to gain access to upper secondary school.

	Primary and lower secondary schools	Upper secondary schools	Universities
Number of schools	26,595	6,622	77
Teachers	467,308	277,312	54,856
Pupils	4,572,592	2,605,219	1,658,000
Pupil:PC ratio ¹³⁵	1:22	1:9	1:8

E-learning market size and characteristics¹³⁶

On the supply side the main feature of the Italian digital content market is that players are not in the position to rely upon return on investment. Therefore, no reliable estimate of revenues are available, in spite of the fact that reasonably accurate forecasts of associated costs are feasible.

Still, the role of Information and Communication Technology (ICT) in Italian small and micro enterprises is expected to be relevant to increase productivity and reduce internal costs – being therefore a leverage for economic development. Furthermore, electronic commerce as an application of ICT is likely to be a particularly important tool for Italian small and medium

¹³⁴ <http://www.eurydice.org/Eurybase/Application/frameset.asp?country=IT&language=EN>

¹³⁵

http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computers_perp_primary.gif

¹³⁶ From Acrobat Reader document ‘E-content in Italy’, source unknown

enterprises (SMEs). However, the degree of penetration of ICT in Italian SMEs is lower than the EU average. An analysis of the variety of products, services and prices featuring the Italian e-Learning sector suggest the following trends: fragmentation of supply, lack of transparency and strong concern on quality issues.

On the demand side 69% of Italian Internet users go online for recreation, 52% for business, and 16% for educational/research purposes (ISTAT, Annual Report 2001). As far as the 'gender' variation is concerned, the male population is more oriented towards recreation (71% in comparison with 65% of the female population) and business (55% vs. 46%), while women use the Internet for education/research to a greater extent (38% vs. 33%).

The educational market is characterised by public-private partnerships. The provision of computer equipment and ICT to schools, connecting them to the Internet, and the development of computer network services has generated partnerships with the private sector. An agreement with *Radiotelevisione Italiana* (RAI) has led to 5 000 schools being fitted with digital satellite dishes, while Internet providers are offering free subscriptions to schools and IBM is taking part in the 'Reinventing Education' initiative. Private external bodies carry out a share of teacher training.¹³⁷

E-learning industry

There is no central listing of e-learning suppliers in Italy, so an overview is hard to get. But the industry is very focused on the educational sector, but also other sectors as the banking sector, the health sector and the ICT sector itself are targeted. The services offered are a combination of standard and customised courses.

Infogroup was set up in 1985 by the Cassa di Risparmio di Firenze, the bank that currently controls the shareholding. The company operates mainly in the field of Information Technology for banks, a sector that has undergone steady development over the years and achieved important dimensions in the Italian scenario. Didaxis&Multimedia is the part of the group that operates in the e-learning and communications technologies and methodologies sector. It offers services as advice on the methodological, technological and organisational aspects of introducing Distance Learning; supply, installation, customising and maintenance of the platform; and supply of catalogue courses, for on-line and multi-media training of the staff of complex nation-wide organisations.¹³⁸

The e-learning suppliers offering courses to the educational sector is among others represented by traditional Italian publishers – see example below.

Mondadori Informatica has been operating since 1989 on the scene of professional IT education, and is offering in-room as well as on-line personalised courses, among them a marketing management course in co-operation with Università Cattolica del Sacro Cuore. But the Mondadori Informatica is also a publishing company, primarily publishing text books.¹³⁹

¹³⁷ http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

¹³⁸ <http://www.infogroup.it/english/offerta/didaxis/index.htm>

¹³⁹ <http://education.mondadori.it/DocumentInfo.asp?IdDoc=183>

International suppliers

Several international suppliers of standard e-learning courses, such as Adobe and Blackboard have Italian offices. But often the companies also operate through a local partner that distributes the products.

The international software company **Oracle** has a representation in Italy. Oracle offers e-learning programmes, Oracle University's eLearning FastTrack program, educating other companies' employees in using Oracles products in an optimal way.¹⁴⁰

ALLOS, Italian partner of Saba, implements **Saba LMS**, the leader American training platform. Saba Learning Enterprise is a LMS based on WEB technology that automates the management of learning processes for students, trainers and e-learning managers. ALLOS designs and produces tools for business processes management. It also provides in outsourcing LMS platforms for the delivery, the tracking, and the reporting of digital contents.¹⁴¹

E-learning content suppliers

A number of companies are specialised in the development of e-learning content and solutions for other companies and companies that are interested in using bespoke e-learning courses. These companies provide language-training courses, marketing courses, working environment courses etc. including custom-made courses, platforms and standard products in system development. They are well represented in the Italian market.

Examples of Italian suppliers of bespoke content:

For the **Enel group**, Sfera has made EDLS (Enel Distance Learning System), one of the most advanced e-learning systems in Italy. EDSL provides personalised educational courses on-line, the subjects spreading from managerial cultures, English language courses to technical specialist courses.¹⁴²

Isvor Fiat has set up two new companies in order to concentrate on its role as Fiat's corporate university and, at the same time, to focus attention on meeting the needs of increasingly demanding markets. Isvor Fiat creates e-learning systems by acting as a learning services provider (LSP) on the market, providing content structured for self-instruction, services to support management of the training process, and technology even though the company is not a technology provider as such.¹⁴³

Elearning is a company operating in the distance learning sector, using the most advanced technologies, information, telecommunication and multimedia wise. The company uses the American method Skill Training, which allows personalised educational solutions with varying speed and duration.¹⁴⁴

E-learning Technology Suppliers

There are only few companies supplying e-learning related technologies - tools for managing e-learning content and e-learning activities (learning management systems) and tools for authoring learning modules - developed in the Italian E-learning industry. Most of the technol-

¹⁴⁰ <http://www.oracle.com/newsletters/index.html?exnewsmar01.html>

¹⁴¹ <http://www.allos.it/page.jsp?id=100&idp=30&fl=0&idl=2>

¹⁴² <http://www.sfera.it/chi-siamo/edls.asp>

¹⁴³ <http://www.isvor.it/eng/offerta.html>

¹⁴⁴ <http://www.elearning.it>

ogy used is developed in the United States, however there are a number of operators like Simulware.

Examples of E-learning technology suppliers:

Giunti Labs is an Italian LMS company that is part of a large Italian media and publishing company. One of its most prominent products is *eXact Packager*. This module—containing wizards, templates, themes, plug-ins, and a "packager lite"—is used to create, index, version, and publish eLearning content. One can use it to create or modify learning objects or learning-object structures and package content in major packaging formats.¹⁴⁵

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consulting in connection with e-learning projects. These cover e-learning strategies, development planning, pedagogical and technical advice in relation to e-learning design and implementation. This category is well-represented in Italy with companies like the consultancy TESI with more than 100 consultants working in the HR and learning field, T4L with 30 employees providing innovative training solutions to companies, the language training operator Digital Publishing with significant international activities, the personal development company u2coach which uses several technologies in analysis competences and delivery of learning and ALLOS profiled below.

ALLOS SpA provides an effective consulting service in order to help the customer to annualise, plan and implement his learning solution and enhance the benefits of training activities. From the analysis of the customer requirements to the implementation of specific solutions tailored to his needs, ALLOS offers: just-in-time training solutions – whenever and wherever needed; innovative training management solutions based on competencies; consulting services supporting generational changes in top management; solutions designed to offer lifelong learning; analysis of company expenses and identification of unnecessary training expenses.¹⁴⁶

Italian E-learning companies in international markets

Most Italian companies are focussed on the national market, often not even having an English version of their web site. But there are some companies with an international focus - see examples below.

The Italian company **Learning Systems** is represented in Italy, Greece, Turkey and Switzerland. In these countries the company operates directly as well as through co-operation with local business partners.¹⁴⁷

Spaghettilearning is a free open source project born in Italy in 2002. This e-learning platform is used by several businesses, schools, institutions, and universities all over the world. The provided services are

¹⁴⁵ <http://www.sric-bi.com/LoD/news/2003-12giuntiLabs.shtml>

¹⁴⁶ <http://www.allos.it/page.jsp?id=100&idp=30&fl=0&idl=2>

¹⁴⁷ http://www.learningsystems.it/it/chisiamo/index_r.asp

- hosting: Unique packet with E-Learning, Portal system and e-commerce system for selling courses (credit card payment included)
- hosting for schools and universities: School portal with teachers curriculum, laboratories reservation, stage center and E-Learning included
- consulting: for e-learning projects
- training: Training in E-Learning.¹⁴⁸

¹⁴⁸ <http://www.spaghettilearning.com/index.php?newlang=english>

Latvia

National policy and economic conditions

The most important national programme is the project 'Latvian Education Informatisation System' (LIIS) that was initiated in 1997 by the Ministry of Education and Science. The aim of the project is to incorporate ICT into teaching in primary, secondary schools and universities. The project is co-ordinated by the University of Latvia, but involves the whole educational system as well as local authorities. One of the top priorities of the programme is training for all teachers in the use of ICT. Also, educational content has been developed and tested and schools have been provided with computer equipment.¹⁴⁹

The aim of the programme eLatvia is to improve the basic knowledge about information technologies, to improve the effectiveness and competitiveness of Latvia. This should be achieved, among other things, by speeding up the introduction of a substantial computer base in the schools.¹⁵⁰

ICT profile of Latvia

Demographics and Network Readiness Status

Latvia has a population of 2.33 million and ranks 39th in the Centre for International Development's Network Readiness Index.¹ Whilst part of the former Soviet Union, Latvia had a relatively advanced telecommunications system but Lattelkom's extended monopoly of fixed line services until December 2002 inhibited the country's rate of progress. Internet access costs are high but despite this usage had grown steadily over recent years, and in 2002/2003 37% of the population was accessing the Internet in some way as opposed to only 6% in 2000. Internet usage from home is at a very low level – only about 7% - and the bulk of Latvian users access the Internet from work or from another public place. Internet usage is low compared to the number of PCs per 100 of the population. This may be explained by the inadequacy of fixed line telephones. Subscriber numbers have dropped since 2000 in favour of mobile phones. Fifty-four per cent of Latvians were using mobile phones by September 2003 and the figures are still rising. Broadband connections are scarce and are only available in large cities. E-commerce is at a very low level with only 10% of the Latvian population having ordered anything online or used online banking according to 2003 figures.

¹⁴⁹ <http://www.liis.lv/english/main.htm>

http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

¹⁵⁰ http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

Telecommunications infrastructure

Year	2001-2002
Main telephone lines per 100	31.19
No. of cell phone subscribers per 100	16.86
No. of personal computers per 100	8.40
No. of personal computers connected to the Internet	9.44%
Internet Hosts per 1000	8.37

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

In cooperation with the University of Latvia, the government launched the Latvian Education Informatisation System in 1997 with education, management and information services as priorities. The programme covers all aspects of ICT applications in education including the development of an ICT infrastructure, digital content, a training and management system and eLearning. By 2000, Latvia's ICT education budget had increased by 20% and all schools offered computer classes. The ratio of pupils per PC in 2002 averaged 25, down from 67.3 in 1997, and there was an Internet connectivity level in the schools of 97% as opposed to 9% in 1997. High telephone costs, however, meant that only 75% of schools actually used the Internet. Sixty-eight per cent of teachers in 2001 were trained in IT usage. Life-long learning opportunities are not universally available. ICT training, however, is provided in adult education centres where they exist, and 31% of the Latvian population feels reasonably competent in using the Internet. Twenty-nine per cent of the labour force takes part in self-directed learning with 15% using eLearning, 5% of which is online.

ICT and government policy

The Latvian government has concentrated on strengthening its democratic institutions and achieving stability in the run-up to becoming a member of the EU. The liberalisation of the telecommunications industry as of December 2002 has improved Latvia's network readiness and it is expected that this will result in lower access costs and increased dissemination of ICT. The government adopted a National IT Programme in 1999 and devised a framework, e-Latvia, for the future development of ICT to include e-government systems and further legislation governing e-commerce, including e-document and e-signature Acts. E-Latvia encapsulates the government's key priorities in the development of ICT amongst which are increased Internet connectivity and making IT training universally available. The government is also considering following Estonia's lead in publishing the full text of legislation on the Internet and is anxious to increase transparency in government and IT awareness to the extent that in October 2000 the Minister of Finance installed a 24-hour web-cam in his office and broadcast live on the People's Party website.

Training and development market in Latvia

Adult education and training in Latvia has several organisational forms. It is run as evening classes, correspondence education and continuing education courses at the universities and other higher, secondary and professional training institutions. There are several adult educa-

tion centres offering general education courses, courses for professional retraining and courses of public interest. The operators in the adult training market include institutions such as the centres organised by the State Department for Employment, Municipality Training Centres, Trade Union Training Centres, Entrepreneurship Support Centres, Agriculture Consulting Centres, NGO Training Centres, etc.

Educational sector in Latvia

Compulsory education in Latvia includes pre-primary, primary and lower secondary education. Pre-primary education is a preparatory programme for five- and six-year olds and can be implemented in pre-primary education establishments as well as in families. Between the age of 7 and 16, pupils attend primary and lower secondary education and almost everybody attends state schools. Upper secondary education is optional and can be attended between the age of 16 and 19 and is free of charge in state schools. In Latvia it is possible to attend non-university as well as university type higher education. The former offers profession programmes whereas the latter often offers both academic and profession programmes.¹⁵¹

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	-	-	36
Teachers	23,167 ¹⁵²	5,652	-
Pupils	290,755	61,234	110,500
Pupil:PC ratio	20 ¹⁵³	-	-

As a result of the 'Latvian Education Informatisation System', 66% of all teachers had been trained in ICT usage and the number of pupils per computer has declined from a ratio of 67.3 in 1997 to 20 in 2002. Also, in 2002, 97 percent of all schools had dial-up connection to the Internet, however only 79 percent of schools have reported real use of the Internet due to high the price of Internet usage, i.e. mainly phone costs.

E-learning market size and characteristics

In the educational market, educational electronic teaching aids have been developed within the LIIS project since its beginning in 1997, so that approximately 20 percent of the total amount of high school programmes can be taught through eLearning. In some disciplines, e.g., Latvian language and mathematics, this percentage reaches 75% of the whole syllabus.¹⁵⁴ There are virtual learning environments in the There are virtual learning environments in the Riga Technical University, University of Latvia and Business College Turība.

E-learning industry

E-learning service suppliers

School of Business Administration **Turība** Ltd. was founded in 1993. It is one of the first and the largest private institutions of higher education in the Baltic States. Turība was established just in time for the renewal of Latvian state, when the necessity of a new type of dynamic education appeared.

After a careful analysis of other Higher Educational Institutions in Latvia and their academic and pro-

¹⁵¹ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

¹⁵² http://www.eurydice.org/Eurybase/frameset_eurybase.html

¹⁵³ <http://www.liis.lv/english/main.htm>

¹⁵⁴ <http://www.liis.lv/english/main.htm>

http://www.eurydice.org/Doc_intermediaires/descriptions/en/thematic%20reports/ICT/FrameSet.htm

fessional programmes as well as an experience gained abroad, School of Business Administration Turiba was set up as an educational establishment where secondary comprehensive and professional, higher academic and professional, postgraduate and adult education can be obtained. It is possible to obtain higher education in Business Administration in professional degree programme (equivalent to a Bachelor's Degree), college education in programmes Finances and Accountancy Advertising Management or choose optional courses. Many of the courses can be obtained via online learning. www.turiba.lv

Distance learning at higher educational institutions has developed over the past few years and several of the institutions in Latvia are offering on-line courses. Most overviews of eLearning in Latvia therefore cover the higher educational institutions.

BDA (www.bda.lv) (Baltijas Datoru Akademija - Baltic Computer Academy) is the biggest computer training centre in the Baltic since its acquisition of Soft-Tronik Education Centre in 2000. BDA is a member of the Microlink group (www.microlink.com). The company trains at its own training facilities about 2,500 students per year. The BDA team has been in the IT training and testing business since 1994. BDA designs and implements ICT training projects, helping organisations to optimise training investments. It creates customised training programs taking into account skills level, ICT infrastructure and the goals to be achieved. All training classes of BDA are network- and Internet-enabled. The company provides ICT courses via eLearning and is a distributor of Intralearn platforms in the Baltic countries.

Lithuania

National policy and economic conditions

The stated main goal for ICT improvement for Lithuania, at primary and upper secondary school, is to develop a new culture of coexistence between education and society. Furthermore, the national government stresses the goal of making the pupils in the education system, aware of the importance of ICT and to offer them instruction in the subject. Last, but not least, it is a main objective in the Lithuanian strategy to include ICT in the education of the entire population.

More specific objectives envisage ICT as an integral part of the administration and management of schools. In fact, ICT is expected to be included in the curriculum and teaching methods. Other goals include teacher training and the creation of closer links between education and research.¹⁵⁵

The formal strategy for development in the Lithuanian educational sector is set forth to cover a period from 2002-2012. The Education Development Strategy defines the priorities for the educational policy. Its aim and tasks are to foresee means, time and resources necessary to develop an effective, coherent education system, which is accessible to everyone. Furthermore it is supposed to become a resource of the country's cultural and economic power and a guarantee of its national safety. A major part in this strategy is the use of distance education or eLearning via the web.¹⁵⁶

ICT profile of Lithuania

Demographics and Network Readiness Status

Lithuania has a population of 3.6 million and an overall ranking of 42nd in the Centre for International Development's Network Readiness Index.¹ Lithuania along with Latvia has the lowest GDP per capita of the last ten countries to join the EU. The number of Internet users was measured as 500,000 in December 2002, a 14.3% penetration level but according to figures for the first half of 2003, Internet penetration was set at 23% defined by being online at least once during this six month period. This compares with a 45% average Internet usage for the EU using the same measure. ICT is the fastest growing sector in Lithuania and Internet penetration has been aided by the formation of an alliance of private companies, which has established 66 public Internet access points and made IT instruction available at each point. PC penetration to Lithuanian households rose from 12% in 2002 to 19% by the end of March 2003. The telephone system is inadequate, and despite the installation of fibre-optic cable, fixed line tele-density is low and is falling rapidly in favour of mobile telephony. In 2000, 32% of the population had a fixed line. However, this figure had dropped to 26% by 2002 whereas mobile phone penetration has been measured at as much as 52% according to some figures for the first half of 2003 with a projection of 57% by the end of that year. There was a sharp rise in subscriptions between 2000 and 2001 to coincide with the launch of Tele-2, the third mobile operator in Lithuania. An agreement signed between the second largest mobile operator in Lithuania and Vodafone in July 2003 gave subscribers access to a wide range of

¹⁵⁵

http://www.elearningeuropa.info/dir_national2.php?lng=1&vnt_cnr=48&doclng=1&sid=8e6c6c71492cb08bba6a337f1f8a7f11&p3=

¹⁵⁶ http://www.conference.mimoza.hu/pres/dr_danguole_rutkauskiene.ppt

international mobile services. The telecommunications market was liberalised in December 2002.

Internet banking increased rapidly between 2002 and 2003, tripling the number of subscribers and the number of bankcards in circulation in 2003 totalled 1.9 million.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	32.11
No. of cell phone subscribers per 100	14.16
No. of personal computers per 100	5.95
No. of personal computers connected to the Internet	6.45%
Internet Hosts per 1000	4.81

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

In preparation for becoming a member of the EU, Lithuania has been engaged in reforming its education system since 1997 and a white paper detailing plans for the development of higher education until 2015 was approved in December 1999. Between 1997 and 2002 Lithuania has concentrated on aligning its education system with European standards, particularly relating to the provision of non-university higher education and quality controls on study and teaching standards. Lithuania participates in international student exchange programmes such as the Socrates programme and adopted legislation in December 2000 on the long-term funding of science and education. SMEs are also beginning to cooperate with R&D institutions. Moreover, a new Science and Technology park, IT Visoriai, was underway in 2002. IT literacy is low, and the government is keen to provide access to ICTs in schools and universities. Plans are underway to link secondary schools with higher education institutions and the Ministry of Education in an attempt to integrate R&D. The Lithuanian government is considering ways of tackling the problem of improving ICT literacy in rural areas via distance learning programmes delivered through a wireless infrastructure. According to information gathered from school principals in 2003, 90% of secondary schools and gymnasiums use the Internet. The ratio of students to PCs was 1:31 at the end of 2002 and was targeted at 1:10 by 2004.

ICT and government policy

The Information Society Development Committee established in 2001 is responsible for monitoring and evaluating the development of the Information Society and for supervising the implementation of legislation. A Strategic Information Society Development Plan was confirmed by the Lithuanian Government in August 2001. This plan sets out the main priorities for achieving a networked society and focuses on education in IT literacy, the promotion of e-government and e-commerce including e-signature legislation and the preservation of Lithuanian culture and language. It was expected that 90% of the budget for the Strategic Plan would be spent on education and e-government projects.

Educational sector in Lithuania

The Lithuanian state school system consists of compulsory and non-compulsory schooling. According to state law children can start compulsory education at the age of 6. It ends at the age of 16. Compulsory education involves four years of primary education followed by six years of basic (lower secondary) education. Compulsory education is provided not only in state-maintained schools of general education, but also in private schools that get state support if they adopt state curriculum. However, enrolment in the latter is still limited. The universities and the sector of non-university higher education make up the non-compulsory part of the Lithuanian educational sector. Admission to these institutions is based on the leaving examinations from the upper secondary school. All education throughout the Lithuanian publicly funded establishments is free. Students at upper secondary and university level, however, may be required to pay for their own books and various teaching materials.¹⁵⁷

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	821 (1999/2000)	710 (1999/2000)	16 (1999/2000)
Teachers			4,297 (1999/2000)
Pupils	40,515 (1999/2000)	450,451 (1999/2000) ¹⁵⁸	84,345 (1999/2000)
Pupil:PC ratio	15.3 (2003) ¹⁵⁹	134 (1999) ¹⁶⁰	137 (1999) ¹⁶¹

E-learning market size and characteristics

E-learning or distance education was triggered in 1993 through feasibility studies in Lithuania, Latvia and Estonia with assistance from the Nordic Council of Ministers. This process resulted in critical research, awareness promotion and modernisation in eLearning in Lithuania. It also resulted in the creation of a platform for the sustainable development of distance education in the country. In 1996 the influential board for Distance Education was set up under the auspices of the Ministry of Education and Science. Two years earlier, in 1994, the Lithuanian Distance Education Center was established with financial support from the ministry. In 1998 and 1999 the government decided to finance an investment programme in the area of distance learning. These three aspects have been the most important aspects of distance learning-related activities in Lithuania.

The eLearning market in Lithuania is, however, limited. Hence, it is only possible to identify one supplier of eLearning in the country. Besides this one supplier, there have been a couple of projects in the eLearning area initiated by the Lithuanian government, through the Ministry of Education and Science. These projects are embedded in network-projects, where universities in Lithuania are the main forces.¹⁶²

E-learning industry

The eLearning industry in Lithuania addresses mainly the educational sector. The field is co-ordinated from the national level, and the universities in the country play a large part in the implementation of the programmes. The eLearning industry in Lithuania is not characterised

¹⁵⁷ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

¹⁵⁸ <http://www.eurydice.org/Eurybase/Application/frameset.asp?country=LT&language=EN>

¹⁵⁹ http://www.ipc.lt/21z/projektai/2003/WB_Lithuania_0619.ppt

¹⁶⁰ <http://www1.moe.edu.sg/press/1999/pr991122.htm>

¹⁶¹ <http://www1.moe.edu.sg/press/1999/pr991122.htm>

¹⁶² <http://www.nsc.vu.lt>

by any national developers of LMS systems as well as partnerships consisting of public and private businesses cannot be identified.

The national program of Information Technologies for Science and Education (ITMS), running from 2001-2006, is meant to handle the most important spheres of the information society, i.e. science and studies. The programme is made up of three basic parts closely linked together. These sub-programmes consists of the Development of Distance Education in Lithuania (LieDM), Lithuania Academic Libraries Network (LABT) and Lithuanian Science and Studies Information System (LieMSIS). All of the programmes are embedded in networks. These networks consist mostly of universities, which in most cases provide the Lithuanian eLearning market with content, technology as well as service.

Examples of Lithuanian eLearning projects in networks:

LieDM (www.liedm.lt). The project "Development of Distance Education in Lithuania" was implemented in 1998. LieDM is established through network cooperation between a video studio at Kaunas University of Technology (KTU) and ten learning classrooms located at Universities of Vilnius, Kaunas, Klaipėda, Šiauliai, KTU branch in Panevėžys, colleges in Alytus and Utena, higher education institution in Kedainiai. Through a gateway of the videoconference studio it is possible to connect any point of the world with distance education classrooms of this network by using ISDN lines. The learning process is organised by the use of videoconference and learning tools in the web environment. The LieDM include, among others, a programme of the second level for the vocational teachers, e-study programme for the preparation of informatics specialists in regions. Likewise, the network has offered more than 25 courses in a web-environment as well as having provided training for lecturers willing to deliver distance education courses. The main objectives of the programme is to develop cooperation among higher education institutions in distance education development, to build a better infrastructure between the higher education institutions based on modern telecommunication, information and videoconference technologies. Furthermore, it is an objective to set up virtual universities and deploy eLearning in this environment. LieDM works as a content, technology and service supplier in that it develops and supports eLearning modules and interactive virtual study environments on the Internet. Likewise, the network develops sound and video training tolls.

LABT (www.labt.lt). The Lithuanian Academic Libraries Network (LABT) was initiated in 1998 and designed for the use of the libraries of Lithuanian higher education institutions. The information systems of all the libraries are connected to the Internet and for the users' convenience it is interconnected by special ALEPH 500 and standard library protocols. This allows searching for information on all servers at the same time through both standard web and special graphic user interface. Using these protocols, ALEPH 500 enables the sharing of bibliographical inscriptions among various library systems. LABT permits the storing of library information, and, combining works with university publishing offices, also to collect full-text documents, create united directories, search for the information, connect to the world-wide e-libraries networks, share and receive information.

LieMsis (<http://www.man.poznan.pl/ist/eunis/programme/EUNIS2000/slides/LieMSIS/sld004.htm>). The main objectives of the programme is the standardisation and integration of information systems in Lithuanian science and studies institutions, control and assessment institutions for science and studies as well as other organisations. The programme has been established in pursuance of development of the science and studies system and coordination of its activities as well as to meet the growing requirements for information in Lithuania at all level in the most effective way.

International suppliers

The existence of the Internet makes it easy for international providers of eLearning to gain access to the Lithuanian market. These suppliers are mainly from foreign Western European countries, the US, Canada and Australia, none of which actually set up representations in Lithuania. The most international suppliers by far operate from their homebases, through sites on the Internet. Other companies, however, set up representations that cover the whole Baltic region. The reason for the almost non-existence of physical representation from any international suppliers is the smallness of the Lithuanian eLearning market.

IBM (www.ibm.lt) is based in the US, but offers eLearning to most countries in the world. In Lithuania, the company offers courses over the Internet. The company's web-site is also developed for the Lithuanian market, thus it is a web-site in the Lithuanian native language.

E-learning content suppliers

Content suppliers in the Lithuanian market are few. Above we have described how some of the programmes, which exists in networks, provide content for the eLearning educational sector in the country.

E-learning technology suppliers

The providers of technology to the Lithuanian eLearning sector are found in the networks, in which the above mentioned programmes are embedded.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. These covers eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. Once again those who offer these services are mainly the same universities that are part in the established programmes.

Lithuanian E-learning companies in international markets

We have not been able to identify any Lithuanian companies that are active in the international markets.

Luxembourg

National policy and economic conditions

The Luxembourg Ministry of Education, Vocational Training and Sport has introduced a series of projects for general implementation from 2001/2002 to familiarise young Luxembourg citizens with ICT.¹⁶³

In order to overcome increasingly important maintenance problems, the National Centre for Technology in Schools has created a structure whereby a group of technicians is responsible for the maintenance of IT hardware in post-primary schools. The size of this pool of technicians is expected to grow until a solution is reached whereby appropriate technical training can be provided in every school. Moreover, the pilot experiment 'Electronic Schoolbag' will enable Luxembourg to gather valuable information to determine those changes necessary to a school's internal organisation for the equipping of all its pupils with a laptop.

In response to the requests of users, both organisationally and pedagogically, the National Service for Pedagogical and Technological Research and Innovation (SCRIPT) has undertaken the coordination of a project for the integration of ICT in the secondary curriculum (projet elabotic.lu). SCRIPT has, at the same time, made available human resources and financial means to ensure the completion of the project for the start of the school year 2002/2003.

The Ministry of Education, Professional Training and Sports intends to carry out a series of projects with the aim of promoting eLearning in the Grand Duchy of Luxembourg.

Luxembourg national policy emphasises explicitly the support of continuous professional education. This is done by the national campaign for continued professional education (FPC) having for instance established a national web-portal - www.lifelong-learning.lu – supporting training in private enterprises. This initiative is not solely focused on eLearning, but focusing on 'The continued professional education – advancing with the world'.

Furthermore, the Centre de Recherche Publique (Center for Public Research) Henri Tudor (CRP) has been launched by the SITec in order to enhance public-private partnership in the eLearning business. These projects have the objectives of favouring the development of eLearning in the market of Luxembourg by:

- creating and animating a web of professionals within eLearning.
- experimenting with new forms of organising education (virtual university, eLearning education etc.) and learning (collaborative learning, individual learning via the Internet, capitalisation intra-enterprise, etc.)
- developing products and services in the domain of new educational technologies (education for eLearning professions, counselling in the education for eLearning professions, services and tools of the conduction of eLearning activities etc.)¹⁶⁴

¹⁶³ http://www.elearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=32&doclng=1&p1=1&p4=1

¹⁶⁴ <http://www.innovation.public.lu/html/portal/FR/81/85/100/242/C938/index.jsp>

SITec and CRP have, for instance; carried out the conference ‘E-learning days in Luxembourg’ in order to establish a network, a sort of public-private relationship, including all players within the field of eLearning in Europe.

Having the National Institute for the Development of Continuous Vocational Training (INFPC, Institut National pour le développement de la Formation Professionnelle Continue) Luxembourg is consciously trying to establish a linkage between eLearning and the private sector.

ICT profile of Luxembourg

Demographics and Network Readiness Status

Luxembourg, bordered by France, Germany and Belgium, has a population of 429,000 and with its long tradition of broadcasting and satellite transmission it has a very sophisticated telecommunications infrastructure. Too small to be covered by the Centre for International Development’s Networked Readiness Index, it has no ranking. However, the ICT infrastructure is good with low Internet connection costs, a highly skilled and multi-lingual workforce and high ICT penetration levels, particularly in relation to mobile phones. Eighty-three per cent of the labour force is involved in the service industry, and the standard of living in Luxembourg is very high. Fifty per cent of households are connected to the Internet, thirty-three per cent of the population has been using the Internet for two years or more, and 57% see the use of computers in daily life as important. Despite this, broadband access is low, apparently due to the lack of competition amongst operators. E-government has also been slow to develop although e-commerce is strong.

Year	2001-2002
Main telephone lines per 100	69.17
No. of cell phone subscribers per 100	87
No. of personal computers per 100	?
No. of personal computers connected to the Internet	8.6%
Internet Hosts per 1000	40

Source: SIBIS, 2002 WP4-D4.3.3

Education

Despite its 100% adult literacy rate, Luxembourg suffers from problems arising from the practice of teaching primary school pupils in Letzeburgische, the local language. School pupils must also be proficient in both French and German and Luxembourg’s high proportion of foreign children have great difficulties with this. In some regions as many as 45% of students can leave school with no qualifications.

Luxembourg has 100% of its secondary schools connected to the Internet, but only 25% of its primary schools have an Internet connection. There are 18 pupils per PC at primary level and 11 at secondary level. ICT is treated as a priority in teacher training programmes. At university level, most students go abroad to study as the Luxembourg University Centre only runs

first year courses although it is possible to study a variety of vocational subjects at other institutions within Luxembourg.

ICT and government policy

Luxembourg acknowledges the need to support EU initiatives in ICT under the eEurope project and has launched e-Luxembourg which focuses on the setting up of 'Tele-centres' for all age groups in local communities, the education of teachers for 'Internet driving' and Internet cafes in senior clubs. The Luxembourg government is also committed to increasing the involvement of its citizens in ICT, expanding the role of ICT within public agencies and enterprises, promoting e-commerce and continuing to develop its current ICT infrastructure, particularly regarding the use of the Internet.

Training & Development market in Luxembourg

Initial vocational training

Upon completion of compulsory education students have the option of moving on to either general secondary education at the *lycées* or vocational training at technical secondary school (*lycée technique*). Technical secondary education is available in two cycles: an intermediate cycle and an advanced cycle.

The intermediate cycle consists of three branches:

- The vocational branch (*régime professionnnel*)
- The technician training branch (*régime de la formation de technicien*)
- The technical option (*régime technique*)

The vocational branch is an apprenticeship lasting three years and entails training in the workplace and vocational education at the *lycée technique*. In 1998/99, there were 2,366 apprenticeships. The other two options last two years and are full-time with *technician training* providing a pathway to technician studies in the advanced cycle, and the *technical option* leading to the *baccalauréat technique*. In 1998/99, there were 4,082 students in the intermediate cycle.

The upper cycle consists of advanced studies for both the *technical option* and *technician training* and each option lasts 2 years. In 1998/99 there were 6513 students in the upper cycle.

Continuing vocational training, adult training and training for the unemployed

The system of adult education in Luxembourg has undergone reform in recent years, first with the creation of Ministry of National Education and Vocational Training in 1995, and secondly as a result of legislation introduced in 1999 specifically to develop and provide support for continuing vocational training. This legislation came into force in January 2000 and provides for the following:

- Collective access to continuing vocational training in the context of the firm
- The right to establish continuing vocational training units
- Direct subsidies or tax deductions for training projects of firms
- Protection for investment in training by firms

Training provided by the public sector tends to be delivered through:

- The National Centre for Continuing Vocational Training (CNFPC) and caters for adults requiring CVT or social training, and young people seeking employment training/retraining;
- The National Institute for the Development of Continuing Vocational Training (INFPC), which develops IVT, retraining, adaptation and further training programmes.

As a result of the 1999 legislation there has been a significant increase in the number of people participating in continuing training: by 2001 there were almost 158,000 participants. Total public funding for 2001 amounted to just over € 16 million, with most of this in the form of direct subsidies (96%) and the rest as tax deductions.

ICT in Education and Training¹⁶⁵

ICT usage in Luxembourg was boosted by the government *eLuxembourg* initiative that aimed at initiating and training young people in the use ICT in daily life. Within education the MENFPS¹⁶⁶ has carried out a number of projects to promote the use of eLearning, i.e.:

- Establishing virtual community of teachers from all levels of the education system to enable exchange of ideas and of good practice;
- A pilot project equipping all students of one school¹⁶⁷ with laptop computers to enable them to use ICT in all lessons;
- Guaranteeing adequate ICT equipment in all schools to enable ICT integration in all teaching programmes;
- Put in place a policy of continued training to respond to the ongoing training needs of teachers

By 2000/01, all schools in Luxembourg had high speed Internet-access. On average, there were six students to every Internet-connected PC. Since the beginning of the 2002 school year, specific ICT lessons for those aged 14-16 have been superseded by the progressive integration of ICT into all subjects.

In 2003 the MENFPS invested € 4¼ million in the integration of ICT into education. In addition to this, the *eLuxembourg* project invested € 12,286 million over the period 2002-04.

Educational sector in Luxembourg

The educational sector in Luxembourg consists of several levels that the pupils pass through. There are three customary levels, pre-school education, primary school and lower secondary school. Lower secondary and upper secondary school is divided into six different directions according to the degree of theoretical/literary or practical/technical orientation. Finally, there is a superior level including universities and technical academies.

¹⁶⁵ Information from EUN Insight Country report, September 2003.

http://insight.eun.org/eun.org2/eun/en/Insight_policy/sub_area.cfm?sa=2326

¹⁶⁶ Ministère de l'Education National, de la Formation Professionnelle et des Sports

¹⁶⁷ Lycée Aline Mayrisch, By September 2003 there were already 1000 laptop computers in operation.

	Primary schools	Secondary schools	Universities and colleges
Schools		29 ¹⁶⁸	1
Teachers			
Pupils	31,963 ³	31,530 ³	
Pupil:PC ratio	2.2 (2001) ¹⁶⁹	6.25 (2001) ⁴	11.2 (2001) ⁴

With relevance for the primary and secondary levels, the Ministry of Education and Centre for Technology in Education has established the myschool.lu portal to give the public access to information about the national education and providing up-to-date content for use in the educational system.

According to a study made by eEurope (see table above), Luxembourg has comparatively many PCs pr. pupil in primary school. It is, however, interesting that there are comparatively few PCs pr. pupil at the higher levels.

E-learning market size and characteristics

The majority of training and education organisations and institutions have not yet treaded the path of eLearning. Only a minority of those offers any service within this domain, and these are exclusively complementary to the their main services. Therefore, the private sector is driving eLearning in Luxembourg.

According to a study¹⁷⁰ of eLearning in Luxembourg 5.6 % of the companies have a great deal of knowledge about and are regularly using eLearning. 19.9 % have occasionally used eLearning and have some knowledge on the subject. 53.4 % of companies in Luxembourg state that they have some knowledge about eLearning, but also that they have not really used it yet. 16.1 % have not yet heard about eLearning. These facts illustrate that there is still an unrealised potential market for eLearning in Luxembourg and also that eLearning is slowly penetrating the private sector market. Thus, eLearning is the slightest used form of training in enterprises in Luxembourg. It is estimated that the reason for the slow progress is that the private sector in Luxembourg is constituted primarily of small and medium sized companies. However, 23.9 % of companies are planning the use of eLearning.

The primary criterion for the choice of eLearning tool is the cost of the product in companies of Luxembourg.

E-learning industry

The eLearning industry in Luxembourg is still on an embryonic stage. Thus the most recent study of this market is based solely on responses from 18 companies. Only few actors on the market rely solely on eLearning solutions. This study indicates that the eLearning industry of Luxembourg is constituted of different types of eLearning solutions offering differing content.

¹⁶⁸ Les chiffres clés de l'éducation nationale – Statistiques et Indicateurs 2001-2002, Ministère de l'Éducation, de la Formation Professionnelle et des Sports 2003: http://www.script.lu/documentation/pdf/publi/chiffres_cles/chiffres-cles2003-brochure.pdf

¹⁶⁹ http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/index_en.htm

¹⁷⁰ 'Rapport d'enquête 2003 - E-learning au Luxembourg: situation et perspectives' by Centre de Recherche Public-Henri Tudor, GIE SITEC and ETUDES ET FORMATION: http://www.sitec.lu/SI/Channel/SITEC.nsf/fs_Root?OpenFrameset

44,4 % of eLearning providers offer profession education. 33,3 % offer training in ICT, 22,2 % training in administration, 22,2 % linguistic training and 11,1 % self-development.¹⁷¹

The eLearning industry consists primarily of small enterprises.

eLearning Services (www.eLearning.lu), CMI creative communication (2 employees). Being a small company, eLearning Services characterise well the Luxembourg eLearning industry. The company combines the Internet and audio-visual technologies with management and marketing consulting.

International suppliers

Since the eLearning-industry in Luxembourg is comparatively small and at an early stage, external vendors penetrate Luxembourg to a high degree. Furthermore, this tendency is advanced by the fact that foreign companies are playing on much larger markets. There are both international global players but also eLearning providers from neighbouring countries. Several international companies penetrate the market by the use of Internet and communication online, and thus have no need for establishing offices in Luxembourg. Because of the size of the country several suppliers service Luxembourg from offices in neighbour countries.

Cognos (<http://www.cognos.be/be/training/elearning.html>) is a multinational company with a Belgium/Luxembourg office situated in Belgium. Its award-winning computer-based training product is an alternative method for learning that complements current classroom training offerings. A considerable advantage of these courses is that they are self-paced. In Luxembourg, the company has worked with Cetrel (Centre des Transfers Electroniques) and Syndicat Intercommunal de Gestion Informatique (SIGI).

Being placed situated between Germany, France and Belgium, the Luxembourg market is heavily influenced by suppliers of eLearning products from those neighbouring countries and has no need to establish offices in Luxembourg. Being both German-speaking and franco-phone, sharing cultural attitudes and having traditional cultural and economic linkages, companies from neighbouring countries have comparative advantages in the competition with other foreign vendors.

E-learning suppliers

There are only few suppliers in the eLearning industry of Luxembourg. The players in the Luxembourg market are primarily eLearning content providers. The majority of suppliers in Luxembourg offer both content and services at the same time.

Examples of eLearning suppliers in Luxembourg:

Reval Consulting (www.reval.lu) primarily supplies the market with bespoke content within eLearning, but also offer consultancy services in this field and coaches eLearning projects.

EBRC (www.e-training.lu), E-Business Recovery Centre, primarily delivers eLearning content but also offers some consulting services.

¹⁷¹ 'Rapport d'enquête 2003 - E-learning au Luxembourg: situation et perspectives' by Centre de Recherche Public-Henri Tudor, GIE SITEC and ETUDES ET FORMATION: http://www.sitec.lu/SI/Channel/SITEC.nsf/fs_Root?OpenFrameset

E-learning companies in international markets

Being a small market with small suppliers and already embraced by international corporations, the number of Luxembourg players on the international market for eLearning is very limited.

Malta

Policy and economic condition

In 2001, the Ministry of Education established the National Minimum Curriculum - a strategic plan for the curriculum development in Malta. The strategy has led to the setting up of the National Curriculum Council and eighteen focus Groups. The “ICT in Education Focus Group” is one of these, with the following policy aims:

- To establish an ICT training unit;
- To set up a multimedia and course production unit;
- To set up a national web-based education resource centre;
- To ensure that children and teachers have access to the Internet;
- To train and retrain teachers in ICT.

The above policy aims are also relevant for the wider social and national targets as proposed in the e-Government initiative¹⁷² and the terms of reference for the eMalta Commission.¹⁷³

The policy on ICT implementation supports key stages 1 and 2 (1996-2004) concerning training of teachers to ensure the necessary skills required by primary classroom teachers to use ICT confidently and integrate it into various teaching and learning methods. It comprises the following stages:

- | | |
|-----------|---|
| 1996-2002 | Gradual phasing in of ICT equipment in all state primary classrooms. |
| 1996-2002 | All state primary school teachers are equipped with a laptop computer. |
| 2000-2004 | Gradual phasing in of Internet connectivity for all state primary schools.
All primary school teachers and pupils have their own Internet and e-mail account |
| 1996 - | Various types of INSET courses, (official courses the teacher have to attend once a year) in-school and in-class training programs have been organised and are being planned. |

Internet safety policy

The “Safe Internet Schools Portal” policy concerns the provision of a school Internet portal.¹⁷⁴ It acts as a launch pad for the effective use of Internet in schools at both primary¹⁷⁵ and secondary levels.¹⁷⁶ It involves a filtering out of inappropriate content, e-mail and web-hosting services. The completion of the portal was scheduled for 2004.

The school Internet portal contains a collection of good educational sites that helps students and teachers to identify relevant information about curricular content. It also serves as a facility for e-mail messaging and web-hosting services. Another aim of this project was to provide web-based e-mail messaging accounts to all students and teachers and an opportunity to create their own websites (including 5Mb of web space).

In addition, the Ministry of Education has facilitated the purchase and distribution of a num-

¹⁷² <http://www.gov.mt/egovernment.asp>

¹⁷³ <http://www.emalta.gov.mt>

¹⁷⁴ <http://schoolnet.magnet.mt>

¹⁷⁵ <http://schoolnet.magnet.mt/primary>

¹⁷⁶ <http://schoolnet.magnet.mt/secondary>

ber of software titles to all state primary schools throughout the past six or seven years. A number of online theme packs for use in the classroom through a thematic approach has been created.¹⁷⁷ A regular newsletter, ComputerWise, for teachers and school administrators has also been launched.

Social studies in-house developed software, including teachers' notes and students' handouts, are currently available on school computers but only little use is made of them. It is envisaged that Malta will focus on the teaching of social Studies through ICT during the school year 2003-2004.

Limited in-house designed software for social studies already exists and is in use in some schools. However, it is envisaged that the Internet and e-mails will be extensively used during social studies lessons for collaborative projects and communication with other European countries.

Approximately 38% of primary schools have a web-site and 30% of secondary schools have one. Internet access and e-mailing have gradually been introduced into primary schools since 2001 and by the end of 2003 all school will be connected. The introduction of computers into the Maltese primary schools requires an average of four computers per classroom. The students per Internet-connected computer ratio is 8.92 PCs per 100 students in primary school and 6.3 PCs per 100 students in secondary school.

In March 2003, the Ministry of Education produced a compendium on lifelong learning opportunities in Malta. The catalogue contains 1520 educational courses provided by 150 private and public educational institutions. Some of the many courses are also offered as online learning offerings.

Training and development market

Initial vocational training

The Maltese education system has been reformed as a result of relatively low educational attainment levels and of the recognition of the need to adapt more to the needs of the labour market. Overall, there has been a shift away from early specialisation. Recent data show that there has been a marked increase in the numbers of students participating in post-compulsory education. In 2000, 65% moved in to further education compared with 56% in 1990. However, there has also been a clear shift towards academia with student numbers rising by almost 18% with a corresponding drop of 7% in those following vocational education.

After post-compulsory education, vocational training is available at two types of institution:

- *MCAST*: the Malta College of Arts, Science and Technology, established in 2000 to replace the trade schools. MCAST comprised 10 institutes by the end of 2002. It is hoped that the greater choice and flexibility of these institutions will have a positive effect on enrolments in vocational streams.
- *ITS*: the Institute for Tourism Studies

Students may also progress on to apprenticeships, which are run by the Employment Training Corporation and are available as two options:

¹⁷⁷ See <http://schoolnet.gov.mt/primarythemes/>

- *The Extended Skills Training Scheme (ESTS)* lasting 2-4 years and leading to a journeyman's certificate. In 1999/2000 there were 338 apprentices enrolled in this scheme.
- *The Technician Apprenticeship Scheme (TAS)* lasting 4 years and leading to a technician qualification. Some 260 apprentices enrolled in this scheme in 1999/2000.

In both cases, the first year of apprenticeship is school-based, before combining on-the-job and off-the-job training in a 3:2 ratio.

In 1998, Malta spent 8% of its GDP on education, but only 0.44% on VET (equivalent to € 9.8 million). All public institutions providing IVT and CVT are financed by the state. The state also funds maintenance grants for post-secondary students.

Continuing vocational training, adult training and training for the unemployed

State-funded CVT is provided mainly by the ETC and the Department for Further Studies and Adult Education (DFSAE). In 1999/2000,¹⁷⁸ there were 3,420 participants in ETC courses, while DFSAE provided training for approx. 2000 people on 2000/01. It is expected that MCAST and ITS - by their modular nature - will play a bigger role in the provision of CVT.

Although not part of the official Eurostat Continuing Vocational Training Survey in 1999, the Maltese National Statistical Office did run a very similar survey over the same period, and this survey provides the only real measure of company training. Of the 1,683 enterprises surveyed, 59% provided their employees with CVT, with the vast majority of these being managed outside of the enterprise and 274 encouraged self-learning through open distance learning. Some 28,705 employees - predominantly male (20,000) - participated in CVT courses. The average time spent on courses was relatively high, 37.2 hours overall, though this was as high as 48.3 hours for female employees. It was estimated that enterprises spent around € 8 million on CVT courses, with an average cost per participant of around € 270 (though this varied enormously across sectors from around € 100 per participant in the hotel and restaurants sector to € 950 in business services).

Training for the unemployed is delivered through the ETC, and employment policy is funded by employer and employee contributions (amounting to 10% of monthly wages). Overall, public expenditure on employment policy amounted to 0.64% of GDP in 1999, but the share devoted to active labour market policies for training and employment measures was tiny (just 0.8% of GDP). Active expenditure was therefore just € 3 million and of this € 1.25 million was spent on administration. In 1999/2000 1,552 registered unemployed persons received training. This represented just 19% of the total unemployed, though in the 16-25 age groups the share was higher at 36%.

E-learning industry

The E-learning industry in Malta is dominated by state-owned training organisations and international operators with a presence in Malta. There are activities at the universities; the example below is one of them.

¹⁷⁸ Running from October-September

The Henley distanceLearning programme (<http://www.henleymalta.com.mt/about.shtml>) allows people to pursue studies in parallel with their career by integrating the two. What learners experience at work can enhance their learning process, and vice versa. Course materials are supported by a web based eLearning environment, providing additional learning materials. This is backed up by local support in Malta from tutors and supervisors appointed by the Henley Management College. Henley Management College is one of the few schools worldwide to achieve the coveted triple accreditation from the principal quality assurance bodies in UK (AMBA), Europe (EFMD) and the USA (AACSB).

There are a number of small IT companies with non-core activities related to eLearning. They typically represent international IT and eLearning suppliers in Malta.

Powered by strategic co-operation with global companies such as Microsoft, Pearson VUE (Virtual University Enterprises), WOW (World Organisation of Webmasters) and ECDL (European Computer Driving Licence), **Computer Domain** (www.computer-domain.net) focuses on education in technologies like enterprise networking, software development, web-based technologies and desktop office applications. Computer Domain offers a catalogue of over 200 courses, each designed to be industry relevant. These courses are delivered and administered through internationally certified standards of training. Our reputation for excellence has been recognised with certification and authorisation status from major international IT vendors. Computer Domain is the exclusive representative in Malta and Libya of the EB-Learn, a comprehensive eLearning platform developed by the company E-Business Ltd. The EB-Learn solutions provide server-side and client-side components for providing interactive communication tools between students and the relevant educational institution through the Web-browser.

The public private partnership initiative, **Nucleus Training International Ltd.** (www.stcmalta.com) has been entrusted by the Office of the Prime Minister and by MITTS Ltd. with the operation and management of the Swatar Training Centre (STC), the training arm of MITTS. Nucleus' composition of a number of local IT firms, MITTS, Bank of Valletta, HSBC and KnowledgePool (a global IT training services company), and close collaboration with MITTS has enabled STC to become a centre of excellence for the delivery of professional IT training in Malta. As from 2002, students have been able to join the NCC Education's Virtual Campus. Available 24 hours a day 7 days a week the NCC Education Virtual Campus offers students the opportunity to take advantage of the latest eLearning facilities to supplement their studies.

The Netherlands

National policy and economic conditions

The Dutch Government plans to fully integrate information and communication Technologies (ICT) into education at all levels. In 2004, an estimated € 220 mill will be invested by the government in ICT at all educational levels.¹⁷⁹

Kennisnet is the Internet organisation for primary, secondary and professional education in the Netherlands. The foundation was established by the education organisations in 2001.

Kennisnet was set up by and for education, and therefore has a strong public objective. In order to meet this objective, Kennisnet creates virtual space for learning and educational processes. The added value of Kennisnet lies in its ability to offer simple and effective solutions to complex problems in ICT education. Kennisnet, in particular, offers tools and resources for achieving learning goals in innovative ways. Kennisnet's objective is therefore to realise ICT's maximum potential for education. This is done by:

- organising and facilitating a range of educational activities geared to various target groups (primary, secondary, professional and adult education)
- cooperating on building an educational market for electronic learning resources (it does not invest in the supply side but stimulates the growth of electronic media in schools);
- guaranteeing unrestricted access to educational content and services for all users.

www.kennisnet.nl offers broadband Internet access to more than 11,000 schools and cultural institutions across the country, providing connectivity to more than 2.5 million Dutch citizens.

SURF, the HE partnership organisation for network services and ICT, partly funded by the Dutch Ministry of Education, has played a major role in stimulating HE institutions to embrace VLEs and to cooperate in innovative educational projects.¹⁸⁰ From 1999 to 2002 SURF Educatie<F>, a joint funding organisation, put out an annual call for tenders supporting theme-related projects. Institutes could submit proposals for the innovation of education and 40% of the project costs were funded by SURF. In the new plans for 2003-2006¹⁸¹, the need for adequate teacher training has been stressed, and suggestions like a sabbatical year for training and development of materials are presented. However, lack of funding will probably make it difficult to realise these plans. However, the three main layers of the programme are:

- Basic network infrastructure, e.g. using advanced optical techniques, upgrade of bandwidth, elimination of bottlenecks between national backbone and local networks.
- Electronic software distribution
- Middleware, which can be used to build specific applications for education, research and support - common database systems and harmonisation of systems

The total estimated funding of the programme including private funding is valued at € 307,5 mill.

¹⁷⁹ The Dutch Challenge in Perspective, Policies on ICT in Education set side by side, Feb. 2002, Dutch Ministry of Education CW.

¹⁸⁰ see <http://www.surf.nl>

¹⁸¹ SURF strategic Plan 2003-2006, Surf Foundation, Utrecht April 2002.

Government policy initiatives such as SURF and Kennisnet are mainly targeted towards initial education. There are other programmes that support eLearning initiatives in other fields, like 'scholingsimpuls' from Senter (www.senter.nl), which is financed by the Ministry of Economic Affairs and more targeted toward initiatives in the field of training of employees. There are examples of projects designed for training of unemployed using eLearning ('digitale vakschool' = digital vocational school).

The KeBB scheme at Senter, for example, deals with new ways of exchanging knowledge between the vocational training sector and the business community. It is hoped that the exchange will lead to the development of innovative teaching aids for vocational training and adult education, or the implementation of innovative teaching aids with the involvement of companies.

ICT profile of the Netherlands

Demographics and Network Readiness Status

Holland has a population of 15.9 million most of who are multilingual and highly skilled. This has provided an excellent foundation for the Dutch government's early investment in ICT development and the Netherlands was ranked sixth in the Centre for International Development's Networked Readiness Index.¹⁸² Seventy-two per cent of Dutch households are connected to the Internet, a higher level of access than the USA. Holland also scores highest in a compound measurement of usage and impact of the Internet as an indicator of PC penetration levels. All of Holland's public administration workers are trained in ICT and 67.5% of the working population use a computer for work. Holland has one of the highest migration rates to broadband in Europe with 50.1% of the population using the Internet. The telecommunications network is highly developed with Dutch mobile penetration rates close to those of Scandinavia.

Year	2001-2002
Main telephone lines per 100	61.91
No. of cell phone subscribers per 100	67.11
No. of personal computers per 100	39.48
No. of personal computers connected to the Internet	25.77%
Internet Hosts per 1000	101.75

*Source: Center for International Development at Harvard University
Global Information Technology Report 2001-2002: Readiness for the
Networked World (Country Profiles)*

Education

Holland's commitment to enhancing eLearning was evidenced in policies put in place in 1999 aimed at creating a national Intranet connecting all schools, libraries and museums by the end of 2001. Eighty-six per cent of Holland's secondary schools and thirty-eight per cent of its

¹⁸² <http://www.cid.harvard.edu/cr/profiles.html>

primary schools are connected to the Internet with 13 pupils per PC at secondary level and 16 per PC at primary level. Holland intends to meet the EU target of ensuring 85% of 22 year-olds complete secondary education and that at least 12.5% of the adult working population is involved in lifelong learning by 2010. Expenditure on education stood at 4.9% of the GDP in 2000 and Holland has a 99% adult literacy level. Forty-nine per cent of the relevant age group is involved in tertiary education.

ICT and government policy

Holland has expressed a commitment to increasing investment in human resources in its National Action Plan for Employment 2003 and has undertaken to support training initiatives by employers designed to promote productivity, competitiveness and active ageing. On-line banking, virtual marketplaces and e-government services are all at a very high level and the Dutch government's goal in 2002 was to have 25% of its services online.

Training and development market in the Netherlands

Initial vocational training

Most upper secondary education is provided by the public sector at regional level, but since the introduction of the 1996 Adult and Vocational Education Act (WEB), private suppliers are now allowed to offer education and training related to the national qualification structure.

Senior secondary vocational education (*MBO*) is structured according to the different business sectors: technology, commerce/administration, services/healthcare and agriculture. *MBO* consists of two types of pathway:

1. *block/day-release pathway (BBL)*, comprising of mainly apprenticeship schemes where 60% of training time is spent within a company environment. This type of training has increased significantly during recent decades and has become particularly popular among women;
2. *vocational training pathway (BOL)*, is predominantly school-based learning involving more theoretical studies with generally a lower proportion of time spent in practical occupational training (though this can vary between 20% and 60%).

There are more than 500 training programmes within IVT that are mainly provided by the regional Training Centres (ROCs), large multi-sector institutes which are funded by the public sector. School-based IVT is exclusively financed with public funds through direct subsidies, whereas apprenticeship-based IVT is financed by both public and private funds.

Continuing vocational training, adult training and training for the unemployed

Continuing vocational training in the Netherlands consists of the following:

1. *Publicly-provided CVT and adult education*: which itself is made up of:
 - Part-time CVT: the same routes exist here for adults as they do in IVT (cf. above), where those wishing to change careers or who left initial education early can participate in part-time CVT. For those aged 27 and over the apprenticeship route is the most popular as they are no longer entitled to student grants.
 - Adult Education: Falls within the WEB framework, this first of all seeks to establish a link between vocational and secondary education, while also allowing personal development of adults. Adult education covers the following areas: general

secondary adult education; training directed towards general social skills; Dutch as a second language; courses for immigrants from outside of Europe; other training directed towards social autonomy.

2. *Enterprise-based continuing training*: often this is determined through collective labour agreements on a sectoral basis by employers and employees for a certain period of time (often two years). The agreements include financial arrangements to set up funds for provision of CVT, the best known of which is the Training and Development Fund. Most of the training itself is carried out by private training institutes though the ROCs play a minor role too. Additional funding is provided by individuals who enrol for courses.
3. *Training for the unemployed* is aimed at strengthening the position of disadvantaged groups in the labour market. It is funded entirely by government and amounted to €3,691 million in 2000 (0.92% of GDP) with training specific measures accounting for €325 million.

Educational sector in the Netherlands

Full-time education is compulsory in the Netherlands for all children aged five to sixteen. For 17 and 18 year-olds, part-time education is compulsory. Children begin their school careers at the age of four in primary education (BAO), special primary education (SBAO) or special education (SO). Later, most of them move on to secondary education (VO), which branches into pre-university (VWO), senior general secondary (HAVO) and pre-vocational secondary (VMBO) education. After secondary education, pupils move on to senior secondary vocational education (MBO) or higher education (HO). MBO is divided into a vocational training programme (BOL) and a block/day release programme (BBL). Higher education encompasses higher professional (HBO) and university (WO) education. Apart from these mainstream types of education, children with special needs attend learning support departments (LWOO), special secondary schools (VSO) or practical training programmes (PRO).

Adults can attend adult education courses. These are outlined in the section ‘Adult and Vocational Education: System and Funding’. During the 2000/2001 academic year nearly 167,000 (2001/2002 – 171,700) students were registered in Dutch universities, 30,000 of those being registered with the Open University.

¹⁸³⁾	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	7,690 (2001)	845 (2001)	67 (2001)
Teachers	113,600 (2001)	107,100 (2001)	61.7 (2000)
Pupils	1,652,000 (2001)	1,368,000 (2001)	3,867,000 (2001)
Pupil:PC ratio	9 (2001)	12 (2001)	9 (2001) not uni.

There are twelve universities in the Netherlands.

¹⁸³ Ministry of OCW, <http://www.minocw.nl/english/figures2003/008.html>

E-learning market size and characteristics

Market research conducted by NIDAP in 2002 of the eLearning practices of 700 companies in Holland suggests that the percentage of companies using eLearning for education and training would increase from 20% to 38% in 2003. The same survey in 2004¹⁸⁴ suggests that its primarily the ICT, public and financial sectors that use e-learning with 50%, 38% and 25% of companies using e-learning respectively. It is not surprising that particularly the larger companies are likely to be strong users of eLearning. In the Netherlands, it is particularly the transport and financial sector and, of course, the IT sectors that represent strong user communities. The take-up by sectoral training institutes (CVT) is, however, only slowly developing.

Starting from 1999, all Dutch HE institutions began introducing web-based virtual learning environments (VLEs) for a wide range of educational subjects. By far the most popular one is now Blackboard. Many institutions in the Netherlands consider it particularly user-friendly. Web-CT and Lotus Learning Space are also used, but to a lesser extent.¹⁸⁵

In terms ICT in initial education in the Netherlands, a survey¹⁸⁶ is carried out periodically covering different themes around ICT usage in schools and education.

E-learning industry

There are a number of Internet sites providing useful input on the structure and developments within the Dutch E-learning industry. The primary one is <http://www.eLearning.nl/>, which provides company profiles, events, research, news, advertisers and market research reports.

Stoas (www.stoas.nl) was established in 1981, Stoas Intermedia has been working in the field of eLearning content for more than 15 years. They develop tailor-made solutions to solve customer needs in the fields of education, training and communication. Stoas has partnerships with the a number of leading eLearning technology providers such as Saba, Docent (Click2Learn), Question-Mark, Blackboard, Syntegra and Knowledge Quest. The company claims to have developed eLearning solutions for, for instance, the following multi national companies: ABN AMRO Bank, Deloitte & Touche, Epson, Ernst & Young, Fluke, Glaxo Wellcome, Heineken, ING Bank, KLM, Or-ganon, Rabobank, Shell Learning Center, Xerox.

NETg Benelux (<http://www.netg.be/>). As a subsidiary of NETg International, headquartered in London Chiswick that in turn is part of the Thomson Corporation and Thomson Learning, NETg Benelux has been operating for over 18 years. NETg is one of the market leaders for technology-based learning solutions in Benelux. The Benelux team and local support resources serve local clients such as ABN AMRO Netherlands, Cap Gemini Ernst & Young Netherlands, Belgacom, Siemens Belgium & Luxembourg, Corus, etc. NETg Benelux has offices in Amsterdam and Leuven.

Publishing firms have become increasingly interested in the educational multimedia market as the government has been stimulating uptake in educational institutions. Nevertheless, it is still considered a small market due to the small area of exploitation (a relatively small Dutch language and culture area) and risk-aversion in many publishing firms. Publishers have equally developed an interest in the home market (edutainment). There is a tendency to translate existing foreign multimedia titles and adapt them to the Dutch market (localising).

¹⁸⁴ NIDAP E-learning rapport 2004, http://www.traininginfo.be/stat/nidap_e-learning_report_2004.php Research company Nidap, Amsterdam, Holland.

¹⁸⁵ NETHERLANDS NATIONAL REPORT ON NEW LEARNING ENVIRONMENTS – THE EUROPEAN LEARNING SPACE by Alessandra Corda, Leiden University

¹⁸⁶ <http://www.ict-onderwijsmonitor.nl/>

In the Netherlands there are some specialised multimedia publishers. The most important among them is Philips Media with educational titles and participation in a large number of multimedia publishing projects. There is also a wide range of smaller multimedia publishing firms. Some 75 suppliers provide content and services via the Kennisnet site and in total the site¹⁸⁷ has more than 200 different suppliers listed. A lot of useful material has also been supplied via Thinkquest. As of the beginning of the school year 2001-2002 over 200 web sites containing additional digital courseware will be made available through the Knowledge Net (Kennisnet).

International suppliers

The Netherlands is one of the countries with the most developed eLearning uptake in Europe both in terms of the educational and the vocational markets. Many large multinational companies have their headquarters in Holland and consequently international eLearning suppliers have established representations in the Netherlands. This is the case for technology, content and service suppliers.

Intellinex www.intellinex.com, an Ernst & Young company, helps companies harness the power of learning to execute business strategies, drive performance, and achieve growth. Blending best practices with its technology, content, and services, the company designs, builds, and operates customised learning solutions in order to help companies reduce costs, accelerate speed to profit and improve people effectiveness. Together with Océ in the Netherlands, Intellinex has designed a blended learning solution to increase speed-to-knowledge while potentially saving Océ approximately 7,000 learner days per year in the first phase of the project alone. In this initial phase, 5,000 system consultants and sales and service employees will access 32,000 hours of role and competency-based learning per year through Océ LearnLink. In Phase 2, the program will expand to other disciplines in the organisation. Learners will access over 186 hours of custom Web-based learning, available in multiple languages. Océ will also use the solution to identify and monitor skill and competency gaps and address specific learning and recruitment objectives.

Most international suppliers operate through Dutch distributors and integrators in order to overcome key obstacles in entering the market (language, knowledge of the market and key contacts, educational distribution system and policy priorities).

The Mindscape Group (www.mindscape.co.uk) is a major publisher in the international CD-ROM market. It is a multicultural and independent group with more than 10 years' experience in the multimedia industry. The company has a turnover of more than €38 million and a presence in more than 40 countries through offices and distributors. It employs excess of 150 staff and has a catalogue of 700 titles available in several languages. It is a leader in the educational (Number 2 Worldwide), lifestyle, cultural and value CD-ROM marketplace. It has expertise in the republishing market managing big brands e.g. Warner Bros, Microsoft, Electronic Arts and BBC Multimedia. The company is active in the Dutch market.

¹⁸⁷ <http://www.programmamatrix.nl/>

E-learning content suppliers

Standardised content still dominates over bespoke content in the Netherlands, although the bespoke eLearning market has developed well over the last few years. In the Netherlands 44% of surveyed eLearning providers offered their customer full service solutions including content and technology.¹⁸⁸

Examples of Dutch Suppliers of bespoke content:

Mediator Group (www.mediatorgroup.com) employs 14 staff and apart from having developed approximately 150 different eLearning relevant projects, the company provides IT courses to companies and their employees. In addition, the company has developed the development tool www.didactor.nl.

Abbatia (www.abbatia.com) is a small company developing bespoke eLearning content for companies and represents a number of international authoring and LMS tools in the Benelux market. These include the Authorware Toolbook, the Aspen LMS and the EKP LMS from Net dimensions.

NIB Software (<http://www.nib.nl/main/index.html>) is a supplier of educational software aimed at the primary and lower secondary educational sectors in the Netherlands. The company has developed more than 10 products within different topics. They operate both as stand-alone and network products.

E-learning technology suppliers

The Netherlands is one of the countries with the highest proportion of technology suppliers among its eLearning suppliers. Many companies focusing on content development are also providing an authoring tool and/or a Learning Management System.¹⁸⁹

Examples of E-learning technology suppliers in the Netherlands:

Accessium (www.accessium.nl) is a joint venture between Siemens, Netherlands and NLTree that provides technologies, services and content development within E-learning. The company has distribution agreements with Fronter in Norway on their LMS and with Trivantis on their Authoring tool LECTORA.

I-Concept (www.i-concept.nl) was established in 1997. In 1999 the company introduced the eLearning concept Studywiser.com, based on three elementary fundamentals: Accessibility and ease of use for authors and learners, cost-effective reuse and compatibility with future technologies and 3rd party vendors by dbase & XML. It is uncertain how wide the product has sold. However, there is a German distributor and the product has been translated into German, English and Spanish.

Niam-TMS (www.niam-tms.com) provides the total eLearning development solution Easy Generator Suite sold to, among others, Dixons in the Netherlands, the Dutch Army and the Ministry of Finance. The company uses the tool for bespoke developments and sells it as a development tool.

¹⁸⁸ The European E-Learning Provider Market in 2002, markets, customers, service enterprises and trends in Europe and eleven regional partial markets, 05.02.2002, HighText Verlag Graf und Treplin OHG

¹⁸⁹ The European E-Learning Provider Market in 2002, markets, customers, service enterprises and trends in Europe and eleven regional partial markets, 05.02.2002, HighText Verlag Graf und Treplin OHG

Whizzdom BV (www.whizzdom.nl) was established on the back of a co-funded European project (The Wired World) outcome. The Whizzdom Learning Management tool has been installed in 17 companies and institutions world-wide. The company has operations in the UK and Belgium apart from Holland where the majority of clients are located.

It is evident that suppliers are part of both national and international networks. In order to satisfy the needs of their customers they source content, services and technologies from within their networks. For example, Whizzdom has a network of technology, service and content suppliers that compliments its own LMS and Knowledge Management Suite.

E-learning service suppliers

Most eLearning services providers in the Netherlands are application service providers offering eLearning on tap or for some companies performance support systems.

Xaurum BV. (www.xaurum.nl) is an eLearning company that provides technology tools in the shape of IntraLearn as an ASP, hosted, company based small and large. It supplies eLearning content from Skillsoft and ElementK primarily for IT courses. The company specialises in integrating eLearning solutions on behalf of companies and organisations.

Doceo BV (www.doceo.nl) provides an ASP online learning solution where learners can access educational courses from various sources. It includes MBA courses from the Spinoza University, the NOVI Transport High school and the SDO together with the PMC Academy.

SMS (www.smsnet.nl) is Holland-based consulting firm delivering innovative products and services for the fields of knowledge management, learning, training, e-docs and eLearning solutions based on standard technologies since 1991. More specifically the company provides training and documentation support for integration of: SAP, Siebel, Peoplesoft and MS-Office.

Siennax (www.siennax.com) has a current workforce of around 55, employed at its offices in the Netherlands and Germany. Its head office is in Amstelveen in the Netherlands. Siennax holds a 100% stake in Acadoo (www.acadoo.com), the learning service provider. Acadoo (offers a total solution for the outsourcing of training policy in the field of ICT. The Acadoo service is delivered to companies like ABN AMRO Bank, Fujitsu, SNS IT Bank and Microsoft.

EXIN, the Netherlands Examination Institute for Informatics, assumed responsibility for management of the competence framework in the spring of 2001, and carries out further development in co-operation with various parties, including Acadoo.

There are also companies active in terms of integrating eLearning solutions with other systems and supporting systems implementation with eLearning support.

Dutch E-learning companies in international markets

The eLearning industry in the Netherlands is not particularly active outside of Europe or even the Netherlands itself. Even the Open University in the Netherlands has primarily focused on the Netherlands and Flemish speaking countries like Belgium and parts of South Africa. It is however, very advanced in its use of distance learning and eLearning and it can sell its courses world-wide.

It is mainly the large Dutch corporations, such as Shell, Philips, Océ, Akzo Nobel, ABN AMRO Bank and the publisher Reed Elsevier, which have established international eLearning

initiatives or products. As an example, Shell Open University claims to be providing more than 200 education and training programmes online and the management of physical training for a total of 30,000 individuals. However, the degree of development within the above companies in terms of eLearning is not always as extensive as the media suggests.

Norway

National policy and economic conditions

During the period from 2001 to 2003 the Norwegian government introduced two initiatives in order to improve the uptake and exploitation of technology based learning in schools. The first was a programme aimed at introducing ICT in the education and training system to take full advantage of the opportunities offered by ICT as a teaching and learning aid. This programme ran from 2002-2003.

A school net portal was established offering resources to primary and secondary schools and for special education. Measures have also been established to increase the ICT competence of teachers.

Since 1996 the National Learning Centre, part of the Ministry of Education and Research, has contributed to the development of digital learning content by allocating funds to producers of digital learning content suppliers. The purpose of this initiative is to stimulate the development of new learning resources that are innovative and generate experiences affecting future digital content development.

According to an opening speech by Norway's minister of education, Kristin Clement, at the ITU conference in 2003, 2004 will see a continued focus on competence development among teachers in ICT, further development of digital learning content, continued improvement of infrastructure and broadband plus further research and development work.

The four goals linked to the initiatives are:

- By 2008 the Norwegian educational system must be among the best in the world when it comes to the development of ICT within the teaching and learning
- Digital competence must play a central part in the learning at all levels
- ICT must be an integrated aid
- Norwegian schools must have infrastructure of the best quality.

ICT profile of Norway

Demographics and network readiness status

Norway's population of 4.5 million, 65% of who are aged between 16 and 65, is highly literate. There is an extremely sophisticated ICT network in place with equally high levels of computer and Internet usage amongst the population generally. Norway ranks fifth in the Centre for International Development's Networked Readiness Index for 2001-2002¹ and, although initially slow to embrace the 'knowledge economy', the Norwegian government has adopted a very pro-active approach in fostering the development of ICT in recent years.

Telecommunications infrastructure

Year	2001-2002
Main telephone lines per 100	72.90
No. of cell phone subscribers per 100	70.25
No. of personal computers per 100	49.05
No. of personal computers connected to the Internet	Figure not available
Internet Hosts per 1000	100.93

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Norway enjoys a remarkable 100% literacy rate and coupled with the existing sophisticated ICT network, this constitutes excellent preconditions for developing lifelong learning on-line.

Norway is adopting a very pro-active stance in terms of eLearning through its commitment to establishing a national learning network amongst Norwegian educational institutions, developing public/private partnerships in the uses of ICT and promoting the development of ICT skills amongst educators. Norway has a shortfall in ICT skilled workers and has identified the need to address this within its national ICT policy through instituting measures which will enable foreign specialist ICT workers to take up positions in Norway faster and with greater ease. Norwegian universities currently do not have enough ICT instructors and this has led to low numbers of graduates filtering into the workplace.

Norway spends 7.7% of its GDP on education and has 65% of the relevant age group involved in tertiary education.

ICT and Government Policy

Norway is anxious to diversify into the 'knowledge economy' as a survival tactic for the future and as an alternative to its current heavy dependence on exploiting its natural resources, particularly oil. ICT has been identified as a priority in achieving this goal, and in June 2000 Norway launched its national ICT policy, referred to as eNorway. The three main pillars of this programme were: access, knowledge and confidence.

Norway intended to increase ICT access and usage amongst the population at large through promoting the use of publicly owned computers in schools, libraries and cyber-cafes. The Government also intended to support ICT projects in the private sector and increase usage in government offices and initiatives as well as throughout Norwegian cultural affairs and environmental authorities.

Norway also launched an action plan on broadband communication in October 2000 designed to provide affordable conditions for broadband connections to all schools, libraries, hospitals and local authorities by the end of 2002 and to all households by the end of 2004.

Despite a high percentage of Norwegians utilising on-line banking facilities, there has been some hesitation within the commercial sector regarding the adoption of on-line transactions and Norway is addressing this by taking measures to increase the security of on-line transactions. At present, Norway's ICT network is under-used by the commercial sector but this looks set to change given the government's energetic moves to bring Norway to the fore as a 'knowledge economy'.

Training and development market in Norway

Initial vocational training

Vocational training and apprenticeships are fully integrated into the Norwegian education system with the vast majority of upper secondary schools offering both general studies and IVT. Responsibility for upper secondary level education rests with the 19 regional counties and the development of education and training is carried out jointly by the authorities and the social partners. Everybody aged 16-19 has the right to 3 years' upper secondary education leading either to a journeyman's certificate (in the case of vocational training) or a general studies certificate. In 2002/03, 47% of upper secondary pupils had chosen the vocational pathway. Over 98% of pupils attend schools in the public sector and have access to scholarships from the State Loan Fund. The remainder can obtain loans to pay for fees in private schools. Apprenticeship schemes are part of the upper secondary school system and last 4 years (2 years in school; 2 years at the workplace as on-the-job training).

Continuing vocational training, training for adults and training for the unemployed

The social partners have a considerable involvement in continuing training and the development of skills. For continuing vocational training organisations in both the public and private sector are responsible for determining their own skills needs and developments and sectoral wage agreements usually contain special measures to stimulate and finance continuing training. There are no special tax incentives for enterprises to invest in CVT. Unfortunately, there are no data available on to the scale of expenditure by enterprises on CVT. In addition to this, from 2001 and onwards all employees were granted the right to training leave up to a maximum of 3 years subject to certain conditions.

As a result of the Adult Education Act public funding for training is available for those who have not completed basic education.¹⁹⁰ Responsibility for education and training at the upper secondary level rests with the counties and since 1995 universities and colleges have assumed a greater role in the delivery of continuing education and training. The total budget allocated for adult training in 2003 was NOK 1,665 billion.

Individually/household training also plays an important role through adult training courses organised by the study associations. Some 54,530 courses were offered in 2001 and include those of a vocational nature. Furthermore, incentives exist for individually-funded training as higher wages may be offered in certain professions (e.g. teaching).

Distance education in Norway

Distance education is widespread in Norway. Whereas this has traditionally been based on correspondence courses, there is now a shift to multimedia programmes. There are 14 authorised dis-

¹⁹⁰ More specifically, those who have not received education and training in general studies at upper secondary level or who do not hold a journeyman's certificate.

tance education institutions, and in 1999 almost 40,000 people followed their courses. Distance education is seen as being an important source for alternative and flexible facilities to meet the need for continuing education and training. As a result, CVT courses are being provided through this route and the social partners play an important role in this development.

Training for the Unemployed

Training for the unemployed is paid for by public funding from the central government and is administered by the regional offices of the Employment Service (AETAT). Training courses are tailor-made and are purchased from both private and public sector organisations. In 2000, Norway spent €896 million on active labour market measures (0.51% of GDP) with training-specific expenditure of €154 million (0.09%).¹⁹¹

Educational sector in Norway

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	3,278	515	68
Teachers	49,717	24,551	11,981
Pupils	569,044	168,587	167,757
Pupil:PC ratio	12.6	8.9	4.0

There are 26 higher educational institutions in Norway.

E-learning market size and characteristics

The e-learning market in Norway according to a report by Infosector in September 2004 was worth some 411 mill NKR in 2003. In the same period, the 50 participating e-learning suppliers recorded a sector surplus of 32 mill NKR. There are some 100 e-learning suppliers in Norway within private educational institutions, consultancies, technology suppliers and publishers. 50 of them have less than 5% of turnover on E-learning and therefore did not take part in the study. On average e-learning revenue represented 22% of the participating fifty companies' total revenues. Compared to 2001 and 2002, the total revenue has not grown much, but the companies have turned around huge losses in these years to a significant surplus in 2003. Research from IDC suggest that the e-learning sector in Norway will grow significantly in the coming years. Growth rates of between 17 and 28% is expected.

Research¹⁹² indicates that most companies use a variety of learning modes in Norway. From 375 public and private companies with a strong bias in terms of large companies (more than 40% of the participating companies have more than 250 employees), almost half the companies use eLearning to some or a large degree (12%). Particularly the finance, transport and energy (oil related industries) sectors are heavy users of eLearning according to the study. Furthermore, the study shows that 34,7% of the respondents have focus on introducing IT systems to support the implementation of training and learning within the company.

The market for digital learning materials targeted at the educational sector is like other Scandinavian markets dominated by specialised multimedia publishers as well as publishers of book systems for the schools. There are a number of actors selling solutions directly to the

¹⁹¹ Eurostat Labour Market Policy Database, 2000. Table B.1

¹⁹² A study of HR practice in 375 Norwegian private and public companies conducted by HR Norge and Alexandria Human Resource during the period May-June 2003.

consumers both as aggregators of online courses towards the adult market and retail CD-ROM products for the children's segment.

Within the educational sector, Norway has made significant progress in terms of integrating LMS systems with administrative systems achieving relevant benefits, upper secondary schools thus use MSTAS and universities use FS.

E-learning industry

The e-learning industry in Norway stretches across a wide range of businesses, public, private partnerships as well as other types of partnerships. A number of private suppliers are offering standard eLearning courses developed within Norway as well as digital learning courses supplied by large international standard e-course suppliers. The institution that has contributed most to the development of e-learning in Norway is the NKI Distance Education (www.nettskolen.com). It has provided online education continuously since 1987 and it now has more than 400 different online courses, 6000 online students and a revenue in 2003 of 43 mill. NKR on distance education. Some suppliers have set up operations as aggregators of digital learning opportunities (cf. www.nkn.no and www.datapower.no – Datapower Learning Online), however the NKN company established in 2000 found it tough to establish a market and lost its shareholders approximately 10 mill Euro. NKN was sold to the CEO of the company in 2002.¹⁹³

NKS (www.nks.no) is a distance learning company, now a self-owned trust addressing both the vocational education system as well as the company and further education markets. It has a long history of 90 years as it was established as a correspondence school in 1914. NKS uses the learning platform of LUVIT (a Swedish LMS supplier) to administrate online learning activities and supplements online learning with offline classroom teaching and workshops.

HR Norge "E-læringsrapporten 2002"¹⁹⁴ gives an overview of e-learning suppliers in Norway. It profiles some 100 different public and private eLearning suppliers and approximately 100 central eLearning products.

Edvantage Group (www.edvantagegroup.com), a leading Scandinavian eLearning solutions provider, achieved profitability in Norway in 2003 by supplying total solutions to large companies and organisations. Total solutions include the platform and standardised content from various world-wide suppliers. The customers include Hydro, Nordea, Ericsson, DNB NOR, Siemens UK and Scandinavia and Atlas Copco. The company has offices in Norway, Sweden; Denmark, Benelux and UK.

E-learning suppliers addressing the educational sector are primarily represented by traditional Norwegian publishers such as Aschehoug, Cappelen Forlag AS as well as innovative operations such as Cyberbook A/S.

The eLearning industry in Norway is well represented in terms technology suppliers, service as well as content suppliers.

¹⁹³ Online Education and Learning Management Systems - Global E-learning in A Scandinavian Perspective" (www.studymentor.com)

¹⁹⁴ Elearning rapporten 2002 by HR Norge, September 2002.

Software Innovation (www.software-innovation.no) is a software developer in the area of CRM and document and workflow. It supports its learning activities offered to customers by introducing e-learning solutions. The implementation of systems, regulations and processes are typical drivers of e-learning development and uptake in Norway.

International suppliers

Norway is a small language area and therefore the eLearning industry focuses on collaboration with suppliers from England and the USA to exploit existing content where possible. A number of international suppliers of further education and courses are already present on the Norwegian market.

SABA (www.saba.com) is one of the world's leading providers of eLearning infrastructure. The company has extensive partnerships and alliances that can contribute to providing a substantial curriculum of learning content. Saba was chosen in 2000 to provide the infrastructure for the NKN initiative and has deployed similar solutions for some of the world's largest companies, including 3Com, Cisco Systems, Ford Motor Company, Hyundai, Red Hat and General Electric.

International suppliers of standard eLearning courses within areas such as general IT competencies or management are also active on the Norwegian market. Apart from Skillsoft, NetG and others, it also includes Universities such as Capella University. In addition, IT systems providers such as SAP, Oracle and IBM are providing eLearning solutions and resources to support the implementation and exploitation of their systems.

E-learning content suppliers

Norway has a significant eLearning content industry considering the size of the country. Below we profile just a small range of these suppliers. However, there are other operators both in the educational and the adult training markets. Some have specialised in specific industries, such as the publisher Vett Viten, and others address the broader market. The operators are all small and without the financial muscle to penetrate international markets.

Examples of Norwegian Suppliers of bespoke content:

Transform AS (www.t-l.no) claims to have worked with 50 of the largest commercial companies in Norway on creating more than 200 custom-designed learning solutions.

Boxer Technologies AS (www.boxer.no) was established in 1986 and is one of Norway's leading providers of learning solutions. The company currently employs 20 professionals, based in offices in Stavanger and Lysaker. In 2002, Boxer became part of the Reitan Group, a Scandinavian company with a turnover of DKK 26 billion and 13,000 employees.

Didac AS (www.didac.no). Didac's main focus is on eLearning, both as an independent service and in combination with traditional ways of learning. Over last few years, the company has acquired good experience in planning, developing and running successful eLearning solutions. It also supplies the LMS WebTopTrainer that is used by wight Norwegian companies.

Norsk Interaktiv (www.norskinteraktiv.no) (14 employees) was established in 1997. It participates in a joint development project together with a number youth and high schools with the aim of developing an innovative learning resources to teach English targeted at youth.

Mintra AS (www.mintra.no) was established in 1997 and has developed into an actor in the Norwegian eLearning market. The company has developed bespoke learning solutions for ConocoPhillips and Statoil.

Infopark AS (www.infopark.no) (four employees) is the course contributor in learning design and Net Pedagogy for customers of the LMS *It's:learning*, e.g. Karlstad University, Akershus Fylkeskommune and Den Norske Opera used Infopark's training program.

Mediafarm AS (www.mediafarm.no) (10 employees) was established in 1996. The company develops interactive multimedia and specialises in training and learning resources. They produce CD-ROM, Intranet, Internet and dedicated network solutions. It also markets a development tool called "enable".

Grieg Multimedia is Norway's leading manufacturer of software for language teaching. They provide educational systems and courses for primary schools, high schools, adult education centres, private consumers and the business market. They claim that their software is in use in 85% of all schools in Norway. One example of such a product can be found on the following website: www.norskkurs.no

Vett Viten Educational Learning Solutions AS (<http://vvi.vettviten.no/ELSINT/index.htm>) was established in April 2003 and has developed an online learning resource aimed at the offshore oil and gas industry in collaboration with a range of partners supplying the relevant knowledge and pedagogical skills.

E-learning technology suppliers

There are also several technology suppliers on the market. One company Glasspaper has focused on introducing a US based authoring tool in the Scandinavian market where as others like Fronter and Cyberbook, IT solutions and the open source developer Kark has focused on Learning Management. Fronter is by far the leader among the higher educational institutions and colleges in Norway and has made inroads into international markets.

Examples of eLearning technology suppliers

Fronter A/S (www.fronter.com) Fronter has an 85% market share within the Norwegian higher education sector. The total number of users at these educational institutions is approx. 74,000. In addition, quite a few organisations, companies, primary and secondary schools are using the platforms of Fronter. Fronter is also represented in Sweden, Denmark, Finland, Holland and the UK where the company is experiencing significant growth. Fronter employs 22 people in the core company, and more than 50 people make their living from Fronter and affiliated products.

CyberBook (www.cyberbook.no) is a Norwegian data publisher that publishes multimedia based pedagogical programmes. On top of its own products, it also distributes educational software from other suppliers and publishers. Cyberbook primarily addresses the school and home markets. In addition, Cyberbook runs the platform www.kunnskap.no in collaboration with local authorities and other suppliers.

IT Solutions (www.itsolutions.no) supplies the LMS aimed at the schools and university market called *it's:learning*. The company is also active in Sweden.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy on eLearning projects. This may cover strategies for eLearning, development planning that cover e-learning, pedagogical and technical advice in relation to eLearning design and implementa-

tion, consultancy around acquisition of eLearning systems, evaluations and measurement of results. A large number of the operators mentioned before also offer eLearning services and are therefore also active in this segment. Particularly Edvantage has built their business model on consultancy to businesses and organisations around competence development and learning design.

Classware AS (www.classware.no) has developed and provides the online learning facility www.Nettgymnaset.no to schools at upper secondary level in Norway.

Edvantage Group supplies total learning solutions for companies in the UK, Norway and Sweden. (cf. above)

NKI Distance Education (www.nki.no) was established in Norway in 1959. The institution has had a steady growth and development, with particular emphasis on R&D. NKI is today one of the leading non-governmental educational institutions in Europe. It offers approximately 60 study programmes and more than 400 courses at secondary and undergraduate level, as well as specialised courses and hobby courses. Each year it has approximately 20,000 active students, 6000 of which study online. NKI is recognised by the Ministry of Education and receives government grant towards operating costs.

Norwegian E-learning companies in international markets

Unfortunately, the useful experiences with eLearning are not leading to much in the way of significant exports to Europe and other continents. One company, Fronter, has had success internationally, and have significant exports of its LMS to Denmark, Sweden, Holland and the UK. The LMS has been translated into 17 languages including Arabic, Chinese and Russian. So far out of almost 800,000 licences more than half have been sold outside Norway. Fronter's largest international contract is with the NCSL (National College for School Leadership) in the UK for a learning solution for up to 250,000 school leaders.¹⁹⁵¹⁹⁶

¹⁹⁵ Computerworld Norge article "Norge best på elektronisk opplæring". By Ahlert Hysing 02.01.2004

¹⁹⁶ <http://www.fronter.no/no/>

Poland

National policy and economic conditions

ePoland - The Action Plan for the Information Society Development in Poland for the years 2001-2006, outlines the main aims of the ICT policy in the educational sector. These are 1) to introduce ICT in education in all schools, 2) to prepare all teachers to become animators of ICT in their schools and to use ICT for pedagogical purposes, and 3) to assure the global access to rich educational content for all students.¹⁹⁷

The Ministry of National Education and Sport has established a programme oriented towards schools in poor rural regions, supporting the introduction of ICT for learning purposes, aiming at the digital inclusion of students from these regions. The programme is part of the Rural Development Programme, and consists of teacher training, purchase of educational software and the establishment of an Internet Based Educational Resource Center.

An example of a Public Private Partnership is an agreement between The Ministry of National Education and Sport and Intel on teacher training called “Intel Teach to the Future” programme. More than 50,000 teachers have been trained in the programme.

In 1999, the Interkl@sa initiative was launched in Poland. The Interkl@sa Programme is a nation-wide cooperation network of thousands of schools, teachers, pupils, educational NGOs. It is a non-governmental programme but it cooperates closely with the Ministry of National Education and is supported by private companies, especially from the IT sector. The aim of Interkl@sa was to equip all secondary schools by the end of 2004 and all Polish primary schools by the end of 2007 with computer equipment and ICT facilities with Internet access.

In Poland local government is responsible for financing schools. However, local funds spent on ICT is limited, and there is a large gap in ICT expenditures between poor and rich local governments. Generally, the government has been very little engaged in the provision of computers to schools.¹⁹⁸

The access to the Internet is very poor as only 8.6 percent of the citizens in Poland had access in 2000. However, this percentage is expected to reach 15.2 in 2005. The cost of using the Internet is very high in Poland due to the high prices of telecommunication services.

Since December 2002, you can find on the Polish Educational Portal Interkl@sa www.interklasa.pl the content of the portal Eduseek, www.eduseek.interklasa.pl and since April 2002 learners can also find the second portal 6plus on the Interkl@sa Internet platform <http://www.6plus.interklasa.pl/>. With the content of Eduseek, Interkl@sa became the biggest non-commercial educational Internet portal in Poland.

¹⁹⁷ http://insight.eun.org/eun/en/Insight_Policy/sub_area.cfm?sa=2326

¹⁹⁸ Piotr Rypson. „eLearning in Poland 2003. An overview.” Workshop on the Challenges and Opportunities of Vocational Training and e-Learning in EU Accession Countries, Budapest 12. November, 2003. http://www.conference.mimoza.hu/pres/piotr_rypson.pps

A few more educational portals targeted at various groups of people have appeared on the Polish market. Interkl@sa does not compete with what it offers, but it provides personalised access to their content, as well as to other online and off-line information and software sources.

ICT profile of Poland

Demographics and networked readiness status

Poland has a population of 38.6 million and comes 35th in the Centre for International Development's Networked Readiness Index.¹ Twenty-one per cent of Polish households are connected to the Internet, about three per cent of which are broadband connections. Roughly twenty-three per cent of paid employees had access to the Internet at work in 2002 as against an EU average of thirty-nine per cent. Internet usage is increasing in Poland in all age categories and in November 2000 35.8% of the population felt that using a PC in daily life was important. The country scores marginally above the EU average for positive attitude to e-government and about eighteen per cent of Internet users bought online in 2002. Telephone connection charges are amongst the highest in Europe although there are strong indications that charges will be reduced in the near future. The cell phone market is growing fast and is competitive. Estimates for 2002 put the total number of cell phone users at 11.5 million and projections are that this will increase to 13.2 million by the end of 2003. E-commerce is expected to grow rapidly over the next two years.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	28.23
No. of cell phone subscribers per 100	17.40
No. of personal computers per 100	6.89
No. of personal computers connected to the Internet	12.73%
Internet Hosts per 1000	8.76

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Poland has a need to produce its own ICT workforce and despite a high general level of education, there were no specialist courses on Internet skills being taught at any Polish university in 2000. Furthermore, at that time only 16 per cent of primary or secondary schools were connected. In 2002, Poland had the lowest level of digital literacy in the population as a whole when compared with the US, the EU and Switzerland. Levels are higher across the board for 16-24 year olds and Poland's position improved within this category to third last after Greece and France. The gender gap is wide too with 49% of women attaining digital literacy when compared with men. However, between 1997 and 2002, there was a sharp reduction in the digital divide in Poland which was particularly marked between 1997 and 2000. Adult literacy stands at a high 99.7% although only 24% of the relevant age group is involved in tertiary education. Poland spends 5.4% of its GDP on education.

ICT and government policy

Poland has been preparing for accession to the EU since 1992, and one of the main planks of its ICT policy formed in preparation for admission was the liberalisation of the telecommunications industry which was facilitated by the Telecommunications Act passed in 2000. Local telecommunications services were completely liberalised in January 2002 and have become increasingly competitive. The Polish government is anxious to implement e-government as widely as possible and has adopted 'ePoland', an action plan designed to develop IT in Poland between 2001 and 2006. The policy focuses on measures designed to promote the diffusion of technology in education, government, business, and within Polish households.

Educational sector in Poland

Reforms of the Polish education system have been undertaken at all levels in recent years. Compulsory primary education starts at the age of seven. Six-year old children have the right to complete a year of preparation for primary education, which 97.7 percent took advantage of in 2002/2003. It is planned to make this preparation year compulsory from September 2004.

Compulsory school is divided in two phases, which are six years of primary school (szkola podstawowa) and three years of lower secondary school (gimnazjum). In Poland there are various types of upper secondary and post-secondary education for the 16 to 21 year olds. There are different types of education institutions available, among others general upper secondary school, specialised upper secondary school, technical secondary school, supplementary general secondary school and post-secondary school. Higher education comprises both non-university and university type institutions, the most important being traditional universities, technological universities, academies, teacher training colleges and non-university higher vocational schools.¹⁹⁹

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	20,747	9,986	-
Teachers	349,165	130,703	79,080
Pupils	4,766,088	1,809,054	1,781,458
Pupil:PC ratio	-	-	-

By 2002, ICT workrooms have appeared in all lower secondary schools in Poland. The ratio of students per computer connected was in average 42: 60 in primary school, 33 in lower secondary school, and 30 in upper secondary school.

E-learning market size and characteristics

The Polish IT market is still relatively small. In 2002, it was valued at about \$4 billion. A survey of local and international vendors and potential sellers of eLearning technologies, eLearning sales in Poland was conducted in 2002 by the Warsaw-based research firm IDC. At the time the Polish eLearning market was estimated to be worth less than \$300 000 in 2001 and expected to be worth about \$1 million in 2002.

¹⁹⁹ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

In Poland, corporate training is almost only utilised by larger companies that have western shareholders or are owned by transnational corporations.²⁰⁰ However, private Polish companies have to a greater extent started to act as pioneers on the eLearning market in Poland and produce custom made content.

Government involvement in the ICT development within the country has been very limited, and the knowledge of new teaching technologies and methodologies within the Polish administration and local governments is low. So far, there is no permanent system for distance education in Poland. Distance teaching is mainly performed by those who work in the traditional educational system. These teachers primarily use distance teaching methods in their didactic work.²⁰¹ However, universities have started implementing eLearning on a growing scale and electronic education is taking roots in schools. Universities such as Warsaw Technical University, University of Warsaw, Gdansk Technical University, Świętokrzyski Technical University and the University of Mining and Metallurgy now offer bachelor programmes entirely taught on the Internet. Also, a group of Polish technical universities have created the so called “Polish Virtual University” that will offer bachelor and master courses prepared and administered jointly by these entities.

E-learning industry

The eLearning industry in Poland is mainly dominated by private companies, who have started acting as agents of change. The development has mainly taken place in telecommunication companies, banks and financial institutions. Before 2002 the focus was on content developed by large foreign companies and made available to Polish employees of these companies. Now Polish companies increasingly also have started producing custom made content.

There exists no formal overview of eLearning suppliers in Poland, but the number of commercial suppliers is not very large. One of the companies, Mindworx, has established an eLearning discussion forum that seems to be fairly frequently used by professionals in the market. <http://forum.e-dukacja.com.pl/>

e-learning.pl (www.e-learning.pl) is a blended and eLearning solutions provider. The main areas of expertise are strategic consulting in e-Learning, planning and implementing e-Learning strategies within organisations, delivering eLearning training courses and fully customised e-courses. The Company also specialises in the implementation of LMS platforms within organisations including SkillSoft's SkillPort, IBM, Hewlett Packard and Intralearn.

The universities are the most important providers of eLearning systems. The universities seem to make use of content sold by local as well as foreign companies. For example, the Polish Virtual University cooperates with domestic companies such as TVP SA, IBM Poland, Lotus Poland, Young Digital Poland, WiedzaNet Co., Skalczyński Nagrodzki Consulting, and foreign companies such as Siebel Systems, R5 Vision, and WebCT in providing eLearning solutions.²⁰²

²⁰⁰ http://www.zpsb.szczecin.pl/Poland/elearning_english.htm

²⁰¹ http://mission.pu.acad.bg/en/partn_odl_in_pl.html

²⁰² [http://www.puw.pl/english/art.html?akcja=english&P\[aid\]=197](http://www.puw.pl/english/art.html?akcja=english&P[aid]=197)

International suppliers

Although Polish companies now play a more important role in the Polish eLearning market, international suppliers are still the dominant market players when it comes to corporate training needs.

PrimeLearning (www.primelearning.com) sells content on a wide range of areas such as project management, communications, diversity awareness, negotiation, customer care, team building, marketing and personal effectiveness. In Poland, the company has partnered with Mindworx www.mindworx.pl, a leading Polish company in the market.

The companies often partner with local Polish companies to distribute the products in the market and therefore only few have set up a representation in the country. However, companies such as IBM, Sun Microsystems and Lotus have set up a representation in Poland.

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies that are interested in using bespoke eLearning courses. There are not a large number of Polish suppliers, as the market is not very big. A few companies use standard eLearning content from large foreign companies and modify it to meet local needs.

Mindworx (www.mindworx.pl) is a Polish training and consulting company, the leader in eLearning solutions for corporate customers in Poland has created staff training courses for both the private and the public sector in and outside Poland. Mindworx also sells content developed by large foreign companies such as PrimeLearning, Harvard Business School Publishing and ReadyGo, but also localize some of the products developed by these companies. Among the customers are BISE Bank, Centra – Excide Europe, General Motors, Henkel, Kodak, Kostrzyn Paper, PKO BP, The Polish Stock Exchange, Polkomtel, The Post Office Bank, Procter & Gamble, Polish Telecom and Unilever.

Computerland (www.computerland.pl). According to the prestigious TOP 200 report issued by IDG publishing house, ComputerLand ranks among the leading Polish IT companies. The company operates in the sectors banking and finance, health care, industry, telecommunications, and public utilities. It is one of the leading suppliers of bespoke learning content in Poland using the Lotus LearningSpace platform, and is the partner of international companies such as Hewlett-Packard, IBM, Microsoft, Oracle, Siemens, Sun Microsystems, and SAP.

E-learning technology suppliers

There are a few companies within the Polish eLearning industry supplying tools for managing eLearning content and learning activities as well as tools for authoring learning modules. However, in most cases large foreign companies supply the eLearning technology utilised in the Polish market.

Young Digital Poland (www.ydp.com.pl) The company has operated in the interactive software market since 1990, primarily as a developer and publisher of interactive educational software packages and e-Learning technologies. Young Digital Poland has launched the eLearning platform, Leo.

The company's flagship product is "EuroPlus+ REWARD", which is an interactive language learning solution sold in most of Europe. Young Digital Poland also offers development of "on demand eLearning projects". Young Digital Poland is partly owned by the Nordic media group Sanoma

WSOY.

SGH has created its own platform for e-learning. It has been built and developed with the use of open source (PHP scripts and database MySQL, programming language XML). The platform has 5 000 unique users. There are over 60 courses with 300 classes in [e-sgh.pl platform](http://e-sgh.pl). They include over 5 000 slides and over 1 000 interactive tests and exercises. The platform is marketed through the e-mentor www.e-mentor.edu.pl newsletter and by the University centre in Warsaw www.cren.pl.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. This may cover strategies for eLearning, pedagogical and technical advice in relation to eLearning design and implementation, etc.

In the education sector The Polish Virtual University offers advice to other Universities and Colleges.

The Polish Virtual University ([www.puw.pl/english/art.html?akcja=english&P\[aid\]=192](http://www.puw.pl/english/art.html?akcja=english&P[aid]=192)) includes a group of Polish technical universities, and offers online bachelor and master courses. However, the university offers to share with other universities and colleges its experience in designing and conducting on-line study programmes and courses. Among the university's offers are methodological counselling on designing on-line courses and blended learning.

Polish E-learning companies in international markets

Only very few Polish E-learning companies are active in international markets. Young Digital Poland's product "EuroPlus+ REWARD" for learning English is sold all over Europe. Also, the company has developed a large series of electronic textbooks covering the majority of school subjects at primary and secondary school level. The series is currently published in a number of languages, including English, Dutch, Chinese, Russian, Czech, and Polish.

Mindworx has conducted training programs for international companies, including, General Motors, Kodak, Procter & Gamble, and Unilever.

Portugal

National policy and economic conditions

A co-ordination group established by the Ministry of Education in August 2000 was made responsible for initiatives concerned with ICT in education and the preparation of a national action plan. Three further strategies receive support under Prodep III, the funding programme for the development of education in Portugal, as follows²⁰³:

- The installation of school computer facilities and networks;
- The development of multimedia educational content;
- Teacher training.

The Ministry of Education launched the Programme Nónio XXI Century to promote the integration and use of ICT in schools in 1997. This programme created a network of ICT Competence Centres to support school projects.

A re-launch of the Nónio programme is foreseen (2003-2006) to broaden the ICT Competence Centres network to support all school groups in the country. The main key areas which are retained from the previous programme, regard ICT integration in schools aiming at the quality of learning and are development of educational multimedia content and Euro-pean/international co-operation. A new impetus is sought concerning the promotion of virtual learning environments in the school groups (a new policy for the school management system in Portugal).²⁰⁴

The Information Society Action plan by the Council of Ministers has cast off the following projects: POSI (2000-2006), Operational Programme for the Information Society has the goals of developing ICT competencies (certification of basic competencies for primary schools and compulsory education; and advanced training). POEFDS (2000-2006), operational programme for employment, training and social development, has the strategic objectives of fostering qualified training and transition for active life, lifelong learning, modernising Civil Service (ICT training for civil servants) and fostering effectiveness and equity of employment and training policies.²⁰⁵

ICT profile of Portugal

Demographics and network readiness status

Portugal has a population of 10 million and ranks 27th in the Centre for International Development's index.¹ The country has made huge strides in the past eight or nine years in ICT development over a wide range of areas, particularly in eLearning. Although Internet use and ownership of computers is still low, there is a high degree of Internet penetration. Use of mobile phones has mushroomed in recent years with 95% growth in this area between 1995 and 1999. The telecommunications service was liberalised in 2000 and is still dominated by the former state owned Portugal Telecom that controls nearly all fixed lines. Local call costs re-

²⁰³ http://www.elearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=11&doclng=1&p1=1&p4=1

²⁰⁴ EUN: "Insight - knowledge base for new technology and education: Portugal"

http://insight.eun.org/eun.org2/eun/en/Insight_Policy/sub_area.cfm?sa=2326

²⁰⁵ EUN: "Insight - knowledge base for new technology and education: Portugal"

http://insight.eun.org/eun.org2/eun/en/Insight_Policy/sub_area.cfm?sa=2326

main high and this is a factor in inhibiting more widespread use of the Internet, although a variety of government directives and incentives are being employed to promote and extend use. Portugal has one of the highest migration rates to broadband or a faster connection than dial-up, possibly encouraged by free Internet access and a flat rate for Internet calls. E-commerce is at a low level but is expanding and the Government has undertaken to open up many of its services electronically to broaden and encourage ICT currency within Portugal.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	43.04
No. of cell phone subscribers per 100	66.51
No. of personal computers per 100	10.48
No. of personal computers connected to the Internet	5.92%
Internet Hosts per 1000	6.20

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Portugal, with an adult literacy rate of 92.2%, has one of the lowest rates of digital literacy in the EU and is still below the EU average when the analysis is restricted to the under 25's. However, the 'digital divide' in Portugal narrowed significantly between 1997 and 2002 despite their being a marked gender gap. Only 49% of women are digitally literate in Portugal compared to men. Access to the Internet at work is at a low level with only 22% of SME's connected in 2000 and 30.7% of the working population using a computer for work. The percentage of the Portuguese workforce using eLearning stands at 8% as opposed to an EU average of 15%. Portuguese enterprises have been slow to provide their employees with work related training courses, one of the strongest indicators of likely demand for eLearning tools. The provision of ICT within schools looks excellent on the surface with 100% of secondary schools connected to the Internet in 2000 and the 42% of primary schools that were connected by then, also targeted to hit the 100% level by December 2001. However, with 65 secondary school pupils per computer, the benefits seem unlikely to have had a big impact. Nevertheless, Portugal has made a lot of progress in networked learning and the Science, Technology and Society Network connects universities, research institutes, non-governmental organisations, museums, schools and libraries. Portugal spends 5.7% of its GDP on education and has 45% of the relevant age group involved in tertiary education.

ICT and government policy

The Portuguese government is focusing its efforts to promote the widespread adoption of ICTs on improving its own on-line services and facilities. The Portuguese government approved the Information Society Action Plan and the e-Government Action Plan in June 2003 along with three other core programmes on broadband, e-procurement and Participation of Citizens with Special Needs in the Information Society. All of these initiatives are intended to act as guidelines for an ICT development strategy yet to be launched. An 'Information and

Knowledge Society Unit (UMIC)' was created by central government in November 2002 to orchestrate the national Information Society strategy. The government is anxious to promote the general utilisation of the Internet and to make this accessible to all sectors of society. To this end, the government is offering tax incentives for hardware and software purchases and is working on a public Internet access programme, underscored by ongoing work on establishing a comprehensive e-government system.

Training and development market in Portugal

Initial vocational training

IVT in the educational system is largely comprised of technological courses and vocational education. Technological courses are designed mainly to prepare individuals for working life, where the standard is equivalent to either year 9 (final year of compulsory schooling) or year 12 (final year of secondary education). Vocational education confers a level 2 or 3 vocational qualification and the equivalent of school year 9 and year 12 respectively.

Technological Specialisation Courses (TSC) are closely linked to the educational system, are post-secondary education non-tertiary training schemes, which are equivalent to a Level 4 vocational education. The nature of the course aims to support people in transition from education to employment, practice periods, involving work experience, either during or after completion of technological courses or higher education. They are available at educational establishments, vocational training centres, accredited training providers and technical colleges.

A key component of IVT is apprenticeship training and it confers a Level 1, 2, 3 and 4 vocational certification and a formal education equivalence of year 6, 9 and 12. In 2001, approximately 104 million Euros were invested in the system. In addition to apprenticeship training, IVT with vocational certification and school equivalence is offered, which in 2001 grew to nearly 140 million Euros and where 21 000 trainees were involved.

School-based IVT is mostly financed by the Ministry of Education budget and the ESF. The cost of technological courses falls within education budget expenditure, while vocational courses are co-financed: 57.5% from the ESF and the remainder either from the financed training provider's budget (when it is a public sector or Ministry of Education organisation), or from the Social Security Budget (SSB) (when it is a private sector training provider). Technological Specialisation Courses (TSC) are 100% publicly financed: 75% from the ESF and the rest from the financed organisation's own budget (when a public sector provider) and by the SSB when it is private. Total investment in IVT in 2001 was approximately €170 million.

Continual vocational training

As in the case of IVT, public funding of the development of CVT is largely funded by the ESF. Provision of CVT tends to be through tailor-made programmes. In 2001, over €193 million were invested in CVT initiatives, 63.5% met by the ESF.

Only a fraction of CVT to develop workforce skills is carried out by enterprises. According to findings of the Vocational Training Courses Survey²⁰⁶, the percentage of firms delivering training was 13.5% in 2000, up from 10.7% in 1997.

Training for the unemployed

Training for unemployed people and other special target groups is subject to specific regulations covering: the long-term unemployed, people with disabilities, ethnic minorities, offenders and ex-offenders, substance users – all those at risk of social exclusion. Interventions in this area are designed to enhance employability by facilitating their integration in society and the labour market. Training is either undertaken within the formal educational system or within the labour market training structure.

In 2001, the amount invested in initiatives of this kind was in the region of €350 million, 59% by the ESF. In relation to total investment, in 2001, the weight of training for the unemployed and disadvantaged groups in total co-financed training activity was 37%, in comparison with 42.5% for initial training and 20.5% for CVT.²⁰⁷

Educational sector in Portugal

The Ensino Básico (Basic education) lasts from the age of 6-15 and is compulsory in Portugal. It is divided into three cycles from 6-10, 10-12 and 12-15 years of age. At the age of 15 the pupils may enter the upper secondary schools which are divided into four different schools depending on the level of technical and literary interest. State-run educational education is free of charge. The higher education in Portugal is made up of universities and polytechnic education and is provided by public, private and co-operative institutions.²⁰⁸ Different actors share responsibilities of ICT integration in schools. At national, regional and local level: the Ministry of Education has still a centralised system of responsibilities, but delegation of management and pedagogical competencies for lower and upper secondary schools (grades 5-11) are under the responsibility of the Regional Education Directorates – namely management of buildings, equipment, and teachers' mobility. The Regional Directorates are responsible for the distribution of computers and other peripherals to all schools, with the aim of reaching national and European ratio pupils per computer.

Municipalities have the responsibility for primary schools (grades 1-4), namely infrastructure (buildings, equipment, etc.), local transportation of pupils (for those living far from their schools), social support (meals).

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools ²⁰⁹	11.857	1.352	23
Teachers	101.205	39.220	
Pupils	1.084.696	290.945	225.325
Pupil:PC ratio ²¹⁰	26,3	17,5	6,5

²⁰⁶ Conducted by the DETEFP, MSST among enterprises with 10 or more employees.

²⁰⁷ Figures from LMP 2000 – training for the unemployed amounted to €292 million in 2000 (0.25% of GDP) with training specific measures accounting for €162 million

²⁰⁸ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

²⁰⁹ 2001: Eurydice: “The Education System in Portugal (2001/2002)”:

<http://www.eurydice.org/Eurybase/Application/frameset.asp?country=PT&language=EN>

²¹⁰ 2001: http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/index_en.htm

Centralised curricula permit ICT integration. In primary and lower secondary schools, the curriculum guidelines for the integration of ICT have an interdisciplinary approach. In upper secondary schools, each discipline has pedagogical suggestions to use ICT, and there are ICT-based vocational courses (technological courses). An ICT discipline (with an extensive technical curriculum) will be established in 2004-2005 for grades 9-10 to guarantee that no student leaves the compulsory school system without ICT skills. ADSL seems a desirable technology for schools, in order to overcome the limitations of the existent ISDN connections to the Internet.

Virtual learning environments (open source, freeware or licensed platforms) are the next innovations to be spread among schools. Dissemination of laptops and wireless networks, where advisable, bring flexibility to some pedagogical contexts.²¹¹ There are 23 universities in Portugal and additionally a number of polytechnic institutions, the latter though of non-university status. The ICT is more common in higher level education than in lower level education.

E-learning market size and characteristics

The potential eLearning market in Portugal is considered being very high compared with the supply. In 2002, only 20% of all training initiatives included eLearning, hence this new training form is slowly integrated into the Portuguese training market. There are several reasons for this probably including the high illiteracy rate – namely digital and interpretative illiteracy, functional illiteracy, the low investment capacity of the Portuguese business fabric, poorly structured and implemented distance training projects, low standard contents and widespread scepticism about the real merits of eLearning.²¹² There is a considerable need for innovation and modernisation of vocational training systems. The market consists of more than two million trainees and public spending alone is 8,5 million Euro.

Research²¹³ indicates that the major part, that is 77%, of potential customers of eLearning products want to implement eLearning on a medium term. Only 5% estimate that they will implement it on a short term. It is interesting to know that the prospective for eLearning varies according to being in a public or a private sector. Apparently, a great majority of private companies expect to implement eLearning on a medium term while more public organisations expect to implement eLearning in both short and long term. Internet-based training is mainly a common feature in enterprises having more than 500 employees. The baking sector is mentioned to be a sector driving eLearning forward in the future.²¹⁴

The Unit Mission, Innovation and Knowledge, promotes programmes that aim at the collaboration of institutions and private sector. POSI finances projects that foster technological research for industrial purposes. In the scope of some European initiatives involving the Ministry of Education, some degree of public-private partnership or sponsorship has been devel-

²¹¹ EUN: "Insight - knowledge base for new technology and education: Portugal"

http://insight.eun.org/eun.org2/eun/en/Insight_Policy/sub_area.cfm?sa=2326

²¹² Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" :

http://www.nettskolen.com/in_english/webedusite/downloads.html

²¹³ CTE 2003: S2Net: <http://www.europace.org/s2net/docs/wp2/situation%20portugal.pdf>

²¹⁴ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" :

http://www.nettskolen.com/in_english/webedusite/downloads.html

oped with school publishers, software and content companies (e.g. in eSchola, Netd@ys, etc.).²¹⁵

Portugal's universities are still anchored in classroom based teaching models and are not yet the active players on the market they could be with regards to the major potentials they would open for. They have though started introducing distance learning activities complementing or substituting traditional teaching.²¹⁶

E-learning industry

The Portuguese eLearning industry is still on an early stage not yet exploiting all potential in Portugal²¹⁷. There are only few players in the Portuguese market compared with other European countries. There is, however, players addressing different kinds of needs in the eLearning market. 60% of the Portuguese training providers offer eLearning courses.²¹⁸ Even though the industry is considered embryonic, there is a significant number of private sector training operators providing distance education and training courses, based on early eLearning models and inspired by results of correspondent course providers. It is estimated that this development will continue in the future.²¹⁹

The Portuguese eLearning industry includes both companies addressing the educational sector but also the corporate sector. Furthermore, the companies cover different areas of eLearning products ranging from eLearning content, Learning Management and eLearning services. They range from different language training and learning tools in relation to formal education to private sector organisation optimising and the like.

AcademiaGlobal (www.academiaglobal.pt) is one of the major players in the Portuguese market and creates and implements eLearning products in companies for all educational purposes. The company has worked with both private clients like Banco Espirito Santo and TradeCom.pt, universities like Instituto Superior Tecnico and Indeg Business School ISCTE and public organisations like Ministério do Equipamento Social.

There exists no complete overview of the Portuguese eLearning industry. The eLearning suppliers addressing the educational sector is primarily represented by companies having traditional or newer close relations with the educational sector, like publishers.

International suppliers

Being a relatively weak market with a relatively weak industry within the e-Learning sector, Portugal is exposed to several international eLearning suppliers including both European and US suppliers. As a matter of fact, the national industry is exposed to such an extent that it

²¹⁵ EUN: "Insight - knowledge base for new technology and education: Portugal"

http://insight.eun.org/eun/en/Insight_Policy/sub_area.cfm?sa=2326

²¹⁶ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" :

http://www.nettskolen.com/in_english/webedusite/downloads.html

²¹⁷ CTE 2003: S2Net: <http://www.europace.org/s2net/docs/wp2/situation%20portugal.pdf>

²¹⁸ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" :

http://www.nettskolen.com/in_english/webedusite/downloads.html

²¹⁹ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" :

http://www.nettskolen.com/in_english/webedusite/downloads.html

must recognise that it has to follow international standards and practises instead of developing Portuguese customs within this area.²²⁰

The foreign presence on the international market implies several aspects. The Internet has made it possible for the eLearning industry to promote, sell and distribute eLearning products online without even establishing offices in Portugal.

digital publishing (www.digitalpublishing.de) is one of the foreign companies accessing the Portuguese market only by using the internet. Producing language learning software the company is situated in Germany servicing the Southern European countries by their homepage and e-mail.

SAP (www.sap.com/uk) is a major international corporation with offices in more than 50 countries. Having established themselves with an office in Portugal, SAP supplies the Portuguese market with both content, LMS and service.

E-learning content suppliers

A category of eLearning suppliers are those specialised in developing eLearning content and solutions for other companies and companies that are interested in bespoke eLearning solutions. These companies provide training modules such as marketing courses, language courses, etc., including custom-made courses, platforms and standard products in system development.

Only comparatively few technology-based Portuguese companies have commenced creating tailor-made global solutions. Those who have designed solutions from scratch are the ones that have achieved the best results so far.²²¹

Consequently, the state has intervened by creating several public-private partnerships. PRO-DEP, through the Nónio Programme and other central departments of the Ministry of Education, finances the development of educational software and web content. There is a long tradition in awarding educational software by the Ministry of Education. Competitions and calls for proposals have been periodically taking place, and since 1997 the trend has evolved towards web content. POC and POSI also finance multimedia content. At the Ministry of Education, the Nónio Programme has been the main contributor for the development of content. In the Ministry of Culture, it is the Institute of Cinema, Audio-visual and Multimedia, that has a specific measure to promote multimedia content. The Ministry of Science and Higher Education, through the Foundation for Science and Technology, manages the structural funds of POSI and POCTI, and finances also multimedia content.²²²

²²⁰ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" : http://www.nettskolen.com/in_english/webedusite/downloads.html

²²¹ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" : http://www.nettskolen.com/in_english/webedusite/downloads.html

²²² EUN: "Insight - knowledge base for new technology and education: Portugal" http://insight.eun.org/eun/en/Insight_Policy/sub_area.cfm?sa=2326

Examples of Portuguese Suppliers of bespoke content:

Rumos (www.rumos.pt) (60 employees) is currently the leading company in supplying training, e-training and technical certification services to all IT professionals in Portugal. Rumos is a Certified Training Centre in Portugal and is education partner of Microsoft, Cisco, Certified Internet Webmaster, Macromedia, Autodesk, Checkpoint and more.

Autor (www.autor.pt) develops interactive multimedia solutions for what platform a company might have. With more than 80 clients, such as Universal Music, Telecel Online, Oni Solutions, Aerocondor and AcademiaGlobo, the company is a major player in Portugal.

E-learning technology suppliers

The eLearning industry in Portugal is as weak within technology as within content. This means that companies developing tools for managing eLearning content and eLearning activities (Learning Management Systems) and tools for authoring learning systems are comparatively scarce, though present on the market. The emerging industry is therefore urged to create products that are on the same time more global but still customised in order to keep up with the suppliers on the international market.²²³ There are a few national companies supplying the Portuguese market with Learning Management Systems and the like in Portuguese.

Examples of Portuguese E-learning technology suppliers:

Evolui.com (www.evolui.com) as one of the first LMS companies in Portugal (the old company was called Prodigio) the company has developed a site today with more than 100 courses online that also addresses the home/consumer market. It counts over 9000 registered users and promotes 45 pay courses and 12 free cost courses. Students may choose between group-based classes with counselling trainers or individual classes without counselling.

Formare (www.formare.pt) is owned by PT Inovação and has developed a Portuguese Learning Management System and offers global e-Learning solutions. The company has worked with Universidade de Aveiro, Portucel, Centro Naval de Ensino a Distância and others.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. There are only few of these in Portugal offering advice and consultancy in connection with eLearning projects. There are companies aiding with eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. There are companies that combine both the consultancy enterprise with the development and distribution of eLearning content or technology.

AcademiaGlobal.com www.academiaglobal.com was created in 2000, specialising in an integrated offer of Internet based content and services, in the areas of education, corporate training and citizenship, and aims to involve, in a further phase, Brazil, Angola, Mozambique and Portuguese communities across the world. Provides synchronous and asynchronous learning. Uses several collaborative web-based tools and involves several distinct Portuguese and international partners, from institutional to corporate and academic partners.

²²³ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" : http://www.nettskolen.com/in_english/webedusite/downloads.html

Portuguese eLearning companies in international markets

Only very few Portuguese eLearning companies are active in the international markets. This is reflected by the fact that most Portuguese eLearning companies do not even have home-pages in foreign languages. Hence the great part of suppliers addresses themselves solely to Portugal. Portuguese eLearning companies are therefore urged to produce content and learning management systems according to international standards in order to include the industry in the international markets.²²⁴

²²⁴ Carina Baptista (INOFOR) 2002: "The challenges of e-learning in Portugal" : http://www.nettskolen.com/in_english/webedusite/downloads.html

Slovakia

National policy and economic conditions²²⁵

Slovakia is part of the eEurope Action Plan. This plan has the following objectives:

- Accelerating the putting in place of the basic building blocks for the Information Society
- Providing a cheaper, faster securer Internet
- Investing in people and skills
- Stimulating the use of the Internet

For Slovakia this has meant implementing the INFOVEK Project, which aims to provide Internet access to 2,500 primary and 800 secondary schools by the end of 2005. In addition to the Internet connections, teachers are being trained to use ICT and integrate it into the teaching and learning process using multimedia materials and digital content.

Also, the Slovakian academic network (SANET) has been substantially improved, and the bandwidth of the backbone network has been upgraded from 4Mbps to 1 Gbps. SANET provides access to Internet for all universities, research institutions, scientific libraries and some schools and museums.

ICT profile of Slovakia

Demographics and Network Readiness Status

Slovakia has a population of 5.4 million and a Networked Readiness ranking of 33rd in the Centre for International Development's Index.¹ From a very basic standard of telecommunications in the early 1990's, the Slovak Republic had graduated to digital networks by the end of the decade. Internet penetration is still low, however, and growth is inhibited by the high cost of access. E-commerce and e-government have yet to get off the ground but the Slovak Republic is keen to comply with EU standards in ICT and has deregulated the telecommunications system to encourage growth. The 1998 elections also brought in a stabilising, forward-looking government, which has ICT development amongst its main priorities. Unemployment remains a big problem with an average rate of 19.2% rising to as much as 30% in some areas.

²²⁵ 'The use of Learning Management Systems in the Czech Republic and Slovakia' by Maria Micincova, <http://www.nettskolen.com/forskning/The%20use%20of%20Learning%20Management%20Systems%20in%20the%20Czech%20Republic%20and%20Slovakia.pdf>

Telecommunications infrastructure

Year	2001-2002
Main telephone lines per 100	31.41
No. of cell phone subscribers per 100	23.93
No. of personal computers per 100	10.92
No. of personal computers connected to the Internet	5.05%
Internet Hosts per 1000	7.01

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

In line with the general picture for the Slovak Republic, access to ICTs in the education sector is low. However, the number of computers within educational establishments rose from 13,400 in 1995 to 27,000 in 2001, and the Government has recently launched the 'Infovek Slovakia Programme' aimed at connecting 3,000 schools to the Internet over a 5-year period. 'EUNIS Slovakia', formed in 1997, is the national association of EUNIS Europe and is designed to allow higher educational establishments in Slovakia to cooperate on IT issues and has a voice in a Europe-wide forum. The fourteen universities which make up the organisation concentrate on the professional development of IT staff, promoting the use of IT in higher education, providing a channel of communication on IT issues with the Ministry of Education and liaising with software suppliers. The adult literacy rate in Slovakia is 99% and 27% of the relevant age group is involved in tertiary education. Slovakia spends 4.3% of GDP on education.

ICT and government policy

Slovakia's Telecommunications Policy for 2000-2002 was geared to preparing the country for becoming a member of the EU. Slovakia is part of the eEurope+ Action Plan and is in the process of implementing programmes on broadband network issues and universal access to the 'Information Society'. Particular concerns are the diffusion of ICT to households, developing a legal framework for e-commerce, extending access to 'Govnet', the governmental network, beyond the ring of central administration to a broader range of public offices and institutions. Electronic signature legislation was due to be passed in 2002.

Slovakia cooperates with large international organisations and is a member of the OECD and of NATO. Commitment to the networked world is a high Government priority.

Educational sector in Slovakia²²⁶

Compulsory schooling lasts ten years and takes, as a rule, from 6 to 16 years of age. The pupils start the attendance in primary school (*základná škola*), which takes nine years and provides the primary education (Grades 1 - 4) and lower secondary education (Grades 5 - 9). A predominant part of the pupils complete the compulsory schooling by finishing the first year

²²⁶ http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

of upper secondary education in secondary school (*gymnázium, stredná odborná škola alebo stredné odborné učilište*).

Underachievers who finish the ninth year schooling in primary school earlier than Grade 9 or who fail to complete Grade 9, continue the compulsory schooling in primary school or in apprenticeship centre (*učilište*). Talented pupils may, upon completing the fourth, sixth or eighth year of primary school, transfer to gymnasium (*gymnázium*) and after four year to dance conservatory (*tanecné konzervatórium*); these pupils complete the compulsory schooling upon completing the second year of upper secondary education.

	Primary schools	Secondary schools	Universities and colleges
Number of schools ²²⁷	2,793	200	93
Teachers ³	38,798	29,578	9,731
Pupils ³	647,207	98,628	147,566
Pupil:PC ratio ²²⁸	Data not available	Data not available	1:24

E-learning market size and characteristics²²⁹

The eLearning market is growing steadily in Slovakia. Among the top users of eLearning are companies that use it for employee training. Global surveys show that 75 percent of company training is based on the company's own know-how, and only 25 percent of company training is being done through the purchase of prepared courses. In Slovakia (and the Czech Republic) the ratio is even more in favour of internally developed courses. This is because of the small size of the market, which means that there are a considerably lower number of prepared courses in the local languages that can be bought and directly implemented. Some companies therefore offer systems that enable corporate clients to develop and manage courses on their own, or prepare them based on the clients' requests. Slovak educational institutions are becoming active in this field.

Despite some initial successes, several obstacles must still be overcome, before Slovakia can get on an equal level with Western countries in the field of eLearning. One problem is the high costs connected with the introduction of new technology, although the subsequent operational costs are minimal and the return on investment is extremely short. The second problem is a certain fear of new technology. Thirdly, a number of companies can be found that claim to offer eLearning, but in reality only a very limited number of companies have actually implemented eLearning and have experience with large projects. However, while aware of the problems, experts remain optimistic about the fate of eLearning in Slovakia.

E-learning industry

There exist a relatively well-developed partnership between private companies and the educational sector, primarily the universities. Several of the eLearning companies are actually started by students or staff at the universities, which explains the cooperation. Also, as the examples show, some universities start off private ventures by themselves.

²²⁷ <http://www.eurydice.org/Eurydice/Application/frameset.asp?country=SK&language=EN>

²²⁸ <http://www1.moe.edu.sg/press/1999/pr991122.htm>, 1999-numbers

²²⁹ <http://www.slovakspectator.sk/clanok-13635.html>

The Centre for Advanced Studies at the University of Economics in Bratislava (CDV) offer management, marketing and corporate finance modules as part of an eLearning program. They are meant for university graduates, but also private companies have shown interest in management courses for its managers.²³⁰

It is difficult to get a complete overview of the industry in Slovakia, but content suppliers seem to be the largest group in the market.

e-learnmedia (www.e-learnmedia.sk)²³¹ was established as an educational company named DUPRES in 1996. Its aim was to establish an educational centre covering training, schooling, courses and consulting services. An important turning point arose with the beginning of the cooperation with several Slovak universities. These universities opened their branches in the region and offered complete sets of educational programmes to the public. The company is today a branch of the company Dupres Consulting, Ltd. The company has a partnership with Netdimensions supplying their LMS product Enterprise Knowledge Platform (EKP).

International suppliers

Several international companies are well represented in the Slovakian market. Especially the technology supply seems to be coming from outside the Slovakian borders. Some examples are shown in the box below.

Cisco (<http://cisco.netacad.net/public/gln/overview/index.html>). The GLN – Global Learning Network – integrates eLearning applications for authoring, management, and assessment with rich media content, delivery, and a network infrastructure.

SAP (<http://www.sap.com/education/eLearning/>). SAP Learning Solution is a platform for eLearning content, a solution that supports both traditional classroom training and the latest eLearning methods. Based on SAP's experience as a training provider and an eLearning organisation, SAP Learning Solution combines a learning management system, an authoring environment, a content management system, and a learning portal.

NetDimensions (<http://www.netdimensions.com/partners/listofresellers.php>). The international company creates software solutions that deliver and manage corporate training, assessment and certification programs. The main product is the Enterprise Knowledge Platform, a powerful family of learning management systems (LMS) that are flexible, scalable, reliable and multilingual, making eLearning easy to administer in environments varying from single departments to global installations.

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies. This part of the industry seems to be the most well developed in Slovakia – compared to technology and service providers. Many of the companies operating in Slovakia operate in the Czech Republic as well, due to the familiarity of the language, culture and history.

Examples of Slovakian Suppliers of bespoke content

ELET (EL&T) (<http://www.elet.sk/>) is the oldest company in Slovakia doing business in company presentation, communication and marketing on the Internet. Founded in May 1995, it focuses especially on the creation of corporate identity and branding programs on the Internet, web-sites and

²³⁰ <http://www.slovakspectator.sk/clanok-13635.html>

²³¹ <http://www.e-learnmedia.sk/en/main.php?menu=97>

online marketing systems, mobile application solutions, online education systems and specialised online courses. E-learning is seen as a dynamically evolving area of electronic learning and the company works on several projects in this area.

Management Partners Group (<http://www.mpg.sk/EN/Default.aspx?catId=38>) is a group of human resources and counselling companies providing integrated counselling services in the area of human resources since 1991. It offers creation of tailor-made eLearning courses on a certain topic or acquiring a certain skill or ability. Output – the ready-made course – can be delivered either on a training CD or DVD or placed on the Internet/Intranet.

E-learning technology suppliers

It seems that the suppliers of technology in Slovakia mainly are international companies co-operating with local service or content suppliers. It has not been possible to find a single commercial Slovakian LMS supplier. However, a study made in 2002²³² has descriptions of two LMSs developed and used internally with no commercial use intended, in respectively a higher educational institute and an NGO.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consulting in connection with eLearning projects. These cover eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. In the Slovakian market supplying service is often combined with content supply.

On the basis of the co-operation between the Company ITC Kosice and the Academy of Communication a new e-learning portal for teaching and learning in the Academy of Communication has been established. The Company ICT Kosice is the developer and provider of the e-learning platform uLern Studio www.ulern.sk. The Academy of Communication www.akkom.sk provides professional education and specialised courses focusing on marketing communication, visual communication and electronic communication.

Elfa s.r.o. (<http://www.elfa.sk/index.html>) aims at transferring new information technologies, education methods and services from academia to praxis and offers distance education programmes based on videoconferencing solutions and on virtual university. Staff members of the Faculty of Electrical Engineering and Informatics, Technical University of Kosice established the company in 1991 and it employs 18 permanent staff members and 25 contracted and has a turnover of one million Euros.

Slovakian eLearning companies in international markets

Many companies operate in the Czech Republic as well as in Slovakia, due to their common history, culture and closely related languages. However, only few Slovakian eLearning related companies are present in the international market.

MainData (<http://www.maindata.sk/new/index.php?f=psedu>) is a Slovakian company providing computer and telecommunications technology, also for setting up eLearning. They operate internationally, e.g. in USA, Taiwan and Indonesia. They have participated in the European SmartEdu project²³³, combining the expertise of the partners, which are experienced in technology, education

²³² 'The use of Learning Management Systems in the Czech Republic and Slovakia' by Maria Micincova, <http://www.nettskolen.com/forskning/The%20use%20of%20Learning%20Management%20Systems%20in%20the%20Czech%20Republic%20and%20Slovakia.pdf>

²³³ <http://smartedu.tv/frame.php>

and psychology. The project partners come from Belgium, Greece, Italy and Slovakia, and all have experience in distance education as well as international cooperation.

Slovenia

National policy and economic conditions

The Slovenian government is implementing policies to provide schools with modern computers and ICT facilities. Some of the envisaged goals are to provide schools with local and international educational computer networks and to encourage educational staff (teachers, school heads and educators) to use multimedia and Internet services. These aims and strategies involve all educational levels and sectors from pre-primary to higher education.²³⁴

It is expected that the development of ODL and eLearning will be encouraged by the recently established Ministry of Information Society which intends to stimulate and financially support the further development of eLearning in Slovenia in close co-operation with the Ministry of Education, Science and Sport.²³⁵ The Ministry of Education and Sport will support individual projects of implementing information technology in all fields, particularly in the disciplines where its use will demonstrate an immediate improvement in the quality efficiency of education and teaching.²³⁶

The Slovenian National Contact Point for Distance Education (NCP) was established by an Act of the Slovenian Ministry of Education and Sport in October 1994 as national coordinator for Slovenia within the PHARE Multi-country Programme in Distance Education.²³⁷

The Slovenian government has furthermore established RO – the Developing Computer Literacy Programme. The objective is to train teachers and pupils in the use of information technology, implement a standardisation of computer-supported transfer of data between schools and other institutions, unify the computer software used for teaching and administration purposes in schools, supply schools with up-to-date computer and data equipment and provide the possibilities for research and development in the field of implementing new information technologies in schools.²³⁸

In Slovenia, the policy is shifting from computer literacy to information literacy; this will cover three areas: training, information upgrading of schools and research and development. The first goal is to train teachers and pupils in the use of modern information and communications technology, providing new quality in teaching and learning. Concerning upgrading of schools, the goal is to develop teaching contents and working methods, install computer networks in schools, standardise computer software, ensure the adequate provision of modern computer and information technology equipment and to provide an appropriate overall organisational structure of the system for the upgrading the schools. The third goal is to provide opportunities for research and development work regarding the introduction of new information technologies in education.

Actions such as developing new forms of work that take advantage of ICT, lifelong and eLearning measures will receive EU and national funding.²³⁹

²³⁴ http://www.elearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=59&doclng=1&p1=1&p4=1

²³⁵ http://mission.pu.acad.bg/en/partn_odl_in_sl.html

²³⁶ <http://www.hoise.com/vmwc/projects/webset/articles/websetProject.html>

²³⁷ <http://www.ef.uni-lj.si/>

²³⁸ <http://ro.zrsss.si/angl/okvir1.htm>

²³⁹ <http://www.uvi.si/eng/slovenia/publications/facts/information/>

In 1994, the PHARE Multi-country Programme in Distance Education (the PHARE Programme) was adopted by the European Commission. Slovenia was involved in the PHARE Programme as one of 11 Central and East European countries. The PHARE Programme lasted from August 1995 until the autumn of 1999.²⁴⁰

A new project²⁴¹ has been initiated by the ministry of Education in 2004 to elaborate the **Slovenian National E-learning Strategy** document, that will serve as the guideline for future complete e-learning implementations in Slovenia. The strategy consists of didactical, organisational, economic, technological and content e-learning aspects intended for elementary and secondary school, academic, corporate, governmental and lifelong learning environments.

Various pilot e-learning implementations are being conducted along with strategy development. Applications, materials and information as results of the project will be presented and adopted by the wider public in Slovenia. Training and use of the previously mentioned resources will contribute to the better IT literacy in Slovenia.

Project partners and contributors: Key players from various fields that address e-learning are included in the project. They constitute the National E-learning Consortium, that has been formed within project activities. Consortium will develop guidelines for co-ordinated e-learning introduction into various target environments. Project is also open for co-operation with any organisation or individual that could contribute to e-learning development and implementation in Slovenia.

Educational sector in Slovenia

The Slovenian educational system consists of compulsory education from 6 years to 15 years of age. This is covered by primary education in elementary school with three different 3-year cycles. The successful completion of basic education enables pupils to proceed to their education of choice at an upper secondary school. Depending on the general literary or technical orientation of the pupil, the pupil can choose between different upper secondary education. Higher education in Slovenia follows a binary model: academic higher education and professionally oriented higher education. Universities (and individual faculties established as private institutions) may offer through its members both types of courses, while professional colleges offer only professionally oriented courses.²⁴²

	Primary and lower secondary schools	Upper secondary schools	Universities
Number of schools	819 (2000) ²⁴³	147 ²⁴⁴	
Teachers	18,000	8,800	2,600
Pupils	222,547 (2002) ²⁴⁵	105,455 (1999)	41,986
Pupil:PC ratio	28.6 (2000/2001) ²⁴⁶	27 (2000/2001)	

²⁴⁰ http://mission.pu.acad.bg/en/partn_odl_in_sl.html

²⁴¹ Homepage for the project: <http://ltfe.org/crp/default-eng.asp>

²⁴² Eurydice 2003: http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

²⁴³ <http://www.mszs.si/eng/education/facts.asp#general>

²⁴⁴ Eurydice: The Education System in Slovenia (2001/2002)

²⁴⁵ Eurydice 2003: http://www.eurydice.org/Documents/Fiches_nationales/en/frameset_EN.html

²⁴⁶ Research on Internet in Slovenia: <http://slovenia.ris.org/content.php?p1=276&p2=285&id=288>

Within the PHARE Programme, the Distance Education Programme Business School was developed at the University of Ljubljana at the University Research and Development Centre and at the Faculty of Economics. It is currently the only higher education institution in Slovenia delivering the whole degree/accredited distance education programme with more than 1,600 students enrolled. The distance education programme at the Faculty of Economics is based on different types of study materials (print materials are prevailing with elements of on-line delivery) and various study support services, which are available to the distance education students (also by video-conferencing).

The interest in eLearning has been growing within higher education institutions. Many higher education institutions implement projects in the field of eLearning, some are developing on-line courses as a means of enriching traditional forms of education and other are experimenting with the use of up-to-date ICT in pedagogic processes. Apart from higher education institutions, there are other institutions embarking on eLearning development at the primary and secondary education level mostly as a way to enrich traditional forms of education. The whole post-secondary vocational programme for business secretaries is offered on-line by the private educational institute. According to the evidence held by the National Contact Point for DE, there are more than eighty institutions in Slovenia interested in development of distance education (including eLearning).²⁴⁷

E-learning market size and characteristics

In late nineties the interest in distance education and eLearning in Slovenia increased due to the raising awareness and training activities implemented through the PHARE Programme and stimulated by very rapid dissemination of information and communication technology appropriate for educational services with a trend of considerably decreasing costs. The corporate sector also took an interest in eLearning as an up-to-date method of education for training purposes. The network of centres for continuing education, which delivers distance education and eLearning is expanding.²⁴⁸

Slovenia is characterised by having two different language groups – Slovenian and Hungarian. This means that the eLearning market for Slovenian eLearning products is small if the products are not translated into Hungarian.

E-learning industry

The first projects and initiatives in the field of eLearning started in Slovenia in the late nineties. In the framework of PHARE Programme, two on-line courses were developed and 20 persons were trained in eLearning (an on-line course learning about Open Learning).²⁴⁹ According to an evaluation (conducted in 2001 by Steinbeis Transfer Centre, Germany) Slovenia is seen as having leading expertise in ICT applications for education and training within the region of South East Europe. However, the number of on-line courses offered by educational institutions is still rather low and investment in ITC-based courses is somewhat sporadic.²⁵⁰

²⁴⁷ http://mission.pu.acad.bg/en/partn_odl_in_sl.html

²⁴⁸ http://mission.pu.acad.bg/en/partn_odl_in_sl.html

²⁴⁹ http://mission.pu.acad.bg/en/partn_odl_in_sl.html

²⁵⁰ http://mission.pu.acad.bg/en/partn_odl_in_sl.html

Amnim (www.bioanim.com), a centre for scientific visualisation - develops products helping to learn about topics in biology or medicine that are hard to understand from the textbooks only. The company produces texts, illustrations (drawings and paintings), web3D and dynamic HTML web projects as well as e- and "classical" books. Their site has been awarded the Nitroglycerin "Dynamite Site" award.

E-learning suppliers addressing the educational sector are primarily represented by companies addressing the educational sector in more than one way. Some have their origin in the Slovenian universities or generally provide the educational sector with textbooks and other classic educational tools. This applies to Amnim and Echo (see below) that have their origins at the University of Ljubljana.

The Laboratory of Telecommunications of the University of Ljubljana is behind the site **Echo** (http://dl.ltf.org/login_ltf_eng.asp), which is an Internet-based eLearning delivery platform. Addressing both the educational sector and the corporate eLearning market in Slovenia. It provides courses, tools and services.

There is no complete overview of the Slovenian eLearning market.

International suppliers

Foreign vendors accessing the Slovenian market in different ways pressure the Slovenian eLearning market. Some suppliers simply sell, distribute and service their products online using the Internet, which gives access to the global market from any place in the world. Others access the Slovenian market by establishing representations in Slovenia. As mentioned above, Slovenia consists of two language groups - Slovenian and Hungarian. The latter group is primarily present near the Slovenian/Hungarian border. This makes it easier for Hungarian companies or companies with branches in Hungary to gain access to these parts of the Slovenian market, whereas companies addressing the Slovenian-speaking community do not get access to the entire market if they do not take into account the linguistic differences.

Cisco Systems (www.cisco.com). Cisco E-learning Solutions deliver self-training courses and other eLearning solutions in most parts of the world. The company has established itself with an office in Ljubljana and network academy partnerships with both a private and a public educational institution in Ljubljana supplying eLearning courses to local students and further training for professionals.

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies. This implies both new content development and off-the-shelf courses. Because of their wide availability, e-courses covering general knowledge topics are not appropriate for new development. There are, for example, already many e-courses available for language or desktop applications learning. Besides off-the-shelf e-courses, companies and learning institutions also require specific knowledge and skills about which training courses cannot be found on the market. While such knowledge represents a competitive advantage in the industry, it is usually meant only for inside company use. In most cases, specific e-courses

must be developed on particular knowledge-owner initiative. Among the Slovenian companies within the eLearning content field, companies provide both types of solutions.

Examples of Slovenian Suppliers of bespoke content:

DOBA (http://www.doba.si/doba_ang.asp) Since its establishment in 1990, DOBA has been following the principles of lifelong learning. During these years it has gained a reputation for being the leading institution in the field of e-learning, office management, development of new educational programmes and pedagogical approaches in Slovenia.

Nevron (www.nevron.si) specialises in development, implementation and management of educational, advertisement, entertainment and informative interactive services for the Internet, interactive TV and other electronic media. According to special needs, the company provides complete solutions and content enabling the establishment of unique and successful e-services. Being an established Slovenian company, Nevron has worked with IBM Mindspan Solutions and Auralog.

E-learning technology suppliers

There are companies supplying eLearning related technologies within the Slovenian eLearning industry. This primarily includes development and selling of Learning and Course Management Systems that enable educational institutions and enterprises to structure and organise course sequences over time and for many learners. There are both Slovenian companies that develop Learning Management Systems themselves and companies that supply the Slovenian market with foreign Learning Management Systems.

Examples of E-learning technology suppliers:

Bit Plus (http://www.bitplus.biz/intro1_eng.htm) offers content management systems like Postnuke and the open source learning Management System called Moodle.²⁵¹ Skupina KIK, Condor d.o.o., GM3 and Tendence are among the company's clients.

TSE Trade (<http://www.tse-trade.si/index-e.asp>) is a system integration and development company specialising in interactive data/video presentation and other multimedia applications. In June 2001 the company decided to expand its activities introducing a new project with the title "Virtual Classroom for Real Students" (because of the abbreviation, we have named the system VC, Virtual Classroom). This is based on ToolBook Instructor technology and the company is hence authorised vendor of Click2Learn products. The University of Ljubljana is among its customers.

E-learning service suppliers

This third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. In this area there are various foreign companies - such as Deloitte & Touch, Mad Geniuses²⁵², KPMG and others - on the market and only very few Slovenian companies.

E-learning service companies in Slovenia

BuyITC (<http://www.buyitc.si/english/english.html>) offers services with regards to planning, organising and realising the use of ICT related to different uses of e-applications and services in the company. Among its customers are Si Mobile, Vodafone, Neckermann, Adria Airways and Petrol.

²⁵¹ www.moodle.org

²⁵² <http://www.madgeniuses.net>

Slovenian E-learning companies in international markets

Although research indicates that Slovenia has leading expertise in ICT applications for education, the rather small Slovenian eLearning industry is reflected in the country's non-presence in the global market. Only few companies have accessed markets outside of Slovenia. One of these companies is PIA, which sells its products in Slovenia, the EU and USA. Another is Nevron who has international players among its clients.

Spain

National policy and economic conditions

As a result of the process of decentralisation, all 17 Autonomous Communities have exercised powers in education since 1 January 2000. The main strategies are to provide all schools with the equipment and facilities for accessing ICT, to develop Internet courses and training, to set up an observatory and laboratory concerned with the educational applications of ICT, thereby supporting innovation and development in such applications and finally to develop co-operation between Latin America and Europe in the area of ICT in education.

The Spanish government has implemented three main kinds of initiatives. The first concerns the development of the information society. The programmes involve all ministries and most economic sectors and runs from 2001-2003 with a budget of EUR 2.5 billion. Some of these initiatives included eLearning activities. The second initiative is concerned with the application of ICT in education. The initiative targets the Spanish education system. The third main initiative implemented by the government is the development of infrastructure in rural areas. The initiative runs from 2000-2004 and targets the schools in rural areas. EUR 62.5 million is being spent on ICT equipment for these schools. Recently, the Spanish Government has launched the Plan Espana.es to cover the period 2004-2005. One of the main actions in this plan is the promotion of accessibility to training (with a total budget of 240 mill. Euro) and digital content (with a budget of 220 mill. Euro).

ICT profile of Spain

Demographics and Network Readiness Status

Spain has a population of 39.9 million and ranks 26th in the Centre for International Development's Network Readiness Index.¹ Internet penetration is low which is partly attributable to very high access costs, but cell phone coverage is growing and is sophisticated with third generation cellular licensing already established. Thirty per cent of Spanish households were connected to the Internet in 2002, one of the lowest percentages within the EU, with five per cent having a broadband connection. Whilst 45.3% of the population feels that using a computer in daily life is important, only 15.7% actually use the Internet regularly. Ninety-five per cent of Spanish enterprises were connected in 2002, with fifty-eight per cent having their own web site although only twenty-seven per cent of businesses sold on-line. Digital literacy is below the EU average for the over 25's and about average for 16-24 year olds with the gender gap standing at 68% digital literacy amongst women compared to men.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	42.12
No. of cell phone subscribers per 100	60.92
No. of personal computers per 100	14.29
No. of personal computers connected to the Internet	7.85%
Internet Hosts per 1000	11.21

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002:Readiness for the Networked World(Country Profiles)

Education

Spain has an adult literacy rate of 97.6% with 56% of the relevant age group involved in tertiary education. The Spanish government spends 4.5% of GDP on education and ICT facilities within schools are fairly good with eighty per cent of primary schools and ninety-five per cent of secondary schools connected to the Internet in 2001, which provided one terminal per thirty-eight pupils at primary level and one per seventeen pupils at secondary level. Fifty-eight per cent of teachers were digitally literate. Spain, at 13%, was slightly below the EU average of 15% for the proportion of the labour force using eLearning at work. This is lower than might be expected given that in 2002 65% of Spanish establishments allowed their workforce free access to the Internet, a figure on a par with Denmark, and the 2000 figure for the proportion of the working population using computers at work was 32.9%.

ICT and Government Policy

The Spanish government's ICT policy is orientated towards using technology to create economic growth although education, public access and digital literacy are also high profile areas. The Ministry of Science and Technology, which was created in April 2000, drew up an Action Plan for 2000-2003 aimed at building an 'Information Society for All'. This focuses on encouraging research and development into new technologies in both the public and private sectors, broadening eGovernment services, providing a range of fiscal incentives to enterprises adopting ICT, including encouraging them to allow their employees to use company PC's at home. The plan also aims at having all schools connected to the Internet by 2001 and emphasises the importance of increasing competition in the telecommunications industry and building ICT skills in all sectors of society with a view to bringing Spain up to the EU average of 23% of the population using the Internet by 2003.

Training & Development market in Spain

Initial Vocational Training

The New National Vocational Training Programme of 1998-2000 defines the basic objectives of the three Vocational Training subsystems.

Upper secondary education

Basic vocational training must form part of the school leaving certificate, which entails giving a practical and semi-professional dimension to traditional subjects and establishing those objectives favouring transition to the working life.

The National Qualification and Vocational Training System has the following aims:

- to train for the performance of professional activities;
- to promote a quality training offers, updated and suitable for the different end products in accordance with the qualification necessities of the labour market and the personal vocational promotion expectations;
- to provide suitable information and guidance on vocational training matters and qualification for employment to the interested parties;
- to include those training actions in the training offer that prepare for carrying out entrepreneurial and self-employed activities, as well as to promote entrepreneurial initiative and enterprising spirit,;
- to officially evaluate and accredit the vocational qualification in whatever way it had been acquired, and
- to favour public and private investment for qualification of the workers and optimisation of the resources dedicated to Vocational Training.

The vocational training centres may be publicly or privately dependent. Medium grade specific vocational training may be offered in centres exclusively dedicated at teaching specific vocational training or centres teaching other stages, although the most frequent is that this teaching is offered together with the 'Compulsory Secondary Education' and the School Leaving Certificate in centres that the majority of the Autonomous Communities call secondary education institutes. They all must meet a series of requirements established for the whole country.

The New National Vocational Training Program of 1998-2000 defines the basic objectives of the three vocational training subsystems, which are:

- Initial training corresponding to the MEC education administration, which has been transferred to the 17 Regional Governments (Autonomous Communities),
- Vocational training corresponding to the labour administration of the Ministry of Labour and Social Affairs and transferred to all the Autonomous Communities except the Basque Country,
- Continuing training corresponding to a shared management between the Central Administration (MLSA) and the social partners through the Tripartite Foundation for Training and Employment.

This specific vocational training is structured into two educational levels or grades: medium grade specific vocational training and upper grade specific vocational training (also called medium and upper grade 'training cycles' respectively), that lead to obtaining vocational degrees. Access to the medium grade Specification Vocational Training is made after obtaining the 'Compulsory Secondary Education' certificate; on the other hand, access to the upper grade is made after the School Leaving Certificate.

Apprenticeships and other forms of alternating pathways:

Two programs in which an alternation between training and employment exist can be indicated: the Contracts for training and the programmes for workshop schools, *apprenticeship* centres and employment workshops.

Continual Vocational Training and Training for Adults and the Unemployed

There are three pathways:

- Adult education within the Education Administration;
- vocational training directed towards the unemployed within the Labour Administration; and
- continuing training directed towards employees.

The National Institute for Employment (INEM), in co-operation with the Autonomous Communities, manage the National Vocational Insertion and Training Plan (FIP Plan). The FIP Plan, the vocational training offer of the INEM, includes the set of training actions directed towards unemployed workers in order to qualify them according to the requirements of the productive system and their entry into working life.

At present, the training offer of the FIP Plan is structured by a modular system both in its design and management of its programming and is classified into different types of courses:

- vocational courses: training for a complete professional activity and for entry into working life,
- specific courses: with the purpose of updating, reconverting and adapting the professional content to the productive reality
- complementary training courses: in order to improve employment chances of the students, they are programmed as a vocational training complement, whether specific or vocational.

Those able to benefit from the FIP Plan are all unemployed workers, with the following groups having preference:

- Unemployed receiving benefits or subsidy due to unemployment
- Unemployed over 25 years, especially those who have been unemployed for more than a year
- Unemployed under 25 years who have lost a previous employment of at least 6 months duration
- Unemployed with special difficulties for their labour insertion or reinsertion, particularly females wishing to become reintegrated in the working life, disabled persons or immigrants

Training for the unemployed amounted to €3,745 million in 2000 (1.5% of GDP) with training specific measures accounting for €1,675 million.

Educational sector in Spain

The Spanish public school system is made up of compulsory and non-compulsory schooling. Education is compulsory from the age of 6 to 16, and is divided into two educational levels;

Primary education, made up of three stages, each lasting two years, and lower secondary education, consisting of four school years. The upper secondary and post-secondary education is non-compulsory. The third level of education, which consists of the universities in Spain and other university-level education, is also non-compulsory.

All education throughout the Spanish publicly funded establishments is free. Parents may, however, be required to pay for materials, transport or meals, depending on their level of income.

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools	13,700 (2001/2002)	17,746 (2001/2002)	
Teachers	169,208 (1999/2000)	264,434 (2001/2002)	83,043 (1999/2000)
Pupils	2,475,027 (2001/2002)	3,116,895 (2001/2002)	897,429 (2001/2002)
Pupil:PC ratio	14.5 ²⁵³	13.5 ²⁵⁴	3.7 ²⁵⁵

E-learning market size and characteristics

E-learning is an emerging market in Spain, the estimations, according to IDC, pointed to an important increase in the medium and long term. The situation today is that 30% of training actions are eLearning actions and in three years, this percentage will increase to 60%.²⁵⁶

A market study carried out by DOXA, among 60 large organisations, where most of the eLearning is happening, suggests that eLearning in Spain currently represents 2.8% of company training, rising to 4% in large companies. The panel reported that 95% of the companies were contemplating eLearning projects compared to 53% in 2001. The forecast for growth of eLearning in large companies is 20% in 2005, in line with general European trends. Progress is greater in larger companies and in the telecommunications and financial sectors. The report identifies a general need to improve communications infrastructure – speed and reliability of communications and security of access.²⁵⁷

According to the information provided by Juan Manuel Cruz, Training and Technology Director of PriceWaterhouseCoopers, only 180,000 individuals were following real eLearning training programmes in Spanish companies in 2003.²⁵⁸

The annual growth in ICT expenditure has, according to the Spanish Confederation of Employers' Organisation (CEOE), been 15% in the last five years. Only 1.88% of the GDP is, however, spent on ICT compared with an EU average of 2.7%. There is also considerable regional and business sector disparity.²⁵⁹

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http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computers_perp_primary.gif

²⁵⁴ http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computers_perp_secondary.gif

²⁵⁵ http://www.europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computer_perp_technical.gif

²⁵⁶ <http://www.eurolern.net/Default.aspx?tabindex=4&tabid=624>

²⁵⁷ http://www.eife-l.org/like/LiKE_Newsletter_00.pdf

²⁵⁸ On aprenderh (2003) "Que puede hacer el elearning por las empresas", pp. 30-36.

²⁵⁹ http://www.eife-l.org/like/LiKE_Newsletter_00.pdf

E-learning industry

The eLearning industry in Spain stretches across a wide range of businesses, public, private partnerships as well as other types of partnerships. A number of private suppliers are offering standard eLearning courses to both national and international customers.

Tangent (www.tangent.es) The company provides educational eLearning courses through virtual platforms and virtual campuses. It is specialised in conceptualisation, design and programming for the use of the companies customers, which include The Wall Street Institute and Deutsche Bank.

An overview of eLearning suppliers in Spain shows that there is around 500 companies related to this sector, of which more than 150 can be classified as eLearning providers on the Spanish market. These companies, however, have an average of 4 employees per company. Besides private suppliers of eLearning courses covering learning management systems, project management, user level and expert level IT, there is a great number of suppliers offering eLearning courses in connection with the supply of IT and other system implementation. According to the Spanish Association of eLearning providers www.apel.es 57% of members provide technologies, 61% content, 93% provide eLearning services and 26% global services. As in many other European markets there are in fact too many providers providing the same thing and it is expected that the market will go through a degree of consolidation over the coming years. The areas that are expected to show highest growth rates in future are personal content development and eLearning training actions.

Furthermore, open source eLearning tools are experiencing a boost through a valuable online service providing information and reviews of open source eLearning tools and standards to Spanish speakers. The site www.elearningworkshops.com has been established by a consultancy that offers support in integrating open source solutions. In addition, the Spanish Association for Open and distance learning <http://www.aefol.com> runs a portal with useful information about the Spanish sector.

International suppliers

There are a number of international suppliers of further education and eLearning courses on the Spanish eLearning market. The Internet and delivery over the web provides easy accessibility for foreign European, American, Canadian and Australian companies to cater for the Spanish corporate and public market without actually setting up physically a representation in Spain, an example is the Swedish company Luvit. Some companies though set up representations in Spain.

Luvit (www.luvit.se) is a Swedish software company that focuses on pedagogy and learning. Luvit's software is used for the administration of online learning. It has been developed by persons with hands-on experience from the educational sector. Luvit has been on the market for 6 years and among its customers are Grupo Doxa and La Universidad Alcalá de Henares, Madrid.

PriceWaterhouseCoopers (<http://www.pwcglobal.com/es>) offers advanced eLearning business solutions to both domestic and international clients. These clients operate in various industries, including human resources consulting and the financial industries. The company is based in the USA, but operates in all of Spain from 21 offices.

International suppliers of learning management systems based on WEB technology and general management are also active in the Spanish market.

Saba (http://investor.saba.com/ireye/ir_site.zhtml?ticker=saba) is the leading American training platform. Saba Learning Enterprise is LMS based on web technology that automates the management of learning processes for students, trainers and eLearning managers. Saba offers include an integrated Internet-based platform to manage learning, content, performance, talent, and collaboration; and related professional services.

E-learning content suppliers

A number of companies are specialised in the development of eLearning content and solutions for other companies and companies that are interested in using bespoke eLearning courses. These companies provide language-training courses, marketing courses, working environment courses, etc., including custom-made courses, platforms and standard products in system development.

Examples of Spanish Suppliers of bespoke content

FYCSA www.fycsa.es FYCSA has more than 20 years experience in the training market. With more than 300 companies using its services the yearly turnover is estimated at 10 mill. Euro. The company has 90 employees and a catalogue of more than 500 on-line courses available from its platform Formanet.

Instituto de Formacion on-line www.ifoline.com Founded in 1996 the company offers more than 60 online courses. More than 200 trainers have been trained by the Institute via its Campus IFO. In addition it has distributed nearly 100 courses in collaboration with other institutions which has led to training for 2500 students.

Santillana Formacion www.santillanaformacion.com From 1998 the company has become involved in Internet based learning for adults. It provides a virtual campus service based on the docent enterprise suite; a large catalogue of courses and personalisation of customer requirements. The company offers courses in telecommunications, financial services, tourism skills and business management, languages, and ICTs.

ITAAC is based on the EasyProf® technology (<http://www.easyprof.com/about/products.jsp>) and in collaboration with its customers, ITACA develops contents, templates and structures for Online and/or CD presentations and eLearning courses. Among the customers are Universitat Politècnica de Catalunya and Universitat de Barcelona.

Atnova (<http://www.atnova.com/>) creates eLearning content for educational institutions, companies and organisations. Examples of their projects include course on food hygiene for a hotel school, industrial product training for distributors and training for managers. Among its clients are Academia Postal and Universidad Carlos III de Madrid.

European Speech (www.europeanspeech.com) develops and distributes software solutions and related services for foreign language learning in CD-ROM. The company targets other companies, businessmen and liberal professionals.

There are many other content providers including Educaline, ITEM Formacion, Cadmo Conocimiento, Cedeco, a distance training institution, 2000ir, Adams, Artesvisuales, aupal, etc.

E-learning Technology Suppliers

There are a significant number of companies supplying eLearning-related technologies within the Spanish E-learning industry. These include both the large international operators represented by companies such as Nanfor Iberica (www.nanforiberica.com) and the eHR specialist Pecasó Ltd as well as Spanish operators.

Examples of E-learning technology suppliers:

Nanfor Iberica (www.cursosweb.com) The company has 10 years of experience in training and four years in eLearning. It is recognised for its quality. It offers a comprehensive range of eLearning solutions including ASP solutions.

Fynet Business and Training (www.fynet.net) The company specialises in the implementation of the IBM portfolio of products including the Lotus LearningSpace.

QS Media (<http://www.qsmedia.es/>) provides the Learning Management System (LMS) 'LMS QStutor', which is designed to allow users to form communities based around specific subjects and skills and thus increase their participation and involvement in training projects. The company has supplied products for AIDO, IBM and CVA (Consultores Valencianos Asociados).

In addition, there are a number of actors like Avanzo M2S, the provider of the M2S WIT platform and content products as part of the Skillsoft set up, Grupo Garben, Ingenia, Interactivos, Didacom, Auna and Atnova are other technology providers

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects, which covers eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. There are companies combining the service with the development and selling of technology or content.

ENRED (<http://www.enred.es>) offering of products and services includes the full range, from the conceptualisation of new ideas and change strategies, down to the raising of financing and full project management, as well as the creation of specialised made-to-order products. The company develops connections between different realities, disciplines, spaces and entities, with special emphasis on the creation of cooperation networks.

Spanish eLearning companies in international markets

More than a few Spanish companies are active in the international markets. Especially the Spanish speaking markets in South America provide great prospects for the Spanish companies. The majority of companies in Spain, however, work primarily with Spanish customers.

Meta4 (<http://www.meta4.com/>) is centred in Madrid and competes world-wide scale technological areas relating to knowledge engineering, agent technologies, semantics-based systems and eLearning amongst others. The company's main objective is to create adaptive systems based on knowledge which combine semantically enriched content with the possibility of making deductions anytime, anywhere. In this way, the learning process of both individuals and organisations improves in terms of both efficiency and performance, independently of the place, moment or pace of study. Meta4 operates in 18 countries.

Sweden

National policy and economic conditions

‘The Nationellt program för IT i skolan’ (National programme for ICT in schools) supports the development of new technologies in compulsory and upper secondary education. The use of new technology as a learning tool is encouraged at all levels of education, including municipal and liberal adult education. The Media Programme, one of 17 national programmes offered at upper secondary level, is oriented towards media production, i.e. modern information and production technology.²⁶⁰

The government has recently established *Nätuniversitetet* (<http://www.netuniversity.se>) as a new national body to fund and co-ordinate these activities. In 2002, *Nätuniversitetet* provided financial funding for the equivalent of 2,350 full-time students at 30 Swedish higher educational institutions.

Furthermore, the Swedish Agency for School Improvement (Myndigheten för skolutveckling) has been commissioned by the Swedish Government to run a network-based national resource centre for educational media. This project began in 1998. The resource centre runs today among other things the websites *Multimediabyrån* and *Läromedieguiden*. *Multimediabyrån* is a website where teachers tutor teachers. The website features courses, video, audio and music archives, meeting rooms, video films and articles providing tips and ideas from teachers throughout Sweden.

Läromedieguiden is a national database of CD-ROM- and Internet-based educational aids. It includes presentations from the producers of educational aids as well as evaluations by teachers and students who have applied the educational aids in a practical context.

ICT profile of Sweden

Demographics and network readiness status

With a population of 8.9 million (in 2001), 35.6% of whom are between the ages of 16 and 65, Sweden’s ranking in the Centre for International Development’s Networked Readiness Index is fourth.¹ The Swedish government was early to promote the use of ICT throughout all sectors of Swedish society, a move securely underpinned by a very highly developed telecommunications infrastructure. As a result, ICT use is well established in education, commerce and government with a high level of access and ICT skills apparent in the population at large.

²⁶⁰ http://www.eLearningeuropa.info/dir_national2.php?lng=11&vnt_cnr=33&doclng=1&p1=1&p4=1

Year	2001-2002
Main telephone lines per 100	68.20
No. of cell phone subscribers per 100	71.36
No. of personal computers per 100	50.67
No. of personal computers connected to the Internet	13.24%
Internet Hosts per 1000	67

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Sweden, like Denmark and Norway, enjoys a 100% adult literacy level. According to the Swedish Action Plan for Employment 2003, in 2002 86.5% of 22 year olds had completed upper secondary education. Within higher education, universities and colleges have been collaborating since 2002 to provide ICT supported distance education under the Swedish National University. Also all employees are entitled to educational leave grants towards financing study periods which are payable up to the student's 50th or 55th birthday.

The goal is to make adult education more demand-driven, individually orientated and as flexible as possible. Sweden spends 8% of its GDP on education and has 63% of the relevant age group involved in tertiary education.

ICT and government policy

Sweden's IT objectives were enshrined in an Act entitled 'An Information Society For All' which was presented to parliament in March 2000. This identified three main principles for the development of IT in Sweden: Confidence in IT, Competence and Accessibility. The Act sets out a number of security measures designed to tackle the first of these and then goes on to address the competence issue through:

- pledging to continue the existing special IT programme for schools called ITIS
- initiating a programme for small businesses in 2001
- increasing the number of places within the technology and natural sciences fields at higher educational institutes by 10,000-20,000 per annum in 2000, 2001 and 2002
- launching an IT university at Kista near Stockholm. (The university now has 3,500 students and plans to be Europe's biggest IT university by 2010. It includes 'IT and Learning' amongst its research areas.)

The Act further set out plans for improving access through increasing the availability of broadband or high transfer capacity networks to all areas of Swedish society by commissioning the National Electricity Grid to complete the construction of a backbone network by 2002. This action greatly improved the availability of broadband connections to sparsely populated rural areas in particular, where 30% of Sweden's population live. The Government has also launched a 5-year programme to stimulate the use of IT within businesses located in regional priority areas.

Training & development market in Sweden

Initial Vocational Training

IVT in Sweden covers vocationally oriented programmes at upper secondary level. Vocational training and general education take place in the same school system, and it is one of the fundamental aims of the Swedish education system to narrow the gap between the two. Therefore, all IVT takes place within upper secondary schools, and 99% of this is funded by the public sector. IVT courses are taken by 150,000 students, around half of the total in upper secondary education. Recent reforms have seen a shift towards more generalisation in IVT with the introduction of core subjects in the belief that this allows for the foundation for life-long learning to be created, thus leaving employers to focus on provision of specialised skills later on.

There has been no general apprenticeship system in Sweden since the 1970s. However, the social partners have established their own systems for employees after upper secondary education in certain sectors, though this is not widespread. More recently, a pilot scheme for modern apprenticeship training has been launched called *Learning in Working Life*. It does not involve any employment relationship, however it does offer an alternative pathway to higher education.

Continuing training, adult training and training for the unemployed

Continuing training among adults comprises a number of areas of training:

- Vocational training within the framework of municipal adult education
- In-company training/staff training
- Professional degrees at university
- Labour market training

The Swedish adult education system is quite complex, and CVT accounts only for a part of it. However, with the exception of staff training, CVT is financed almost wholly by the public sector.

The public school system for adults comprises:

- Municipal adult education (*komvux*)
- Adult education for people with intellectual disabilities (*sarvux*)
- Basic language instruction for immigrants (*SFI*)
- The National Schools for Adults (*SSV*)

In addition to this there are:

- *The Adult Education Initiative*: a 5-year programme set up in 1997 to boost adult education and training, especially among the unemployed and low-skilled employees. Local authorities were responsible for its implementation while the State contributed a special grant amount to SEK 3 billion each year to fund the annual 100,000 full-time study places.
- *Folk High Schools & Voluntary Educational Associations*: set outside the public school system, adult education is also provided at 150 residential folk high schools by county councils, trade unions or other non-profit organisations. Adult education is also available

through study circles organised by the 11 nation-wide voluntary educational associations. These tend to have an affiliation with a political party or other special interest group.

National Centre for Flexible Learning

Established at the beginning of 2002, the Centre for Flexible Learning aims to promote the development and use of flexible learning in the municipal and adult education system, popular adult education and working life. CFL organises distance education, as well as having responsibility for:

- developing and providing adult education using distance education,
- distributing funds for projects developing distance education,
- disseminating information on internet-based software,
- acting as a web-based information centre for IT-supported distance education.

Furthermore, school resources will be increasingly targeted at the development of distance education for adult education and training. As a result of this additional public funding amounting to SEK 11 million has been granted to schools for 2002 and 2003.

Between 1996 and 2001 a new pilot project based on advanced vocational education (AVE) was carried out. This is new form of post-secondary education where one third of the time is spent in the advanced application of theoretical knowledge at a workplace. AVE is aimed at addressing the real needs of the labour market and as such involves close cooperation between enterprises and the various course providers. After a successful pilot, it was decided that from 2002 AVE would become part of the regular education system. It was expected to provide 13,500 full-time equivalent student places in 2003.

Training for the unemployed

Training for the unemployed is financed by the public sector. Funds are transferred from the Ministry of Labour to the National Labour Market Service (AMS). Since 1994, employment training courses must be purchased by the county labour boards and employment offices from the Employment Training Group (AMU) or other tendering companies. According to Eurostat data,²⁶¹ Sweden spent €3.745 billion (equivalent to 1.5% of GDP) in 2000 on active labour market policy measures and 45% of this was directed at training-specific measures.

Educational sector in Sweden

The Swedish public school system is made up of compulsory and non-compulsory schooling. Compulsory schooling includes regular compulsory school, Sami school, special school, and programmes for pupils with learning disabilities. Non-compulsory schooling includes the pre-school class, upper secondary school, upper secondary school for pupils with learning disabilities, municipal adult education, and adult education for adults with learning disabilities. All education throughout the public school system is free. There is usually no charge to students or their parents for teaching materials, school meals, health services or transport.²⁶²

²⁶¹ Eurostat Labour Market Policy Database, 2000

²⁶² <http://www.skolverket.se/fakta/faktablad/english/system.shtml>

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges ²⁶³
Number of schools	4,315 (2002/2003)	717 (2002/2003)	49 (2002)
Teachers	103,902 (2002/2003)	32,001 (2002/2003)	21,000 (2002)
Pupils	1,057,225 (2002/2003)	322,587 (2002/2003)	328,804 (2002)
Pupil:PC ratio	8.4 ²⁶⁴ (2001)	4.1 (2001) ²⁶⁵	4.5 (2001) ²⁶⁶

There are 49 higher educational institutions in Sweden. These include both universities and högskolan. As the table shows there is around four pupils per PC in both upper secondary and tertiary education while there are more than eight students per PC in primary and lower secondary schools. Regarding the implementation of eLearning and ICT in general, the Swedish National Agency for School Improvement provides the Swedish Schoolnet, under a government commission of April 1994, which was renewed in June 1996. It is a website for teachers, educators and students. The goal in 1994 was, as it is today, to stimulate the use of information technology in schools.

In its capacity both as a practical guide and a source of information, the Schoolnet enables teachers to integrate ICT into a practical classroom setting.

In Sweden, there is a trend towards acquiring learning management systems and using them for distance and online learning.

eLearning market size and characteristics

The corporate eLearning market in Sweden according to a report by IDC in April 2002 will be worth some SEK 1.955 mill. in 2006 representing an average annual growth rate of approximately 46% from 2001 to 2006.²⁶⁷

Reports indicate that eLearning is seen as an important part of the continuous development of the Swedish public sector and has been implemented by many large public institutions. For example the Swedish County Administrations, Länsstyrelsen, has introduced StrateGIS which is a nationwide educational programme, including the educational WEB-GIS.

The market is characterised by a number of alliances and partnerships between companies with complementary expertise in eLearning. Particularly common are the alliances between eLearning delivery software companies and content providers.²⁶⁸ There appears to be a few dominant firms in the Swedish eLearning market.²⁶⁹

The demand for eLearning in the private sector is driven by the many large companies such as Ericsson, Volvo Group, SAS, Nordea, Tetra Pak, AstraZeneca, ICA, Hennes & Mauritz, etc.

²⁶³ http://www.hsv.se/sv/CollectionServlet?view=0&page_id=1876

²⁶⁴ http://www.skolutveckling.se/it_i_skolan/dator01/filer/grundskola_2001.xls

²⁶⁵ http://www.skolutveckling.se/it_i_skolan/dator01/filer/gymnasieskola_2001.xls

²⁶⁶

http://europa.eu.int/information_society/eeurope/2002/benchmarking/list/2001/people_skills_2001/computer_perp_technical.gif

²⁶⁷ <http://www.marketresearch.com/map/prod/766223.html>

²⁶⁸ <http://www.marketresearch.com/map/prod/766223.html>

²⁶⁹ Paulsen, M. F. 2002. [An Analysis of Online Education and learning management systems in the Nordic Countries](#). Online Journal of Distance Learning Administration, Volume V, Number III, Fall 2002.

Many of these companies have, apart from using external suppliers, established internal departments specialised in developing and implementing eLearning modules.

The market for multimedia and digital learning materials towards the schools market has since 1998 been very dependent on public funding. Some years up to 90 mill Swedish Kronors have been allocated to content development through public private partnership projects. In fact the edutainment and home eLearning market is estimated to be larger than the school market in Sweden.

The eLearning industry

The eLearning industry in Sweden stretches across a wide range of businesses, public, private partnerships as well as other types of partnerships. A number of private suppliers are offering standard eLearning courses.

E-learning suppliers addressing the educational sector are primarily represented by traditional Swedish publishers such as Studentlitteratur, Liber and Levande Böcker. The learning management systems developed by Swedish companies such as PingPong and Luvit are not dominant in Swedish education. There is little national coordination in this field. The universities are very autonomous, and system choices are all made locally.

Levande Böcker (Insight) (www.levande.se), is a publishing company (Living Books) and is one of the dominating publishers of digital learning materials addressing the primary and lower secondary schools market in Sweden. In 2003, it won a prize for its interactive multimedia programmes. Since 1993, the company has published some 70 different titles, some of them through international collaboration. The company does business throughout Scandinavia.

An overview of eLearning suppliers²⁷⁰ in Sweden shows that there are at least 150 specialised suppliers on the Swedish market. Besides private suppliers of eLearning courses covering learning management systems, project management, online IT courses (user level as well as developer level), there is a great number of suppliers offering eLearning courses in connection with the supply of IT and other systems. Companies and public authorities offer eLearning as part of the course activities connected with system implementation. StrateGIS is an example of such a public authority eLearning directed towards the employees.

International suppliers

There are a substantial number of international suppliers of further education and courses active on the Swedish eLearning market. The Internet and delivery over the web offers the opportunity for foreign European as well as American, Canadian and Australian companies to cater for the Swedish corporate and public market without actually setting up a representation in Sweden. Some companies, however, set up representations in Sweden or regional representations covering several countries.

According to Fredrik Rexhammar WebCT and Blackboard were the most used foreign LMS systems used at Swedish universities and colleges in the spring of 2002.²⁷¹ In the meantime,

²⁷⁰ <http://www.imhresurs.se/PED/eLearning.htm#lankar>

²⁷¹ Paulsen, M. F. 2002. [An Analysis of Online Education and learning management systems in the Nordic Countries](#). Online Journal of Distance Learning Administration, Volume V, Number III, Fall 2002.

the Swedish market has experienced a boom having today additional companies competing in the market, both domestic and international suppliers.

Blackboard (<http://www.blackboard.com/worldwide/se/en/index.htm>) is a company with an office in Sweden. The company offers a complete suite of enterprise software products and services that power e-Education programmes in institutions of higher education, primary and secondary schools, as well as corporate and government organisations. Blackboard traces its technological roots to Cornell University (USA). Among the Swedish customers are Linnköping University and Stockholm University School of Business.

International suppliers of standard eLearning courses within areas such as general IT competencies or management are also active on the Swedish market. Some of these might have roots in foreign and especially American software companies.

Adobe (<http://www.adobe.se/misc/training.html>) is an American software company that has established itself on the Swedish market. The Swedish Adobe Utbildning has followed this up by online instructions, for instance an online Adobe Photoshop course, and more general web-based courses for individual training.

E-learning content suppliers

A number of companies in Sweden are specialised in the development of eLearning content and solutions for other companies and companies that are interested in using bespoke eLearning courses. These companies provide language training courses, marketing courses, management courses and especially systems implementation courses, etc., including custom-made courses, platforms and standard products in system development.

The following web-sites are a frequently used source for identifying relevant courses of both eLearning and traditional nature: <http://katalogen.sunet.se/kat/business/corporations/education>.

Examples of Swedish Suppliers of bespoke content:

Celemi (www.celemi.com) provides hands-on business simulations and tailor-made learning solutions primarily for the private market. Its customers include ABB, BASF, Fiat, PriceWaterhouseCoopers, SAS and Volvo.

Open Training (www.opentraining.se) tries to help companies train employees, customers, partners and sub-suppliers using blended learning including e-training solutions in order to strengthen the organisation. Among their clients are Ericsson, Manpower, SAAB.

TicTac (www.tictac.se) develops ideas and runs projects within web-based learning. The company has supplied products for Atlas Copco Tools, Europolitan, Vodafone and Systembolaget, and others.

E-learning Technology Suppliers

There are a significant number of companies supplying eLearning-related technologies within the Swedish eLearning industry. They supply tools for managing eLearning content and eLearning activities (learning management systems) and tools for authoring learning modules.

In addition, some companies are supplying simulation engines such as Celemi's TANGO engine.

Examples of eLearning technology suppliers:

Luvit (www.luvit.se) is a Swedish software company that focuses on pedagogy and learning. Luvit's software is used for the administration of online learning. It has been developed by educationalists. Luvit has been on the market for 6 years and among its customers are Gothenburg University, the Swedish Military Academy, the Region of Wallone in Belgium, Bergen University in Norway and École des Mines in France.

Ping Pong (www.pingpong.net) provides a learning management system supporting the in-company training courses and organisational development. The company has worked with universities, companies and authorities in Sweden, Portugal and Denmark, and currently has more than 100,000 users.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects as well as hosting facilities such as Projectplace.com a groupware and collaborative tool.

These companies also provide eLearning strategies, development planning, pedagogical and technical advice in relation to eLearning design and implementation. There are companies combining this service with the development and selling of technology or content. Some companies publish their own periodicals and offer courses in eLearning. On the Swedish market several suppliers of content or technology also offers this dimension.

Sigma Education (www.sigmaeducation.com) both develops eLearning content and digital media and offers courses covering presentation technique and programming. It has a number of customers including the city of Malmö and Macmillan/Heinemann.

Nextlearn AB (www.nextlearn.com) develops and sells the Nextlearn Competence Portal that is a solution for CM competence management, learning management and human resource management. Nextlearn clients are global corporations and organisations based primarily in Sweden, such as Telia, COOP, NCC and Volvo Cars.

Comenius (www.comenius.se) has been on the market since 1988. The company began as a traditional training company with a focus on traditional courses. In 1992, Comenius began the development of a web-based training management system (LMS). In 1996, the work was completed on the LMS, and as one of the first companies in Sweden Comenius launched an interactive training course on CD-ROM in 1995. Today, there are 110,000 registered users in Sweden of the company's courses. The company offers a wide program of web-based, CD-ROM based or traditional courses.

Acadamedia (www.acadamedia.se) is one of Sweden's largest consultancies within the area of eLearning. It claims to have undertaken more than 650 different productions. Acadamedia has worked for several of the major Swedish companies including Volvo, Sydkraft, Gambro, Ericsson and others.

Swedish eLearning companies in international markets

Only few Swedish eLearning companies are active in the international markets, and hence the majority of the presented companies work with Swedish customers or Scandinavian custom-

ers. There are, however, companies such as Celemi, BTS Group AB, Luvit and Ping Pong who have customers in most parts of Europe and even in other continents. Some of these companies have major international clients such as Microsoft, IBM, 3M and BP. Additionally, a majority of the Swedish eLearning companies have some of Sweden's global companies such as Ericsson and Volvo as their clients and hence they are active world-wide.

Furthermore, it appears that it has been easier for some of the companies in Sweden to achieve breakthroughs in the Scandinavian market having customers in Denmark and Norway and other markets compared to eLearning companies in Denmark and Norway.

Switzerland

National policy and economic conditions

Since February 1998, the Swiss government has been conducting a massive campaign to promote information and communications technologies (ICT). In the text that forms the basis for the Confederation's actions in this area, the Information Society Co-ordination Group (ISCG) was mandated to lead the federal administration's ICT activities and to make the Swiss population aware of the challenges of the information era.²⁷²

The individual education ministers of the Cantons are members of the Conference of the Directors of the Cantonal Education Departments (CDIP-EDK) which meet several times a year. Regarding ICT in education, the CDIP-EDK has fixed the following main focal points for the coming years:

- Introduction of ICT into the curriculum and related coordination of curricula between different school levels;
- Initial and on-going teacher training in ICTs;
- Development of software (for teaching and learning);
- Efforts to create favourable framework conditions (including contracts with producers of software and educational television);
- Help and collaboration in projects (such as the Swiss Virtual Campus programme in higher education).

Policy for Public-Private Partnership

The Swiss National and the State Council have decided to invest 100 million Swiss francs (€ 65 million) over a five year period in a Private-Public Partnership entitled 'School on the Net' bringing together the Confederation, the Cantons and industry players in a total investment of one billion Swiss francs (€ 650 million). Industry players have undertaken to invest 100 million Swiss francs. The 100 million Swiss francs invested by the Confederation contributes to the implementation of the Action Plan about initial and on-going training of teachers in ICT use. However, the main investment comes from the individual Cantons (estimated at some 600 to 800 million Swiss francs – € 390 - 520).²⁷³

There are three strands to the School on the Net Public-Private Partnership:

- Initial and ongoing training of teachers in the pedagogical use of ICTs
- Content and pedagogical resources (making learning material available including software, pedagogical tools and online content)
- Infrastructure (including connecting schools to the network, providing internal infrastructure within schools including LANs, hardware and software and technical support including maintenance, planning and logistical support)

The PPP 'School on the Net' website is located at <http://www.ppp-esn.ch/>

²⁷² www.infosociety.ch

²⁷³ http://insight.eun.org/eun.org/en/Insight_Policy/sub_area.cfm?sa=2326

The Swiss Virtual campus programme (www.virtualcampus.ch) (currently the consolidation programme 2004-2007) was developed in order for higher education to take full advantage of the opportunities available through new ICTs. It has three main aims:

1. To improve the quality of student learning processes and strengthen interactive teaching by broadening university teaching into a range of available courses for both on campus and off campus students
2. To strengthen the collaboration between the universities and the mobility of students
3. To develop high-quality multilingual teaching materials and methods building on common tools

During its impulse programme, the initiative established 50 content development projects.

ICT profile of Switzerland

Demographics and Network Readiness Status

Switzerland has a population of 7.2 million and ranks sixteenth in the Centre for International Development's Networked Readiness Index.¹ Despite having a very well developed infrastructure in place as a result of identifying IT as a priority as early as the late 1980's and taking a lead in the research and development of new technologies, e-commerce in Switzerland has been sluggish and technology is regarded with some scepticism by both the population at large and by businesses and banks, although there are some recent signs that e-commerce is gaining ground. Sixty per cent of Swiss households are connected to the Internet with roughly nine per cent having a broadband connection.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	71.99
No. of cell phone subscribers per 100	64.45
No. of personal computers per 100	50.25
No. of personal computers connected to the Internet	7.29%
Internet Hosts per 1000	36.64

Figures taken from Center for International Development at Harvard University Global Information Technology Report 2001-2002: Readiness for the Networked World (Country Profiles)

Education

Digital Literacy in Switzerland is amongst the highest in the EU for both the population at large and for 16-24 year olds. There is a wide gender gap with just over half the number of women being digitally literate compared with men. Thirteen per cent of the labour-force uses E-learning for work, slightly below the EU average of fifteen per cent. The Swiss government is anxious to increase primary and secondary schools' engagement with ICTs but has little control over curricula due to the decentralised nature of governmental structure. Each of Switzerland's 27 Cantons has its own ICT policy and each is responsible for its own educa-

tional affairs so detailed information is patchy. However, according to figures gathered in January 2001, 95% of schools, both primary and secondary, were connected and 80% of these had an ISDN connection. No figures are available regarding the ratio of pupils per PC.

ICT and Government Policy

The Swiss government has retained control over Swisscom, the former nationalised telecommunications operator, since it was privatised in 1998 and this has inhibited true competition within the industry. However, the government has succeeded in bringing prices down and main line and cell-phone penetration is at a high level in Switzerland. The Information Society Co-ordination Group was set up by the Swiss government in 1998 to facilitate ICT development through training and education and to further develop e-commerce and e-government. Priorities include catering for any potential digital divide regarding elderly and disabled people, further integration of ICT within schools and promoting the links between ICT, business innovation and the universities.

In the eLearning readiness rankings from 2003 which ranks 60 of the largest national economies in the world, Switzerland held position 10 with a score of 7.72 out of a maximum of 10.²⁷⁴ Of the four categories Education, Industry, Government and Society, Switzerland scores well for education, Government and Society, however the industry only ranks as 16th with a score of 6.87.

Training and development market in Switzerland

Initial vocational training

Around 83% of young people complete upper secondary education in Switzerland and 60% complete vocational training. These are run as apprenticeships with attendance at *Berufsschule* (Canton or regional training school) for 1½ days a week coupled with on-the-job training the rest of the time. Training lasts between 2 and 4 years, though most (56%) last for 3 years. There are 300 federally-registered vocations. In 2001, there were 213,000 young people in vocational training. The number of apprenticeships has though fallen in recent years after the introduction in the mid-90s of the vocational Matura, which offers expanded and in-depth general education to supplement basic vocational training.

Responsibility for vocational education in terms of legal provisions, regulation and the curricula rests with the Confederation, while the Cantons are charged with implementing it. Overall budget for vocational education is CHF 2.9 billion, most (70%) of which comes from the cantons with the rest split equally between the Confederation and the communes.

Higher vocational education is available at the higher technical schools, of which there are around 70 technology schools and 30 other higher technical schools with Federal recognition.

Continuing Vocational Training, Adult Training and Training for the Unemployed

Continuing education is organised mainly by private educational establishments. It is however overseen by the Swiss Federation for Adult Learning (SVEB). There are some 60,000 teachers and trainers within continuing education, though 90% practice part-time. In 1999, 1.9 million adults attended 2.7 million courses in Switzerland. Most (87%) were in employment and

²⁷⁴ The 2003 eLearning readiness rankings. A white paper from the Economist Intelligence Unit, written in co-operation with IBM.

69% of all continuing education was for professional purposes. Employers supported continuing education for 970,000 people (1.24 million course participants) and on average they pay for around two-thirds of professional courses, either entirely or partially. Furthermore, the numbers participating in independent continuing training has risen from 40% to 52% over the period 1996-99. *Professional* continuing training is delivered mainly by companies (34%), though there are other major players such as private schools (19%) and public schools (15%). In terms of *general* continuing education the main providers are private schools (32%), private persons (23%) and public schools (21%). IT is the most popular course in general continuing education accounting for 21% of all courses.

SVEB itself is supported by the Swiss Conference of Cantonal Ministers of Education (EDK) and the Federal Office for Culture (BAK). In total, the Confederation provides funding of CHF 200 million a year, while the Cantons spend some CHF 150 million. A further CHF 350 million is spent on courses for the unemployed by the State Secretariat for Economic Affairs.

ICT in Education and Training²⁷⁵

With education policy determined individually by each of the 26 Cantons a major effort between the regional and federal levels to improve collaboration concerning in ICT in education resulted in the ICT and Education Taskforce in 2000. This resulted in June 2000 in the Swiss Conference of Cantonal Ministers of Education (*CDIP-EDK*) setting out policy priorities in this area, i.e.:

- Introduction of ICTs into the curriculum and related co-ordination of curricula between different school levels
- Initial and ongoing teacher training in ICTs
- Development of software for teaching and learning purposes
- Efforts to create favourable framework conditions, including contracts with producers of software and educational television
- Help and collaboration in projects such as the Swiss Virtual Campus programme.

Since then two major developments have taken place relating to a) teacher training in ICT and b) an agreement to invest in Swiss Education Server (EDUCA).

There has also been significant progress made in the area of public-private partnerships with a 5-year budget agreed for establishing a School on the Net project, covering:

- Initial and ongoing training of teachers in the pedagogical use of ICTs
- Content and pedagogical resources (software, online content)
- Infrastructure (networks between schools, provision of hardware, software and technical support).

The overall cost for the project is € 650 million, most (up to € 520 million) provided by the Cantons themselves, with the rest split equally between the Confederation and industry.

By the end of 2001, 82% of schools had access to computers. There was practically universal access in lower secondary education, but only 73% access in primary education. Pupil-to-PC

²⁷⁵ Information from Insight Knowledge Base for new technology and education, August 2003, <http://insight.eun.org/>

ratios were 9:1 in lower secondary education and 16:1 in primary. Some 68% of lower secondary schools had access to the Internet (36% in primary)²⁷⁶.

Educational sector in Switzerland

Swiss education includes the following educational levels or types of schools: pre-school level, primary level, lower secondary level, upper secondary level (vocational education, intermediate diploma schools, and Matura schools), tertiary level (higher professional education, universities of applied sciences, universities, and the Federal Institutes of Technology), special education, and continuing education. Reforms are presently underway at all levels of the education system. In the Swiss federal system, education is to a very large extent the responsibility of individual Cantons. Information about education (e.g., about admission, learning contents, vacation) will to a large extent be provided by the communes and the cantons.²⁷⁷

Children enter primary school at six years of age at the earliest. School attendance is mandatory and free for all children. The Cantons, in cooperation with the communes, are responsible for the organisation and financing of the primary school. In 20 Cantons, primary school lasts six years, in the other cantons four or five years. In contrast to the lower secondary level, children at the primary level are not divided into achievement groups.

The lower secondary is the second part of the compulsory education period. The lower secondary level provides a basic general education. It prepares for vocational education or for the transfer to a general education school at the secondary II level (Matura school, intermediate diploma schools, among others). Schools at the lower secondary level are supported by the communes and the canton. The Canton determines, moreover, the learning objectives and stipulates the curricula. In 20 cantons the lower secondary level begins with the seventh class, in six cantons with the fifth or sixth class. Pupils between 12 and 16 years of age are at the lower secondary level.

After the compulsory school, adolescents transfer to the upper secondary level. The upper secondary level may be divided into general education and vocational education. The general education schools are the Matura schools and the intermediate diploma schools. Apprenticeships as well as full-time vocational schools are a part of vocational education. Education at the upper secondary level lasts three to four years as a rule. 83% of the adolescents in Switzerland complete it.

	Primary and lower secondary schools	Upper secondary schools	Universities and colleges
Number of schools ²⁷⁸	6,500	-	-
Teachers	72,774	17,049	20,181
Pupils ²⁷⁹	807,300	307,100	162,600
Pupil:PC ratio ²⁸⁰	12.3	9.3	-

²⁷⁶ Informations- und Kommunikationstechnologien an den Volksschulen in der Schweiz, Bundesamt für Statistik, 2002.

²⁷⁷ www.educa.ch

²⁷⁸ <http://www.educa.ch/dyn/67528.htm>

²⁷⁹ http://www.statistik.admin.ch/stat_ch/ber15/eufr15.htm

²⁸⁰ http://www.statistik.admin.ch/stat_ch/ber20/indic-soc-info/ind20d_intro.htm

E-learning market size and characteristics

According to one study, the Swiss eLearning market is expected to grow in the coming years, so that the market will come to look more like in the northern European countries. The Swiss market for eLearning is expected to grow at an average annual rate of 6.2 percent between 2001 and 2006, peaking at 8.6 percent in 2006.²⁸¹

The main sectors of activity in the eLearning market in Switzerland is food and beverage, public administration, luxury and watches, IT and Telecommunication, bank and insurance, and bio-technologies.²⁸²

E-learning industry

The eLearning industry in Switzerland stretches across a wide range of businesses, public, private partnerships as well as other types of partnerships. A number of private suppliers are offering standard eLearning courses to both national and international customers.

The Institute of Information Management at the University of St. Gallen has a learning centre chaired by Prof. Dr. Andrea Back. It was founded in 1997 and is one of the oldest research departments in the field of E-learning in the German-speaking area. "The Learning Center" deals with the potential and the possibilities of applying modern information and communication technologies as well as relevant applications and systems in the fields of knowledge mediation (especially training and professional training), community building and learning organisations.

The University of Basel has also established an internal network for eLearning as well as contributions to instrumental in establishing www.net4net.ch.

Brain-tec GmbH (www.brain-tec.ch) offers the whole range from conceptualising and planning the eLearning system, advice on the technical implementation, custom made content, and the technology used for eLearning. The company sells solutions to in the sectors of are teacher education, universities, and corporate education.

Management Communication Pool AG (www.m-c-p.ch) is one of Switzerland's leading providers, and offers a wide range of solutions from content over technology to service. Among the customers are Alcatel Switzerland Ltd., Ausbildungszentrum SRK – Schweiz, Red Cross, Credit Suisse Communication Center AG, Credit Suisse First Boston, IBM Schweiz AG, IBM., Limmatdruck AG, Mettler-Toledo GmbH, Offiziersausbildungszentrum Dübendorf, Schweizer Garde Rom, Shell Switzerland, Swisscom AG, Underberg AG, Seehotel Wilerbad, and Winterthurer Versicherung Together with the company Teachforce GmbH it has established the live e-training solution.

International suppliers

The international eLearning industry benefits from the fact that the international eLearning market is getting increasingly accessible as long as the IT-infrastructure spreads out. This applies to Switzerland too, where it is possible for companies to penetrate the market solely by the Internet. Therefore there are several offers on the Swiss market from companies not even

²⁸¹ http://www.idg.ch/library/pdf/iik2003/idg_studien-inf-2003engl.pdf

²⁸² <http://www.fiam.org/sommets/summit2002/documents/P.Barazzoni.PPT>

established in Switzerland. On the other hand, several companies have a representation in Switzerland. Switzerland is characterised by its division into the several linguistic communities and this is highly reflected in the presence by foreign companies. First of all, the Swiss market is penetrated by French and German companies that may have an office in Switzerland, but some have no branch in the country and service the Swiss market from offices in neighbour countries. The French and German vendors of eLearning products have linguistic and cultural similarities with the Swiss communities that give them an advantage. Hence, Swiss companies looking for eLearning tools may look outside their border and find products that are easily implemented with no need for translation. Companies stemming from other countries than the Swiss neighbouring countries may also establish branches in Switzerland. However, some of them are represented in one of the larger neighbouring countries like Germany and France and service the Swiss market from such an office. Already being present on one of the neighbouring markets, a foreign company finds it easy to access the Swiss market.

Auralog (www.auralog.com) develops and distributes software solutions and related services for foreign language learning. By combining individualised online courses with off-line CD-ROM support, TeLL me More eLearning offers a complete and personalised language learning method. Auralog was awarded the 2001 European IST Price. The company services Switzerland from their German office.

imc (www.im-c.de). When it comes to eLearning, imc offers a co-ordinated solution from one source: by mixing consulting services, content ware and the CLIX eLearning application, the company provides an education and knowledge architecture to secure and substantially increase the long-term success of the enterprises. The company has established an office in Zurich. Among their Swiss customers we find SwissCom Mobile.

Lerneffekt (www.lerneffekt.de) has at least 18 Swiss clients among whom we find Berner Fachhochschule, Swiss Banking Institute, Universität Zürich and Ecole Polytechnique Fédérale de Lausanne. The company supplies the market with content, support and technology solutions.

Bernard D&G (www.turbodemo.com) an innovative software company and market leader in the development of intelligent application software for the Internet. It develops and distributes eLearning Software Solutions and Internet-Filtering Software Solutions, among those it addresses several European countries and services Austria, Italy and Switzerland from the same office in Germany.

Cegos (www.cegos.ch). The mixed training programs combine classroom phases and remote work phases frequently including remote training modules in the programs. Furthermore, the company offers products for self-instruction (on and off-line). The company has established itself with an office in Switzerland.

E-learning content suppliers

There are a number of companies supplying the Swiss market with eLearning content. These are companies providing either tailor-made courses or standard eLearning courses for other companies. The buyers of such a product can implement an eLearning tool in a learning management system or use it independently of this. Some eLearning content suppliers may sell products to large eLearning projects becoming hence a sub-supplier to the product. E-learning content may consist of language training, business optimising training tools, ICT-training tools, organisational development etc.

Examples of Swiss Suppliers of bespoke content:

STS (www.sts.ch) offers a range of courses specifically dealing with project management. STS specialises in tailor-made training, where the courses are adapted to the particular needs of each company. STS has developed two training tools: The project simulator SimulTrain® is used in the classroom training. E-learning is a web-based training solution including theory, examples, glossary, and numerous interactive exercises. Among the clients in 20 countries training 25.000 project managers are 3M, ABB, Alcatel, Bosch, Nestlé and Telia.

Telecol Online (www.telecol.ch) is a partner for institutions and companies to establish or improve online learning and collaboration by focusing consequently on the methodological approach. This way telecol online supplies customers with tailor-made solutions and has Bildungsdirektion Zürich, Microsoft and Die Schweizerische Post among the clients.

First Webcollege (www.firstwebcollege.com) was founded in 1997 and has been specialised in eLearning, since 2000 online eLearning tools. They have worked for Gymnasium Immensee, Coop, Franke, FUST, GfK Schweiz and Siemens.

E-learning technology suppliers

There are a significant number of eLearning technology suppliers in Switzerland providing Learning Management, Learning Content Management and Content Management Systems enabling companies or educational institutions to organise a distance learning sequence, online or not. These may be general platforms accessible online but also specific learning management systems distributed and adapted to the specific customer.

Examples of E-learning technology suppliers:

E-serve AG (www.e-serve.ch) provides platforms for e-business, CRM, knowledge management and eLearning. Its learning management system provides a comprehensive authoring and editing functionality plus the management as an option.

Comartis (www.comartis.ch) provides both content management systems and services in relation to eLearning. Comartis was founded 1995 in Zug, Switzerland, and develops customer specific solutions for Marketing, Information Systems, E-Commerce and Competence Management.

TWI AG (www.globalteach.com). Global Teach is a product of TWI AG. The company has over 10 years' experience with eLearning, especially with Learning Management Systems. Global Teach is continuously developed by TWI AG since more than 8 years. Global Teach is a Learning Management System (LMS): it allows an organisation (firm, administration, university, school etc.) to distribute knowledge and competence in a controlled way. Swisscom, Swissair, Ascom and SONA AG are examples of clients.

Dockland (<http://www.dockland-sa.com/de/e-learning/index.html>) provides in the same product both a Learning Management System and a Learning Content Management System called Dockland. Among its customers there are HÜNI, Piega, Schotec, Siemens Schweiz, Swissmem and GlaxoSmithKline.

Teachforce urs frei (www.teachforce.ch). Teachforce has developed a Learning Management Platform on the basis of the Enterprise Communication Platform offering iMentoring, iClass, iMeeting, iSeminar and iCast. The company has worked with Digipress, Genius AG, Microsoft Schweiz and Worldidac.

E-learning service suppliers

The third category of suppliers covers companies that offer advice and consultancy in connection with eLearning projects. This implies all sort of guidance such as advising the company in choosing eLearning or not, which eLearning product to buy, the implementation and evaluation of an eLearning module. Some of these companies may also develop eLearning

products themselves, while other specialise in organising the organisational framework and guiding the enterprises through what may sometimes seem as a jungle for companies using eLearning, maybe the first time.

MediaSkills GmbH (www.mediaskills.ch) has operated since 1999 as a spin-off company of the Network for Educational Technology (NET), an organisation of the Swiss Federal Institute of Technology Zurich. Since 2004, the main MediaSkills GmbH activity field consists of consulting and production of Web-based animations for eLearning applications.

Athemia AG (www.athemia.com) provides traditional training services combined with eLearning modules. Originally part of the Klett company, it develops bespoke solutions as well as providing standard courses. The company is located in Germany and Switzerland and has worked with several large companies, including Thyssen, Deutsche Bank, Swisscom, etc. Athemia furthermore provides consulting services in the area training strategy.

Fuchsgroup (www.fuchsgroup.ch) provides a comprehensive selection of instruction and training in the context of IT.

Urs Riser Teachware (www.urteachware.ch). Coaching and seminars in the field of eLearning are the primary products provided by this small company. Urs Riser has been in the field of eLearning since 1986, started the company in 1990 and has been operating with Die Post, Schweizer Armée, Konrad Adenauer Stiftung – Bonn, Crédit Suisse, Cerberus and RADO Watch Co. Ltd.

Swiss E-learning companies in international markets

Only very few Swiss eLearning companies are active in the international markets. One example is Bridge2thinK AG. Bridge2think (www.bridge2think.com) is a global learning solutions group with operations in Australia, Germany and Sweden with its headquarters in Basle, Switzerland. Led by a team of international solutions professionals, Bridge2thinK offers a range of products and services to meet the individual learning and development needs of enterprises around the world.

Bridge2thinK's technical team produces localised versions of generic online content to meet the needs of the international clients. They have secured a multi-year contract with Harvard Business School Publishing (Boston, USA) and Corpedia Education (Phoenix, AZ), Intellexis plc. (London, UK) and Distance Learning Inc. (New York, NY). Through the library of Harvard Business Online and Corpedia Education, Bridge2thinK AG offers its clients leadership, executive and management development online curriculum and performance support tools.

Another Swiss company active in the international market is STS that has expanded into 20 countries having trained 25.000 within the field of project management. A company that has crossed the Swiss border and gained access to a neighbour market easily as a result of linguistic similarities is Urs Riser Teachware that has developed a market in Germany.

United Kingdom

National policy and economic conditions

The UK has been at the forefront of eLearning adoption in Europe and comprises a very large proportion of European eLearning activity on both the demand and supply side. Alongside the Nordic countries, the Netherlands and, increasingly, Germany²⁸³, the UK is by far the most advanced market for the penetration of eLearning, comprising around half of the demand in Europe. Arguably, there are several reasons for this high level of penetration. The first reason, however, is similar to many European countries and relates to the many UK government-backed initiatives to embed distance learning in the first instance and later, eLearning into British education policy. Examples of these initiatives included the establishment of the Open University (OU) in the UK in 1971, which established a government supported high profile distance learning opportunity for hundreds of thousands of adult learners. With over 200,000 students and customers, the OU represents 22% of all part-time higher education students in the UK.²⁸⁴ Originally using television (later video) and print materials, the OU was somewhat slow to adopt technologies into its model but has over the years increasingly integrated electronic media in its courses, although print and television remain important delivery media.

With the establishment of the University for Industry (Ufi) in 1998, which aimed to improve the employability of adults who had few formal qualifications, there was a much greater emphasis on electronic media to provide information, access to online courses and remote human support. Its public face, *learndirect* was launched in 2001 and targets both individuals and workplace organisations, including small-to-medium sized enterprises (SMEs). It claims to be the world's largest Government-supported e-learning venture providing learning opportunities to more than 750,000 people, 54 per cent of which are "new learners" who have not participated in formal learning for at least three years.²⁸⁵

Comparable efforts have also been made in Scotland with its devolved government by the Scottish Executive (the Scottish government executive arm) and Scottish Enterprise (the principal Scottish national economic development agency). An initiative in the English schools sector provided a series of documents on strategies for schools education, with the Government's eLearning ambitions first set out on in May 2003 in the paper on *Fulfilling Potential: Transforming Teaching and Learning through ICT in Schools*. This document set out the directions in which all schools should be moving to advance the development of e-learning and describes what this might mean for both teachers and learners²⁸⁶.

'Towards a Unified e-Learning Strategy'

The most recent statement of UK strategy on eLearning was encapsulated in the UK government consultation document 'Towards a Unified e-Learning Strategy' in July 2003. The intention, following the period of consultation is to produce a coherent strategy for education, lifelong learners and for commercial suppliers of ICT systems, software publishers and service providers for the foreseeable future. Similar initiatives are being developed in Scotland, Wales and Northern Ireland. The vision for England rests on five principles – empowering learners to take greater responsibility for what and how they learn, being creative and innova-

²⁸³ Leavis, K. (2002) The Business of (e)Learning. Screen Digest

²⁸⁴ Open University website. <http://www.open.ac.uk/about/>

²⁸⁵ Ufi Annual Review 2002-3. <http://www.ufi.com/annualreview/foreword.html>

²⁸⁶ (<http://www.dfes.gov.uk/consultations2/16/docs/towards%20a%20unified%20e-learning%20strategy.pdf>)

tive in the knowledge society, offering flexibility in education that will adapt to the needs of learners rather than providers, achieving better value by exploiting the capabilities of technology and generating a professional workforce and fulfilled citizens by having learning and information readily available 'anywhere, anytime'. The strategy document considered seven key action areas, which will apply to all sectors of education in the UK. These are:

- Helping educationalists tackle the funding models that have hampered the adoption of new online technologies
- Helping teachers blend eLearning with other, more traditional methods and be innovative in teaching through technology
- Giving teachers and lecturers career development and incentives for eLearning
- Helping learners meet their personal needs through eLearning support.
- Making assessment a driver of innovation rather than a barrier
- Building a better eLearning market, based on new technical and quality standards
- Deciding on the appropriate technical standards for eLearning.

The response to the consultation was published in April 2004²⁸⁷ with a promise of a 5-year plan to be published in July 2004 although this has not materialised at the time of updating this report. It must also be noted that while it's referenced in various parts of the consultation document as a partner with whom the strategy unit will be working, it is not clear how or where Ufi/learnirect really fits into this strategy. In terms of 'building a better eLearning market', the strategy does not address the development of the market directly or to any great extent. It notes 'We have not yet found the right mechanisms for the partnerships we need between developers and users' which given the very large public funds spent seems a pity. However, they say that they will 'Investigate tendering processes, business models and procurement mechanisms that stimulate market development for both large and small companies, while providing for affordable and sustainable e-learning and protecting public investment.' It tends to use the term ICT industry rather than separating out the industry value chain and segments. The focus is largely on issues of quality control and technical standards. They do not provide any comment on whether the current IPR practices are a barrier to market growth but do say that they will 'Provide advice for organisations and companies in agreeing best practice for IPR, and in negotiating copyright' and that they will 'Explore the use of technical solutions to IPR protection and resolution.'

In the response document, there was a positive view about the benefits of having international interoperability. Some 'key' respondents expressed concern that standards for the design of software and systems would suppress innovation. There were also divided views about the value of kite marking. Over a quarter of respondents felt that IPR needed to be addressed and a number felt this needed to be resolved sooner than suggested in the strategy document 'as collaboration between teachers and the software industry was central to the success of the strategy'. More than a quarter of respondents 'agreed it was right to involve teachers with innovation in software design'. The nature of this involvement is not clear nor is how respondents perceive it might be operationalised. Overall, what is meant by a 'better' market is unclear (more traded products and services? Higher value added products and services?).

²⁸⁷ Progress towards a Unified e-Learning Strategy. 8th April 2004. e-learning Strategy Unit, DfES.
<http://www.dfes.gov.uk/elearningstrategy/online.cfm>

Curriculum Online

In 2001, the UK government announced an investment of £50 million to fund Curriculum Online. Described as ‘the world’s first partnership between the government, leading public private broadcasters and innovative software producers to provide materials for every curriculum subject to transform learning in schools’, the initiative aimed to provide a web ‘window’ with online curriculum materials including a library of eLearning materials, access to commercial products for school purchase and including a guide to the best by teachers for teachers. eLearning credits money for schools could be used to purchase the resources. Take up has been slow which may be due to problems such as the fact that teachers could browse but not buy directly- purchasing has to be done directly with suppliers). By May of 2004, only 25% of eLearning credit funds had been used (with only three months left in which to use funds). The problems are being overcome, but there remains the question about its effectiveness and sustainability, and impact on market development of having government act as a procurement channel.

Different VET systems and the corporate market

Another reason for the interest in e-learning in the UK may be the nature of vocational and workforce training in the UK, somewhat similar to the US model with high levels of individual decision making about training and loose links to other labour market mechanisms. With a less rigid system of training and employment and occupational standards links than for example in other European countries (notably Germany), self-learning using electronic media has attracted some individuals. (A case could also be made that this builds on the same cultural and national system characteristics that helped to stimulate interest in the offerings of the Open University). Quite a lot of firms have offered employees the opportunity to learn in their own time and at their own pace and have been willing to provide content libraries and computer access to their staff – for learning often on a voluntary basis. Many large firms in particular have provided through learning centres and less so, at the workstation, access to these types of self learning opportunities.

The widespread use of (American) English as the current international language of business communication (with estimates suggesting that up to 80% of global business communication is conducted in English)²⁸⁸ has also some influence.

eLearning as a driver in development an export market in education?

This factor may be behind another reason for the surge of interest in e-learning in the UK in recent years: the desire to exploit the global use of the English language to drive eLearning as a major export opportunity for UK private sector suppliers (although there is no evidence yet of private supplier growth as a result of exports) and for the UK education system, especially the university sector. The latter has entertained an anticipation of strong revenues from online programmes in export markets but with the exception of the Edinburgh Business School and perhaps to a lesser extent one or two others, there is little evidence to support their optimism to date. A recent higher education initiative which had significant government funding (estimated to be £ 62 million sterling) was UK e-Universities (UkeU), which began in 2000 and aimed to operate as an ‘aggregator’ for UK universities by acting as an intermediary between individual institutions and students world-wide and in providing, in conjunction with Sun Microsystems, a learning platform and other technology to deliver courses (a similar initiative has been developed in Scotland through the Interactive University). The first programmes

²⁸⁸ Gooderham, P. N. & Nordhaug, O. (2003) *International Management: Cross-Boundary Challenges*, Oxford: Blackwell

became available in 2003 and the plans were for a broad range of undergraduate and post-graduate education in a wide range of subjects. Marketing effort was focused on South East Asia, China, India and South America. It was seeking to market courses to both individuals and to corporate universities and to offer customised content to companies.

The UkeU venture collapsed in Spring 2004, with only 900 students registered and only 215 having used the platform that they were developing.²⁸⁹ The Higher Education Funding Council of England (HEFCE) has since been attempting to sell its assets. According to a recent statement 'Funding on the project, including the limited and final sum agreed by the Board to enable the restructuring of the e-Universities' activities to be completed, total about £50 million. HEFCE plans to use the balance of the £62 million originally provided by the Government, alongside other funds, to support the development of e-learning in universities and colleges.'²⁹⁰ The same statement confirmed that attempts to sell the platform had so far not been successful 'e-Universities confirmed that no bids for the platform, acceptable to the company, had been received by the deadline'.

The experience of the Open University in its attempts to establish an American arm point up the significant difficulties of trying to build export businesses in this sector. They established a US Open University in 1998. However, after four years and £9 million sterling investment, they had signed up only 560 students and ceased operations in 2002. Even today, the OU has only 26,000 students outside of the UK, many of these in Ireland and its unclear how profitable these customers are with the model of student support provided by the OU. At home, the OU is struggling with adapting to a new world of electronic media and competing in a market place with many more aggressive players.

The Edinburgh Business School offers a more successful story (see below and the full case study is also available as part of the EduLearn research deliverables).

E-Learning and public sector reform

In the context of public sector reform, there are a number of initiatives, which aim to integrate e-learning into change and development programmes. One that has had some success has been the local government initiative, the IDeA Learning Pool. This is an e-learning service launched in 2002 that brings local councils together to create, share and access targeted e-learning for local government. Epic plc worked with IDeA to develop Learning Pool. At the time of writing, IDeA had 60 councils participating. By learning from each other, the IDeA Learning Pool community hopes to support the growth of e-learning content, skills and capacity in the sector. However, their experience has been that getting mainstream take-up is not easy and many local authorities are still at a very early stage of usage. In healthcare, the NHS University (NHSU) was established in 2003 to commission, accredit and provide education and training, with the expectation that much of it will be online. However, early plans to have the virtual campus procured and operational by January 2004 were not met and at the time of writing, an open consultation process on their discussion paper 'e-learning for Health' had just been completed (May 2004). A business plan due for April 2004 has not yet been published. Work on building technology-supported resources is however continuing. A recent announcement from a Strategic Health Authority (responsible for two large south eastern counties) stated that they were licensing an online training course from the Training Founda-

²⁸⁹ The Observatory on Borderless Higher Education. Breaking News Article – 1st July 2004.

²⁹⁰ HEFCE website, news June 2004. <http://www.hefce.ac.uk/news/hefce/2004/euni/june.htm>

tion on managing and reducing the prevalence of MRSA (A deadly hospital infection.) The course will cover many of the front line health deliverers (hospital trusts etc) in the area.

ICT profile of the UK

Demographics and Network Readiness Status

The United Kingdom has a population of 59.4 million and comes 10th in the Centre for International Development's Networked Readiness Index²⁹¹ According to figures for 2000, 39.9% of the population in the UK were using the Internet whilst 53.6 considered being able to use computers in daily life important. By 2002, the figure for at home Internet penetration was 58% of which 10% was via a Broadband connection. Mobile phone use rose from about 38% of the population in December 1999 to just under 60% by October 2000 and stands at amongst the highest penetration rates in the world. More than 1 billion SMS text messages were sent via mobile phones in the UK in August 2001. However, the UK had the lowest number of Public Internet Access Points per 1000 of the population in a survey of ten EU countries undertaken in January 2001 with 1763 points in total located in libraries and job centres. The UK has well developed online coverage of government service agencies via UKonline.gov, a project set up by the government with the ultimate aim of moving all government services, communications and transactions online. A great deal of venture capital has been invested in ICT research and e-commerce in Britain which has provided a huge boost to the successful development of a wide range of software and contributed greatly to Britain's success with ventures such as Vodafone and Orange.

Telecommunications Infrastructure

Year	2001-2002
Main telephone lines per 100	58.23
No. of cell phone subscribers per 100	66.95
No. of personal computers per 100	33.78
No. of personal computers connected to the Internet	8.31%
Internet Hosts per 1000	28.07

*Source: Center for International Development at Harvard University
Global Information Technology Report 2001-2002: Readiness for the
Networked World (Country Profiles)*

Education and ICT

The UK has an adult literacy rate of 99% and spends 4.7% of its GDP on education. Fifty-eight per cent of the relevant age group is involved in tertiary education. Ninety-eight per cent of secondary schools and eighty-six per cent of primary schools (the second highest figure

²⁹¹ <http://www.cid.harvard.edu/cr/profiles.html>

after Finland) were connected to the Internet in 2000 giving a ratio of nine pupils per PC at secondary level and sixteen at primary level. The digital literacy rate of teachers was 71%. Digital literacy amongst the general population was the second highest in the EU next to Denmark and well above the EU average. For 16-24 year olds only, the UK was still above the EU average but by a narrower margin, as the literacy rate was generally higher for this age group across all EU member states. There is a gender gap whereby 73 women achieved digital literacy for every 100 men. The highest percentage of the labour force using e-learning at work in the EU was measured in 2002 at 19%. The UK figure is 17% against an EU average of 15% with 56% of establishments giving their staff access to the Internet.

ICT and Government Policy

The UK Government established the 'Office of the e-Envoy' in 1999 which had three core objectives: to make the UK the best environment in the world for e-commerce by 2002, to ensure everyone who wanted it had access to the Internet by 2005 via UK online centres and other schemes, and to make all Government services available electronically by 2005. This has now been superseded by the e-Government Unit which 'works with departments to deliver efficiency savings while improving the delivery of public services by joining up electronic government services around the needs of customers. It also provides sponsorship of Information Assurance. The e-Government Unit takes on the majority of the work previously undertaken by the Office of the e-Envoy.'

The UK Online Strategy sets out 94 detailed recommendations designed to deliver these objectives and make the UK a world leader in the knowledge economy. Policies cover e-commerce, e-government and education and training. The Government is also anxious to improve the ICT infrastructure in schools and colleges and to establish City Learning Centres, which will provide further opportunities for students of all ages to learn about new technologies. Ongoing policies are aimed at training up to 10,000 students a year on full time and updating courses by 2004/5, training an additional 5,000 unemployed people between 2002 and 2005 for technician level jobs in ICT and addressing the gender gap evident in the under representation of women in ICT jobs.

Training and development market in the United Kingdom

The broad elements of VET in the United Kingdom and what they encompass are defined as follows:

Initial vocational training

- vocational training in schools for 16-19 year olds;
- vocational training in further education colleges for 16-19 year olds;
- vocational training in enterprises for school-leavers.

Continual vocational training:

- vocational training for those in employment funded mainly by enterprises;
- vocational training for those in employment funded substantially by the government;
- vocational training for those in employment, mainly self-funded.

Training for the unemployed:

- vocational training in college for those who are unemployed;
- vocational training in private training providers and enterprises for unemployed people.

Further education (FE) includes a great deal of VET activity, but it is neither exclusively VET nor does it cover the whole of VET. FE sector consists of education and training, academic and vocational, at levels of attainment below university level, for people aged 16 or over.

As a result of the government's investment, education and training spending as a whole in the UK as a proportion of gross domestic product rose from 4.7 % in 1996-7 to 5.0 % in 2001-02, and is forecast to rise to 5.3 % in 2003-04. Government's expenditure on education accounted for 11.43% of public expenditure in 1999 compared with 10.99% in 1996 (ONS, 2001). By 2003-2004, spending in England on education and skills will be over €16.7 billion more than in 2001-2002.

Initial Vocational Training

Initial vocational training (IVT) is training undertaken by those between the ages of 16 and 19, excluding higher education and training (above NVQ3 level). It may be full- or part-time, and may be delivered in school (approximately 8% of uptake), further education college (55%) or within an enterprise (37%). IVT constitutes only a small fraction (about 2%) of total schools' activity but as much as a third of the activity in colleges. There is a range of nationally based IVT programmes, including NVQs, modern apprenticeships and IVT programmes that are outside the National Qualifications Framework (and do not, therefore, necessarily qualify for government funding). Modern apprenticeships are now the main aspect of government's drive to improve the quality of initial VET qualifications that are work-based. The picture of initial vocational training is therefore complex, reflecting the fact that such training is an integral part of other systems.

IVT in the public sector is delivered by a variety of providers, FE colleges and sixth form schools, in particular, and the funding sources for them are quite distinct.

Apprenticeship and alternance training

Several programmes are available to help increase work-related skills for young people. These are offered as alternatives to school- and college-based education for 16 to 19 year olds as part of an existing employee's training. The government now encourages young people to train for a job at the workplace by taking up a foundation (ISCED 2) or advanced (ISCED 3) Modern Apprenticeship, incorporating an NVQ qualification (SVQ in Scotland). Take-up of NVQs and Modern Apprenticeship varies by industry, and some employers prefer their own qualifications, or other qualifications than NVQs or SVQs.

Continual Vocational Training and Adult Learning

Continuing vocational training (CVT) is defined as training for those in employment, but excluding those aged 16-19 who is considered to be participating in IVT. CVT would include on-the-job training, adult vocational training, open learning opportunities etc. It can take place in a variety of locations such as within enterprises, with private training providers, and within further education colleges, and either private finance or public finance or a mixture of the two may fund it.

Employer and publicly funded CVT

There is no mechanism regulating enterprise-based CVT in England, neither is there comprehensive up-to-date information on what UK employers spend on VET. In the then DfEE 1998 survey, employer-funded training amounted between €22 and €29 million whereas in 2000,

the DfES Learning and Training At Work Survey found that employers spent £23.5 billion (£38.6 bn) on training their employees, including course-related and other costs, such as trainee wages. An initiative first piloted in 2002 and now covering one third of the country and nearly 12,000 employers, Employer Training Pilots (ETPs) offer business subsidised training at national vocational qualification Level 2 and essential skills with approved providers and compensation to employers to cover the time taken off by staff for training.

Training for the unemployed

Training for the unemployed (TfU) is defined as vocational education and training for those persons aged 18 and over who are unemployed. Those persons aged 16-17 who are unemployed are classified and eligible for IVT as they are not entitled to claim Jobseeker's Allowance (JSA). Since April 2002, the Jobcentre plus under the Department for Work and Pensions is responsible for training of unemployed in England, whereas in Wales it is the responsibility of ELWa. It caters for unemployed people at least 25 years of age who have been out of work for at least 26 weeks. Others facing particular disadvantages in the labour market qualify for WBLA as soon as they become unemployed. Such disadvantages include people with disabilities and single parents. The Jobcentre plus is a new training programme to meet the needs, backgrounds and level of experience of unemployed adults. Its action areas are work and work placements with employers, and the programme is intended to make it easier for trainees to find employment. Also available is job-based short-term training to help people gain or improve work-related skills to enable them to find other work.

Work-based training for adults and the New Deal

The New Deal for Young People (NDYP) and New Deal 25plus are mandatory programmes for those who are unemployed for either six and eighteen months out of the previous twenty-one months respectively. New Deal for Partners, New Deal 50+, New Deal for Disabled People and New Deal for Lone Parents are voluntary programmes. Funding amounted to €1,378 million in 2000 (0.09% of GDP) with training specific measures accounting for €710 million.

E-learning market size and characteristics

The corporate market

To emphasise the importance of the UK to European eLearning, the corporate market in Britain was estimated to be worth some £224m, around 50% of the total European corporate spend on eLearning in 2001 (IDC, 2001; Enterprise Ireland, 2001). However, this figure has to be placed against an estimate worth of the UK corporate training market of £17.1 billion. Again, the data is contradictory. The 1999 CVTS data says that for those sectors covered, CVT expenditure is estimated at €4.07b in the UK. Growth in eLearning is expected to be high in a relatively immature market at around 93% compound annual growth (Epic, 2003). Epic (2003) quote IDC figures projecting growth in UK corporate spend on eLearning to be £286m in 2002, rising to £550 m in 2003 and £1 billion in 2004. These figures do need to be treated with considerable caution.

Epic (2003) noted that the market in the UK remains fragmented with declining interest being shown by the major consulting organizations such as PwC, KPMG and Accenture. Major technology companies, such as IBM and SUN continue to show an interest in the market, but have tended to partner with learning and design organizations and the universities to offer a

solution. Similarly, software companies, such as SAP, PeopleSoft and Oracle are beginning to move into adjacent spaces, arguable with no real impact as yet²⁹².

The main UK-based private sector providers to the further education and corporate sectors remain medium-sized companies, such as Epic and AdVal.

Finally, in the corporate sector, much of the development of eLearning content has been undertaken for internal consumption, particularly in sectors such as information technology, telecomms and financial services. Increasingly, government departments, such as the Ministry of Defence, have shown an interest in providing eLearning content.

Schools

Significantly larger is RM serving the broader education (schools) market, with a turnover of £215 million in 2003 and profits before tax, goodwill and exceptional items at £8.6million. Their interim report for the 6 months to March 2004, shows a significant increase in turnover, although this includes some one offs accounted for example by recent acquisitions.

Media and publishing companies are beginning to see eLearning as a major market for their content (see the EduLearn case study on Pearson Education), with the British Broadcasting Corporation spending an estimated £150million on Digital Curriculum (with repercussions for commercial providers such as RM and Pearson Education who have expressed serious concern about the implications for the market). This has been subject to a decision by the European Commission on state aids, which has given approval for its go-ahead under certain conditions.²⁹³ The Department for Education and Science has developed Curriculum Online, which is a portal providing a search engine and an electronic library of certified, educational materials and the Government has introduced an Electronic Learning Credit (eLCs) scheme whereby £330 million will be provided between the financial years 2002/3 to 2005/6 for schools to spend exclusively on non-BBC materials.

Total expenditure by UK schools on curriculum software and electronically delivered content was recently estimated by the Economic and Social Research Council ²⁹⁴ to be £70-80 million per year. Not really that large if one considers the £150 million allocated to BBC Digital Curriculum and the sums allocated to Electronic Learning Credits. The challenge (discussed in the Pearson case study) is how to assist buyers to purchase effectively with such a huge increase in the size of the market both from a demand (due to increased funding) and supply side.

Sales of educational software to individual homes is approximately half of that at around £35 million. Electronic Learning Credits are not available for home purchase, arguably limiting their usefulness.²⁹⁵

²⁹² Leavis, K. (2002) The Business of (e)Learning. Screen Digest

²⁹³ State aid No N 37/2003 – United Kingdom. BBC Digital Curriculum
http://www.europa.eu.int/comm/secretariat_general/sgb/state_aids/comp-2003/n037-03.pdf

²⁹⁴ (ESRC Report, No. R000223819)

²⁹⁵ (ESRC Report, No. R000223819)

Universities

There is widespread deployment of Learning Management Systems across the HE sector where Blackboard and WebCT are probably the strongest players. In content, Pearson Education is very strong (see their case study) as is Thompson. In higher education, there has been a partnering of companies such as Pearsons Education with Edinburgh Business School and Thompson Publishing with Universitas 21, a grouping of universities from the UK, US, Europe, Asia and Australia.

Edinburgh Business School at Heriot Watt University <http://www.ebsmba.com/index.asp>

Edinburgh Business School currently claims to be the second largest provider of MBA distance education in the world, with all students being moved over to online delivery. Currently there are 9000 registered students in 60 or so countries, including more than 2500 in North America. Its revenue is currently in excess of £10 million and has won the Queens Award for Exporting (a prestigious UK award for export performance) twice since it was established in the 1980s. One of the most novel aspects of its business model is its close alliance with Pearson's Educational Publishing, which acts as the marketing and publishing arm of the business, giving Edinburgh Business School near-unique (in higher education terms) channels to international markets.

It launched an online doctoral programme in Business Administration in 2003 is currently developing a range of masters degrees in business and management to be launched in 2005.

IVIMEDS (<http://www.ivimeds.org>)

IVIMEDS is an international partnership of 36 leading international university medical schools from 15 countries that was formally launched in February, 2002. The 'brainchild' of now emeritus Professor on Medical Education at the University of Dundee in Scotland, where it is currently based, IVIMEDS has the potential to transform medical education in the developing world by sharing online resources and providing virtual medical education on a commercial basis to the undergraduate, postgraduate and post experience markets medicine and nursing. Since its launch, it is begun to develop courses and a further six international medical schools have joined.

The E-learning industry in the UK

Like many other European countries, the eLearning industry in the UK spans a diverse range of public, private and public-private partnerships, as indicated in the preceding paragraphs.

RM <http://www.rm.com/rmcomhome.asp>

In effect, a full service provider, The RM Group is a software, professional services and Information and Communications Technology (ICT) supplier to schools, colleges and universities, local government and central government education departments and agencies. RM provides learning tools software, managed services, network software, hardware, whole courseware and other ICT education services. Products include the RM Tablet PC, the RM IntelliDesk™ and the All-in-One PC, as well as desktop and mobile PCs. It is the UK's leading supplier of educational ICT. In 2003, turnover was £215.5m and profits before tax, goodwill and exceptional items £8.6m. It has strong cash reserves and after post tax losses in 2002 has grown revenues and reduced costs. During 2003 RM opened a software development facility in India.

With exceptions such as RM (schools), and to a lesser extent, EPIC (mainly government and corporate), both profitable, most UK eLearning companies are relatively small scale and even the larger of these e.g. Futuremedia and Adval are not currently profitable. Some of the very small content providers seem to be able to compete in niche areas effectively but it is questionable what real opportunities there are for growth without significant investment.

Technology providers are mainly larger, mainly-US based companies that can offer a broad portfolio of products and services or 'total solutions' approach to clients. There are small UK owned technology organisations, e.g. FlexeLearn (Box 2) and the Knowledge Business (Box 3). The question facing many of these companies concerns their ability to survive in a supply-side market that is increasingly consolidating around a smaller number of large companies in eLearning, knowledge management, consulting and software development, even using the increasingly familiar route of forming alliances with complementary companies.

Epic www.epic.co.uk

(There is a full case study on EPIC written for the EduLearn Project)

Epic Group PLC is a UK registered consultancy, content and services e-learning company. It was founded in 1983 and during the 1980s and 1990s provided CBT (computer based training); in 1998 it began to develop online learning. EPIC's business operates in all three sub-sectors of the e-learning industry. It is noticeable that most of its business has been in bespoke content but in recent years it has developed new products (technology and generic content) and more particularly increased services. It has been consistently profitable throughout the last few years.

A survey undertaken by one of the major UK content providers (EPIC²⁹⁶) in 2003 concerning future (3 year horizon) expectations for eLearning, anticipated growth (relatively evenly spread) from the highest in the tertiary sector, followed by corporate and government to schools and lifelong learning. However, it should be pointed out that in the lifelong learning category, they include UFI/learnirect, where much of the learning is skills for the labour market (primarily basic skills and IT). Contradicting the expectation that tertiary sector will see the highest growth however, if also the expectation that when asked where online learning is most likely to be used, educational establishments were listed below work, home and learning centres.

The Matchett Group www.thematchettgroup.com

Created in 2002 by merging John Matchett Limited (JML) and Adkins, Matchett & Toy UK (AMT), the Matchett Group employs 60 people in training, consultancy and LMS (Pathlore) deployment. They work in business training, learning management and financial training. Their clients include 70% of the UK Times Top 100 companies and claim to have installed more learning management systems than any other UK provider.

²⁹⁶ Epic Survey 2003: The future of e-learning. This survey was completed by 203 respondents including 'online learning professionals working across the public and private sectors', and members of the British Association of Open Learning, the Forum for Technology in Training, the Association for Learning Technologies, the e-learning network, and a number of vendors.

Tribal Group Plc <http://www.tribalgroup.co.uk/>

Tribal is one of the fastest growing companies supporting the public sector in the UK today, providing professional support services, consultancy and managed services and including training and e-learning. Tribal was set up in September 1999 and now employs over 1,800 people. For the year ended March 2004, turnover was £185.7m and profits before tax were £20.1m. In May 2003 they were awarded a £4.4m contract over 3.5 years to supply e-learning services to the South Yorkshire e-Learning Programme, as part of a consortium led by RM plc. In April 2004, they renewed their contract with Fujitsu to maintain and support the learning environment for Ufi learndirect. This contract is valued at £1.2m. They are the market leader in the development of world-class multimedia products and resources for adult basic skills. Their award-winning basic skills software product, Target Skills, is now used in over 300 of the 450 FE colleges in the UK, and is being taken up by an increasing number of other providers such as NHS Trusts and work-based training providers.

Perhaps of most immediate interest to the supply side is the response to the question ‘what underlying technology do you see delivering online learning? The largest proportion indicated a simple Learning Management system (LMS ‘lite’) at a reasonable price, and in some cases, developed in house. Enterprise LMS followed by LCMS were next followed by simple intra-net or CDROM delivery. The lowest proportion opted for Module add-in for existing HR systems (and including ERP/full enterprise suite type systems).

eLearning Industry Networks and Alliances

One of the major problems for the UK government (and the Scottish, Welsh and Northern Irish executives) is facilitating alliances of such small companies to develop an internationally competitive, indigenous eLearning supply industry. The UK government and the various regional executives have realised that eLearning as an industry can play an important part in national economic development and is the kind of industry that symbolises a knowledge-based economy. As a consequence, there have been some important UK regional developments that have emerged or have been deliberately designed to develop significant clusters of eLearning expertise. The best developed of these is the Scottish eLearning Alliance in 2002 (See Box 4), which, as yet, has no equivalent in England. However, the eLearning Network, which is primarily a network of active relatively small suppliers, has been very effective in working in partnership with a dedicated learning publication ‘e.learning Age’. (<http://www.elearningage.co.uk/>). While focused on building the UK market rather than an exporting one, it has built a strong level of visibility and to some extent, through its networking activities, brings the industry together to help educate customers. There are also a number of networks within the public sector and systems, including NLN, NILTA and those formed through participation in funding from bodies such as BECTA and JISC.

International suppliers

The UK hosts major subsidiaries of the major international organisations with interests in eLearning and, along with Ireland, is a popular location for inward investment for the mainly US-based international and multinational players in this Market. Such inward investment is linked the high proportion of European eLearning spend in the UK corporate sector, with organisations such as SumTotal, Skillsoft and NetG having significant operations here. Similarly some of the large players in the educational market have a significant presence in the UK, including WebCT and Blackboard. In addition, as previously mentioned, the large information technology companies that are beginning to operate in the eLearning market, such

as SAP, Oracle and IBM, are providing solutions and resources to support their systems. The Indian TATA Group's TATA Interactive Systems (TIS) has been in London since 1998.

UK Organisations in International Markets

As previously mentioned, few indigenous UK companies have significant and sizeable operations outside of the UK. There may be some promise for UK export earnings deriving from eLearning in the higher education sector and in the UK-based publishers, which have been increasingly aggressive in this market. Apart from the previously mentioned Open University, three examples of UK higher education ventures attempting to compete on an international scale are IVIMEDS (an international virtual medical school) and Edinburgh Business School, and there are three universities in the UK who are members of Universitas 21. Some of the commercial UK suppliers are operating in international markets but the earnings of these firms from export markets is unknown.

Future potential

Current growth in the UK corporate eLearning sector is low and many suppliers are building their revenues through public sector expenditure. This looks set to continue for some time, although it is unlikely to be at the levels of expenditure the government has provided in recent years. One possible growth is professional bodies. A recent survey reported that 74% of professional bodies plan to implement online systems for the management and delivery of Continuing Professional Development.²⁹⁷

²⁹⁷ University of Edinburgh market research – carried out by MBA students for the Lothian project for NKD Webmedia (quoted in e.learning age September 2004)