TOWARDS BUILDING AN eLEARNING ENVIRONMENT IN POLAND

KOŹMIŃSKI Entrepreneurship and Management

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TOWARDS BUILDING AN eLEARNING ENVIRONMENT IN POLAND

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CONTENTS

CHAPTER IV

CHAPTER V

CHAPTER VI

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PREFACE

Information and knowledge are the thermonuclear competitive weapons of our time. Knowledge is more valuable and more powerful than natural resources, big factories, or fat bankrolls.

Tom Stewart,
Intellectual Capital. The New Wealth of Organizations,
New York 1998

In the last decades the economic and technological forces have transformed many economies from production-based to service-based economies. The latter has generally been called "new economies", whereas production-based economies are referred to as traditional. The traditional economies emphasized the importance of physical and financial assets as the main corporate values. Whereas the new economies give the first and foremost place to intellectual capital. However, the life cycle of human knowledge and skills today has become shorter than ever. This has increased the pressure to update the education and skills throughout the whole career development process. Apart from higher levels of education, the new global economy poses new challenges for people who work with computer literacy, information analysis or critical thinking. Lifelong learning[1] is therefore a tangible contribution to the economic growth and competitive advantage of nations.

Information and Communication Technologies (ICTs) have been an integral element of the growth of professional education and lifelong learning. eLearning is defined as learning through the use of ICT, which encompasses the use of ICT in traditional education (in schools and higher education), the use of ICT in training and learning at the workplace, the use of ICT in lifelong learning (including reskilling and training for jobseekers) and the use of ICT in everyday life (digital literacy/digital competences). The latter refers to the necessary critical skills and competences to make use of ICT in a knowledge society (*European*

[1] Lifelong learning refers to all learning activities undertaken throughout life, with the aim of improving knowledge, skills and competences.

Commission Classification of learning activities – Manual, Office for Official Publications of the European Communities, Luxembourg 2006).

The book was written on the basis of a report prepared for the Institute of Prospective Technological Studies (IPTS) of the Directorate General Joint Research Centre, European Commission, entitled: *Next Steps in Developing Information Society Services in the New Member States: The case of eLearning.*

LIST OF ABBREVIATIONS

AGH	University of Science and Technology
AHE	Academy of Humanities and Economics in Łódź
B.A.	Bachelor of Arts
BBC	British Broadcasting Corporation
B.Sc.	Bachelor of Science
bn	Billion
CBOS	Public Opinion Research Centre
CEE	Central and Eastern Europe
CeL	Centre of Excellence in eLearning
CKP	Practical Training Centres
CLS	Certified Lotus Specialist R6 Application Development
CKU	Lifelong Learning Centres
COME (WU)	Centre for Open and Multimedia Education (Warsaw University)
CSC	Computer Skills Card
ECDL	Certificate of European Computer Driving License
ECSC	The European Computer Skills Card
ECTS	European Credit Transfer System
EDGE	Enhanced Data Rates for GSM Evolution
ESF	European Social Fund
EU	European Union
EU10	European Union with 10 Member States
EU15	European Union with 15 Member States
EU25	European Union with 25 Member States
EUROSTAT	European Statistical Office
FDI	Foreign Direct Investment
GDP	Gross Domestic Product

GHz	Giga-hertz
GPRS	General Packet Radio Service
HCM	Human Capital Management
HTML	Hypertext Mark-up Language
ICT	Information and Communication Technology
IDC	International Data Corporation
IIPA	International Intellectual Property Alliance
IS	Information Society
IT	Information Technology
PLN	Polish zloty
M.A	Master of Arts
MNE	Ministry of National Education
mn	Million
MCAD	Microsoft Certified Application Developer
MCSD	Microsoft Certified Solution Developer
MCSP	Microsoft Certified System Professional
MP	Member of Parliament
M.Sc.	Master of Science
NEWW	Network of East-West Women
NBP	National Bank of Poland
NCP	National Computerisation Plan
NDP	National Development Plan
NGO	Non-Governmental Organisation
NIK	The Supreme Chamber of Control
NIS	Newly Independent States
NMS	Network Monitoring System
NRDS	The National Regional Development Strategy for the Years 2007–2015
NRCVG	National Research Centre for Vocational Guidance
OEC	Office of Electronic Communication
OECD	Organisation for Economic Cooperation and Development
OFEK	National Foundation for Computer Literacy
OP	Operational Program
PARP	Polish Agency for Enterprise Development
PHARE	Poland and Hungary: Assistance for Restructuring of the Economies

PCLP	Principal Certified Lotus Professional (PCLP) R6 Application Development
PCSS	Poznań Supercomputing and Networking Centre
PIAP	Public Internet Access Points
PISA	Program for International Student Assessment
PIONIER	Program of Polish Optical Internet
PPP	Public-Private Partnership
PUAP	Platform of Public Administration Services
PUW	Polish Virtual University
R&D	Research and Development
SGGW	Warsaw Agricultural University
SME	Small and Medium Sized Companies
SPO	Sector Operational Program
SPORZL	Sector Operational Program of Human Resources Development
TP S.A.	Telekomunikacja Polska S.A. (Polish national telecommunications provider)
UMCS	Maria Skłodowska Curie University in Lublin
UMTS	Universal Mobile Telecommunication System
USD	United States dollar
VoIP	Voice over Internet Protocol
WiMAX	Worldwide Interoperability for Microwave Access

LIST OF FIGURES AND TABLES

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

eLearning is a relatively new phenomenon for Poland, because the country is at an early stage of Internet development and penetration. Poland is just starting to discover all the advantages embedded in ICT. Nevertheless, the changing work environment has contributed to increasing awareness of the role of continuous education and training in professional and personal success. However, while demand for education is growing, the capacity of the public sector to satisfy that demand is being challenged. At the same time, the development of ICT provides alternative ways of delivering higher education.

The ICT infrastructure in Poland has been boosted by the stable economic growth, steady increase in foreign direct investment (FDI) and the implementation of large-scale IT infrastructure projects. Significant government efforts are being made to improve the broadband network and to support the ICT industry development. The Polish Government is increasingly more often recognising eLearning as an integral part of a complete learning environment and has formulated numerous policies and laws in order to enhance investment in ICT and ICT R&D in education and training. All these policies will contribute significantly to the promotion of web-based or online learning as a method of delivering education and training.

This book aims at presenting the development and applicability of eLearning in Poland. It comprises six chapters, providing detailed analysis of institutional and policy background related aspects of eLearning, as well as its state and trajectory, its main factors, drivers and barriers. Chapter I describes the theoretical background of the role of education in macroeconomic growth and development. The evidence of a positive relationship between skills and competencies of workers, labour productivity and income is being discussed here. Further analysis emphasises on eLearning as a factor of knowledge, skills and competences. The main focus of Chapter II is on the macro-level trends that are most relevant to the development of lifelong learning and eLearning in Poland. Although these developments seem to have a rather indirect influence on eLearning performance, it is still valuable to include them here, as they are important for strategic decision-making and policy implications. In

addition, they facilitate a better understanding of the context in which eLearning issues are being analysed. Chapter III provides more insight into the importance of eLearning in the current education system in Poland, including a description of the education and training system, ICT skills and of the attitudes towards ICT usage. Chapter IV deals with the institutional structures and resources (strategies, policies, action plans and project) with regard to eLearning in Poland. Chapter V gives on overview of the main achievements and shortcomings of eLearning in Poland. This part presents a genuine analysis of the factors behind the existing developments of eLearning in Poland, as well as a list of the incentives and barriers to future eLearning development. The closing chapter concludes the report by giving insights into the key policy implications and the R&D challenges for eLearning.

CHAPTER I

eLEARNING AS AN INSTRUCTIONAL AND LEARNING CONTENT

1. TRENDS AND DRIVERS OF THE LEARNING SYSTEM

The competitive position and economic prosperity of Poland are increasingly dependent on technology and the constant update of skills, whereas knowledge production and the update of individual skills depend on the promotion of the lifelong learning practices and the continuous renewal of human capital. The central role that learning and training play in the economic development, competitiveness and growth could be presented in several pathways (CIDA 2001). Education and training are the most important investments in human capital. The positive effects of education and general literacy on population health, particularly women's health, are well known and researched (Keating; Kickbusch, Buse 2000; Figure 1).

Similarly, the role of human capital as a central pillar of growth and productivity has been widely discussed. There is a well-established positive relationship between skills and competencies of workers, and labour productivity. The improvements in skills and competencies should lead to an increases in the productivity performance per employee. Studies that have been carried out by Bassanini and Scarpetta (2001) provide an empirical evidence of the growth-enhancing role of human capital in OECD countries. Accordingly, an additional year of schooling would, on average, lead to about a 6 percent higher GDP in the long run.

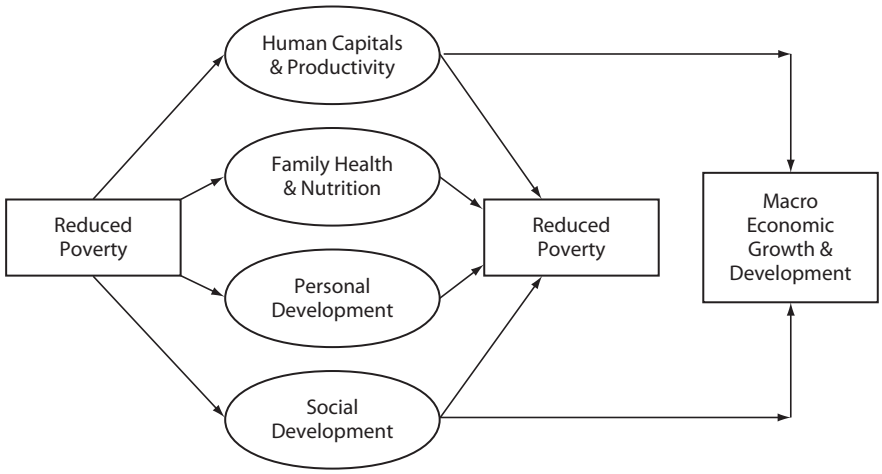

Figure 1. The role of education in macroeconomic growth and development

Source: A.W. Khan, *The Future of Learning – Learning for the Future: Shaping the Transition,* Düsseldorf, Germany, 1–5 April 2001, 20th ICDE World Conference on Open Learning and Distance Education.

The alternative approach to measuring the education-growth relationship is presented by the International Adult Literacy Survey (IALS). The survey tested a sample of adults and then related these measures to labour market experiences. Hanushek and Zhang (2006) collected data on the basic skills of literacy and numeracy based on a representative sample of the population aged 15–65 from a sample of countries between 1994 and 1998.

The Figure below presents the estimated returns to school attainment and literacy scores for the 13 countries[1]. The estimated model jointly includes school attainment and literacy scores. Both school attainment and cognitive skills have a consistent positive impact on earnings and individual income. The worst performance regarding the impact on earnings can be observed in Poland (Figure 2).

Figure 3 shows the IALS estimated impact of school attainment across similar countries on income level. The survey results reveal that returns both to the quantity of schooling and the quality exceeded those found across the countries (with the exception of the United States). The returns to school attainment are also significant for the three transition economies – The Czech Republic, Hungary and Poland. Yet the returns to education quality are noticeably lower in the latter countries,

[1] The survey covered fulltime workers between the age of 26 and 65. The dependent variable in all the models was the logarithm of annual earnings from employment, whereas the control variables are gender, potential experience and an indicator for living in rural areas.

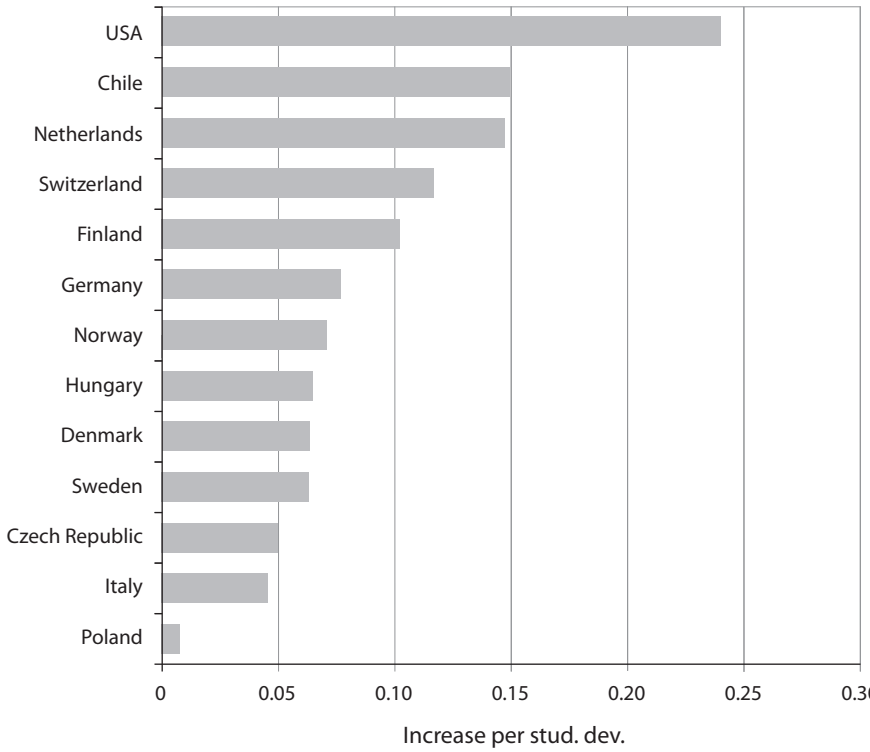

Figure 2. Returns to Cognitive Skills, International Adult Literacy Survey

Source: E.A. Hanushek, L. Zhang, *Quality Consistent Estimates of International Returns to Skill* National Bureau of Economic Research, WP12664, Cambridge, MA, NBER November 2006.

possibly due to the institutional aspects of their labour markets. The effects of the quality of education on the economic development may differ depending on the economic institutions of a country. According to D. North (1990), the institutional framework plays an important role in shaping the profitability of "piracy versus productive activity". If the available knowledge and skills are used in the former rather than the latter activity, one may certainly expect the effect on economic growth to be substantially different, and maybe even to turn negative.

Finally, learning and the constant improvement of our skills is becoming a clear necessity in order to cope with the rapid technological, cultural, social, demographic and economic changes. Khan points out that learning is the key to the survival of individuals and societies. The demand for learning will continue to grow and the conventional system alone will not be able to meet the growing demand. Thus it is important to start using innovative, flexible tools and techniques in the provision of lifelong learning services; and the potential of new communication

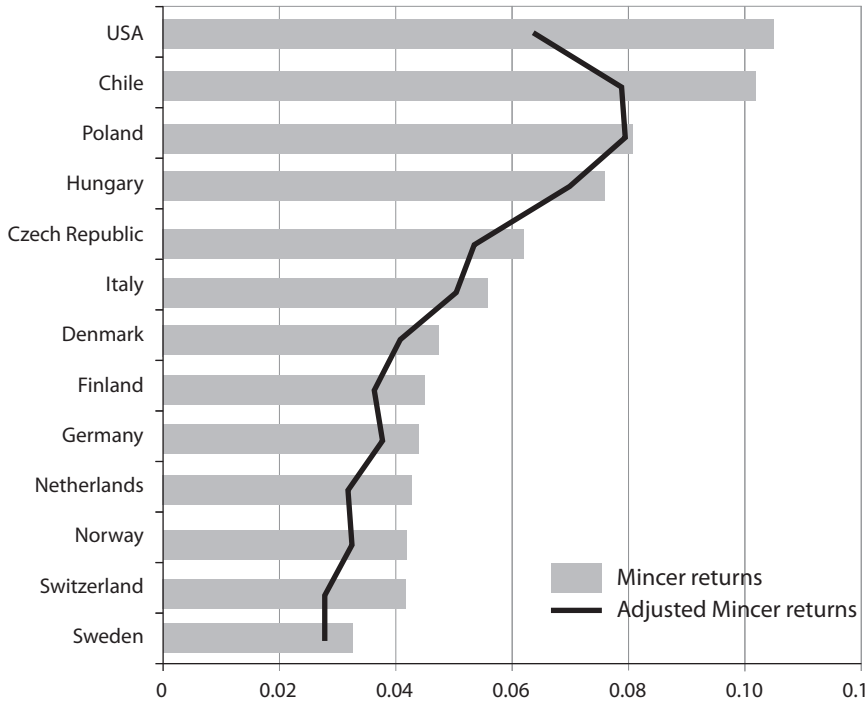

Figure 3. Returns to School Attainment, International Adult Literacy Survey

Source: E.A. Hanushek, L. Zhang, *Quality Consistent Estimates*…, op. cit.

and information technologies (ICT) needs to be harnessed to overcome barriers to learning (Khan 2001).

Factors of the changing role of education and training can be divided into exogenous and endogenous ones (Britton, http). The first group includes such factors as economic environment, globalisation, technological changes, and social and political factors. The second group includes factors related to: the institutional context of learning; organisation, market and distribution; the allocation of resources/value added; the range and quality of provision; access to learning; learning practice: the learner-provider and learner-learner relationship.

Exogenous factors of learning and training

Globalisation and regional integration

This factor refers to the integration processes around the world, resulting in the intensification of trade, financial and knowledge (technology) flows across international borders. The integration and globalisation processes create many opportunities for the education and training

institutions to offer their services domestically and abroad. Advances in ICT and the falling trade and investment barriers facilitate the globalisation of business and intensify global competition. The international expansion via the foreign direct investment (FDI) activity lead to complex corporations, operating in different locations and employing workers with diverse cultural backgrounds and education levels. Thus it becomes increasingly more important to seek more innovative and efficient ways of delivering training to their geographically dispersed workforce.

Technological factors

The IT infrastructure (mobile, wireless broadband and interoperable networks) has been developing extremely fast around the globe. This is due to increasingly cheaper computer-based devices and interoperable and easy to use IT applications. ICT has overcame the physical borders and has offered immense opportunities for the creation, storage and diffusion of knowledge. On the other hand, the gap between those who have access and the necessary digital skills and those who do not has risen. The digital division also affects the access and quality of education and professional development, especially in developing nations.

Internet has overcome geographic barriers offering rich sources of training products. Traditional content providers are raising the question on how much of their product should be moved into eLearning and how much should remain in traditional content. New products and services are emerging in a shorter time period or just in time. Thus just-in-time training becomes a critical element to organisational success (*Online Employee*, http; Casalino 2003).

Social and demographic factors

Several changes related to social and demographic factors of learning and training processes must be mentioned here. The increased mobility among different classes and the rise of the middle class have raised the demand for education products and services**.** Moreover, the regional integration process contributed to the creation of a multicultural society, which may increase the risk of marginalisation of certain minorities and may impose new challenges on the national education systems. Furthermore, declining birth rates, aging population and the lack of skilled labour on the one side and the promotion of lifelong learning (as a precondition of "being young") on the other side, contributed to the new group of students being dominated by working part-time adults. These adult students are seeking education principally to advance their careers and increase their salaries.

Promoting equal opportunities for men and women significantly affected the social attitudes towards the participation of women in the

labour market. For many women a fulfilling personal and professional life means taking up leading social positions. The latter has resulted in an increase in demand among women for professional education and training.

The increasing recognition of the benefits of early education resulted in an increased interest of parents in an early education of their children. Early education plays an important role in preparing children to compete in a global economy.

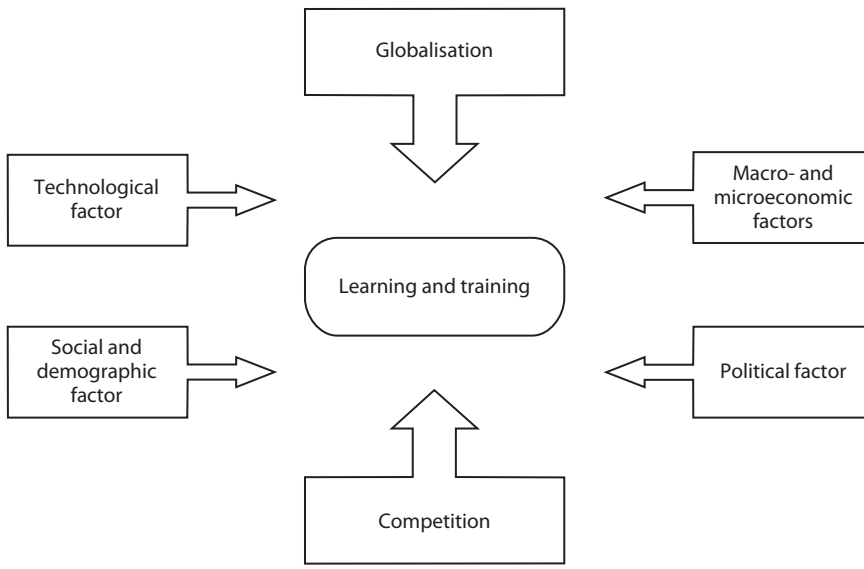

Figure 4. The exogenous factors of learning and training

Source: own elaboration.

Political factors

The ongoing process of regional integration creates new opportunities to higher education institutions. Universities and national systems are diversifying their specialisations and modes of delivery, promoting worldwide accreditation mechanisms and fostering the mobility of students, faculty and staff. Increasing political pushes towards competitiveness and a dynamic knowledge-based economy in the various world regions resulted in increased funds for education, training and R&D, as a way to counterbalance the global competition.

The EU has set a strategic goal to become the most capable of sustaining economic growth world economy, with more and better jobs as well as a greater social cohesion (Lisbon European Council). Moreover, the promotion of a knowledge-based society has been recognised as a key condition for competitiveness and growth (*Learning in Europe*, http).

The importance of education for the economic development has been evidenced by an increasing number of private institutions and public-private partnerships offering education and training services.

Macro- and microeconomic factors

On the one side, the increase of liberalisation and internationalisation of trade, investments and capital flows, as well as rising mergers and acquisitions have increased competition on a global scale and boosted the need for new sources of innovation coming from education and R&D. On the other side, the increasing polarisation of incomes between countries and regions has raised the concern regarding equal education opportunities for developed and developing societies, for the wealthiest and the poorest segments of the active population.

The concern with respect to the above division of perspectives brings forward the importance of the role of knowledge and education as the key resources for economic growth and prosperity. The ability to acquire, manage and keep knowledge determines the future competitive positions of nations.

Rising competition enforces greater flexibility on companies. Business success depends significantly on the ability to adapt to changes in the market conditions and technological changes. The flexibility of companies to adapt to major technological, organisational, political and economic changes can be split into four dimensions (*Learning in Europe,* http; Esping-Anderson and Regini 2000; Heckman 2003):

- numerical flexibility, which refers to the ability to adapt the number of workers employed in order to meet fluctuations in demand;
- functional flexibility, which refers the ability to adapt the tasks that are carried out by the employees in order to meet fluctuations in demand;
- wage flexibility, which refers to the management of wages in response to the changing labour market or competitive conditions;
- temporal flexibility, which refers to the possibility of adjusting the amount of labour in accordance with cyclical or seasonal shifts in demand. A more educated workforce is a more flexible workforce. People with a higher level of education are able to better absorb new ideas and adapt to new working environment.

With the increasing pressures to provide investment returns for training activities, many firms are making the decision to outsource learning. Outsourcing is also used to overcome resource shortages. A primary benefit of outsourcing is the cost saving (e.g. by outsourcing the development or maintenance of eLearning technologies). Many organisations have not built the competencies for developing and delivering eLearning and this enables the provision of professionally designed eLearning. Workers also become aware of the responsibility for their

own development, taking advantage of the training offered by their companies. As a result of the rising importance of training, many corporations have even introduced knowledge officers or chief teaching officers to plan and coordinate training programs.

Endogenous factors of learning and training

The following trends do not constitute the whole list of drivers in education and training, however they do include the main factors of change in learning systems. According to the MENON Network EEIG observations, there are six broad categories of changes affecting learning and training processes:

- institutional context of learning;
- organisation, market and distribution;
- allocation of resources/value added;
- range and quality of provision;
- access to learning;
- learning practice: learner-provider and learner-learner relationship.

The institutional context of learning refers to the structural changes in education institutes, such as new architectural models, implying new methods and systems for competence recognition, reorganisation of classroom space, or the introduction of ICT facilities. The efficiency of the learning system can be measured by matching the competencies and skills acquired by students with the labour market demands.

Furthermore, other factors such as market organisation and distribution are also associated with efficient and productive schools. Hanushek (2002) pointed out that "(…) simply providing more or higher-quality schooling may yield little in the way of economic growth in the absence of other elements, such as the appropriate market, legal and governmental institutions to support a functioning modern economy. (…)". Interestingly, Hanushek and Kimko (2000) observed that better student performance was the result of growth, not the cause of growth.

New forms of education offered by new delivery modes, such as electronic delivery, increase opportunities for improving the skills and competencies of individual students and the quality of national higher education systems. In addition to acquired competences and skills, students learn how to manage the change processes that are inevitably initiated by the introduction of technology into their workplace.

The quality of provision has been also improved due to the increasing number of national and international networking initiatives, resulting in a greater mobility of teachers/trainers and students, as well as an increasing number of bottom-up initiatives in education and training (e.g. minority languages entering into formal education; *Learning in Europe*, http).

Another important factor that is crucial to developing and sustaining knowledge and skills, is the increasing access to both formal and informal learning[2]. The European Union has developed policies and strategies for lifelong learning that focus strongly on identifying, assessing and certificating informal learning, particularly in the workplace (European Commission 2001). The Copenhagen Process, in particular, is promoting the recognition of non-formal and informal learning as a way of achieving greater labour mobility and the transferability of skills.

The implementation of ICT in education systems sets the new model for teaching in the education and training process. With a few exceptions, the face-to face communication between learner and teacher has been gradually decreasing. In many countries a new - "learner-centred" model of teaching has been promoted. The learner-centred approach assumes that students can choose between online seminars with traditional teachers, training modules for self-manage learning or communities and forums (Dondi 2001). Yet, in many other countries virtual interaction among learners remains a practice mainly in corporate and informal learning.

Knowledge creation, learning and competitive advantage

Knowledge is the most important resource in a knowledge-based economy, and learning is the most important process (Morgan 1997). Knowledge is the key driver of firm-specific competences, and learning is the process through which firms create and acquire knowledge. The relationship between the process of knowledge creation and learning within firms was well analysed by Nonaka and Takeuchi (1995). The authors see innovation as more than just the internal processing of information aimed to solve the temporary problems of a company, they see it as the creation of new knowledge and information.

Learning as an economic process is a quite complex phenomenon and causes many spillover effects. For example, the more a company is in the position to learn (identify, understand and exploit knowledge), the more capable and willing it is to increase its demand and capacity to use further new knowledge.

Boekemaet et al. (2000) discusses two critical factors that determine learning processes in companies: a certain degree of business-economic intelligence and access to and availability of knowledge. It means that for a small family-owned company, working in a traditional sector and

[2] According to OECD: a non-formal learning refers to learning through a program of instruction in an education institution, adult training centre or in the workplace, which is generally recognised in a qualification or a certificate, *Recognition of Non-formal and Informal Learning – Home*, www.oecd.org

exploiting local markets, it may require new "intelligent cells" in the form of university graduates in order to enhance a learning process and the adoption of a more competitive business strategy. The graduates may open access to new sources of knowledge, which contribute to an evolution in its business culture, the adaptation to economic change and willingness to further innovations, as a result of the initial successful experience. The mentioned university graduates bring useful new knowledge to the firm or act as "open gates" to existing, but unexploited knowledge in a firm. Generating more "knowledge" on the demand side (by firms) and producing at the same time a new and better-adapted knowledge supply (by local university or technology centres). However, the initial "knowledge" demand can only be sparked by a certain degree of business intelligence, making a so-called innovative capacity of firms.

A similar thought was expressed by Porter (1990), who differentiated between higher-order and lower-order competitive advantages of firms and economies. The advantages of lower-order include labour costs, the availability of raw materials, economies of scale, the use of technologies, and they are easy for competitors to imitate or duplicate, particularly in an international economy where transport costs are negligible and markets are increasingly global. Higher-order advantages include product differentiation (based on unique products or services), brand reputation and customer relationships. Higher-order advantages, according to Porter, have several characteristics that make them more durable: they require more advanced skills and capabilities to achieve them; they depend on sustained and cumulative investments in physical facilities as well as specialised and often risky learning, R&D or marketing.

The importance of the dissemination of knowledge and the acquisition of skills for the economic competitiveness of firms and nations enforces to seek for new modes of learning and training. Lifelong learning cannot be achieved through traditional ways only, therefore learning needs to be increasingly supported and enhanced by technological advancements, such as ICT. Digital content enhances the dissemination of knowledge and provides flexible learning opportunities, which can bring crucial benefits to society.

The competitiveness of an economy is measured by the competitive, meaning skilful, and competent labour. Therefore, lifelong learning is also a key enabler in achieving the Lisbon objectives, sustaining growth and creating more and better jobs. The experts from The European eLearning Industry Group (eLIG) point out that "(…) eLearning emerges as one of the key drivers for the upcoming "Learning Society". The parallel development and continuous enhancement of robust ICT infrastructures and high performance networks on the other, will be the key success factors for the knowledge society and hence for European competitiveness (…)" (*i2010*, http).

2. THE MAIN DRIVERS OF eLEARNING DEVELOPMENT

To better understand eLearning one must better understand the existing *business, training and ICT context*.

Firstly, an increasing competition of labour causes employees to work longer and harder. These workers require more independence and responsibility in their jobs. At the same time workers became more mobile compared to previous generations, believing that as long as the job gets done in time, it is not important where or when it gets done. Thus, the opportunity to allocate time for learning is needed.

Secondly, the increasing technological capabilities change the way firms manage their human resources and training departments. With traditional training methods, companies generally spend more money on transporting and housing trainees than on actual training programs. Time spent away from the job travelling or sitting in a classroom tremendously reduces the productivity and revenue per employee. Therefore, an increasing number of companies outsource a part or all of their training activities to outside consulting or training firms. Outsourcing often leads to higher service levels and increased efficiencies. Vendors become specialised in particular training programs by establishing standard operating procedures and offering personnel with specialised knowledge and skills (Csoko 1995).

Thirdly, in the digital economy, communication, commerce and distribution converge on common network platforms, therefore knowledge is being shared. In addition, information technology is bringing changes to both the supply and demand side of each industry. Also, due to the digital revolution companies and industries face digital transformations, resulting in both tangible (quality and cost) and intangible (information, control, relationships) benefits of their business processes. Digital knowledge reduces the time and financial costs of information and coordination, enabling a bigger number of people to have the information they need in order to make decisions (for more see Drucker 1999 2001; Castells 2001).

There are two basic forms of learning through the use of ICT – eLearning:

- CBT (*Computer Based Training*) – in which a student learns by using special training programs on a computer.
- WBT (*Web Based Training*) – learning through the Internet and Web technologies (it requires text and graphics, animation, audio, video and additional software to work optimally). WBT is also referred to as "online courses" and "web-based instruction" (www.ezinearticles.com).

The main concept of eLearning is the access to education and training through connections. There are three fundamental aspects related

to this. Firstly, the computer or user device enables the learners to access resources and materials which may not otherwise be available or accessible, e.g. graphics, sound, animation and multimedia. Secondly, eLearning supports increased communications between staff and students, and amongst students. Learning occurs as a result of the interaction between the learner and other people, whether it is tutors, experts or fellow learners. Thirdly, learning occurs as a result of direct "conversation", providing frequent and timely individual feedback, for example through computer assisted assessment and through motivating students with the appropriate use of interactive courseware.

The main advantages of eLearning result from its:

- supportive role in conventional education,
- high cost effectiveness,
- enhancement to lifelong learning,
- asynchronous and aspatial delivery of learning content,
- personalised and self-guided training character.

eLearning adds to traditional education modes. The eLearning course content and materials can be easily and instantly updated, freeing the classes from the physical constraints related to location, buildings and access. Even though in the short term eLearning requires investment of time and effort in developing the necessary ICT skills, new approaches and new resources, it can save time and effort in the long term (costs of eEducation in the ratio to traditional education (100%) is estimated at 20–40% (Piech 2001). For example, by creating banks of resources that can be reused, designing learning activities that can be redeployed or producing computer assisted assessment of learners, etc.

eLearning can save organisations costs – instructor costs, costs of arranging training and travel and learners' travel, and time costs. Once the initial infrastructure and developmental costs have been met, there is little extra costs involved in serving additional learners. eLearners can be taught in either very small or very big classes. As a result, eLearning is a perfect medium for small education institutions and businesses, whose training resources are limited or whose workforces are distributed in a large number of locations. A learner can take the course at his convenience without any expense of time or travel. Busy business professionals can get their certifications without the need of travelling to a classroom.

eLearning increases the demand for continuous professional development and thus enhances a lifelong learning process. eLearning usually refers to postsecondary and work-related training and education. It is designed to increase workers' knowledge and skills, so that they can become more productive and competitive in their careers (Wheeler 2007). It offers a stimulating environment in which the learner can learn at

his own pace. Moreover, computer-cased technology decomposes complex software into bite-sized modules for easy and quick understanding. As a result employees can keep up with changing technology (www.ezinearticles.com).

eLearning enables asynchronous and aspatial delivery of learning content. It allows for easier, faster updating of content and quicker turnarounds for product implementation. eLearning can be run on various platforms, such as Windows, Mac, UNIX, PDA, phone and others. It can also be linked to other training systems.

Finally, eLearning can transform education and training from a passive consumption experience to a more flexible and learner-centric experience. The traditional institution has full control over the learner's progress, whereas eLearning offers mainly self-guided progress (Thompson 2000).

The Table 1 presents the main advantages of eLearning over traditional learning.

Table 1. Traditional learning versus eLearning

Traditional learning	eLearning
Teacher centred learning	Student centred learning
"One size fits all" instruction	Customisation to meet individual needs
One pace applies to all students	Flexible pacing based on student needs
Classrooms and school buildings	Distributed learning from any place
Learning during school hours	Learning at any time
Facts and recitation	Critical thinking and real world context
Individual student performance	Collaboration and dialogue among students and between teachers and student
Textbooks	Up to date primary information resources
Parent teacher meetings each semester	Parent teacher communication daily

Source: T. Watkins, *Exploring eLearning reforms for Michigan. The New Education Revolution*, Wayne State University, www.coe.wayne.edu/e-learningreport.pdf

Reviewing the above-mentioned advantages of eLearning, it should be noted that eLearning does not solve all the problems and challenges faced by the existing education system. There are certain advantages of the traditional learning that eLearning will not overcome. The main weaknesses of the eLearning process in relation to traditional learning, is the lack of direct contact with a tutor that guides you through the process. In the traditional form of learning students and trainees meet together in a in a classroom and collaboratively develop skills, building a team spirit and enabling pupils to solve problems faster. This disadvantage of eLearning was corrected to a limited extent by establishing eLearning platforms, which allow people to work and exchange ideas. However, a virtual tutor has only a limited ability to guess student behaviour and his or her needs.

eLearning versus traditional learning – main differences and similarities

eLearning covers many characteristics of traditional training and yet adds to traditional learning through other characteristics belonging typically to eLearning. Here is an example of the most important of them (*Facts, Figures & Forces Behind e-Learning*, http):

- User management and user groups – which would correspond to the organisational part of a school/university that has a principal (admin), teachers (tutors) and students (the users of the platform). The advantage over traditional learning is that the reporting and management part of the users is much easier.
- Content and assessment tools and services (allow teachers to add or edit the teaching material). This refers to editing and printing materials in traditional learning, which is more time consuming and more expensive, whereas digital documents edited on the platform are much easier to manage and maintain.
- Self-paced learning processes – this is an important feature of eLearning, which traditional learning does not usually allow. In means that in eLearning users have a greater freedom in choosing their own learning path trough revealing relevant information and analysing it in comparison to their learning or professional objectives.
- Evaluating the existing education and/or skills level of the learner – testing. Here is a feature that usually presents a disadvantage with respect traditional learning as the testing in traditional learning does not allow for people to cheat during examinations. However, we must understand that as people need to assimilate information, the motivation of cheating is somehow gone and therefore the testing will be more accurate. Also the variety of testing allowed by these tools is very close to the types of testing that can be done in traditional learning

- Creation and delivery assessments – both eLearning and traditional learning acknowledge the importance of homework (its receipt and assessment). Therefore, homework content is being added to the eLearning platform.
- Creation of surveys – this is a way to receive feedback from the student about certain aspects of the learning process. In traditional learning the class can be questioned directly by the teacher, whereas in eLearning platforms this could be possible only through the collaboration tools described before or through the creation of surveys.

Blended learning

Blended learning is a "blend" or "combination" of different online learning modes or of online and learning in-person. Blended learning is becoming very common as it enables both synchronous and asynchronous online learning options.

Blended learning is a combination of all approaches to classroom training (a mixture of lectures, visual diagrams, assessments, group activities, etc.). In one course an instructor may assign weekly self-paced online modules to a group of learners and also periodically bring the group together for in-person sessions, presentations and group discussions.

Another sample of the blended learning program is based on a menu of online reading materials and self-paced tutorials, allowing learners to choose the mode that best suits their learning style. Learners then demonstrate their understanding of the materials by completing an online assessment (Staley, http).

3. THE eLEARNING FUNCTIONAL MODEL

eLearning is a subset of the larger worlds of both "information technology" and "education and training". An effective implementation of eLearning requires: a clear understanding of how eLearning fits into the overall learning objectives; a content that addresses those objectives; the tools to develop, manage and deliver the learning, and a technology infrastructure that supports the tools and the delivery of content. Technology infrastructure must have the capacity to support network growth and the interoperability between components, to ensure a high level of availability for learners, and to provide an open environment and the security to protect the distributed users and content (*eLearning application infrastructure*, http).

The Figure 5 represents a conceptual model of the eLearning components and their functionality in a learning environment.

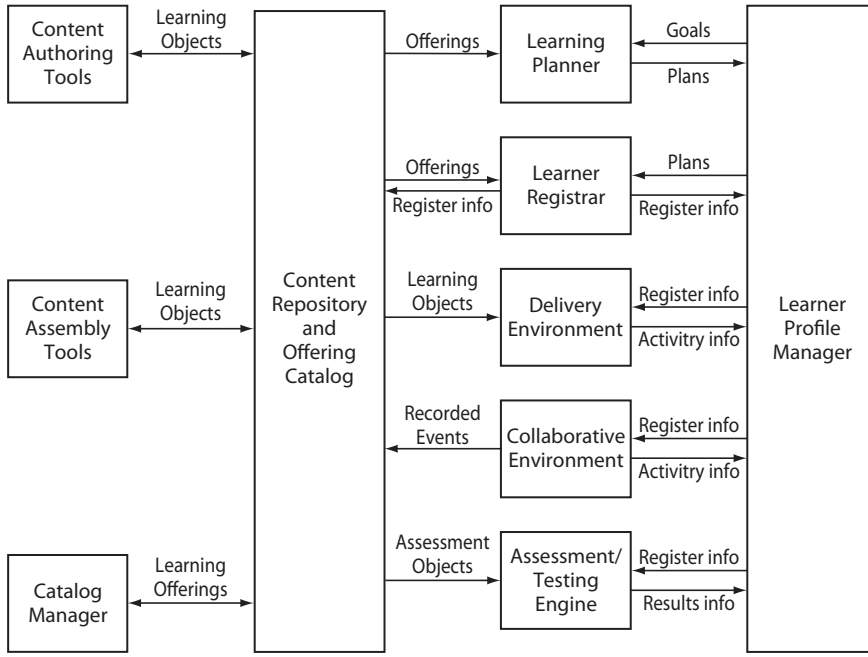

Figure 5. eLearning functional model

Source: R. Robson, *The Global Framework for E-Learning*, Eduworks Corporation 2003; www.eduworks.com

Content Authoring Tools: allow subject matter experts and professional instructional developers to create and modify learning content objects. Subject matter experts typically require their tools to provide a rich set of functions, whereas professional instructional developers are better served by standard templates for the content. The content authoring tools include: text, graphics, photos, animation, simulation, audio and video. The content authors can also to reuse or repurpose existing content rather than completely recreate it (this requires instructional designers, content providers, or course developers to accurately provide metadata[3] descriptions of their content).

Content Assembly Tools: refer to the linking of content objects together into a cohesive learning module. Content assembly tools may support the creation and application of content templates, which serve as a basis for the packaging of content into learning modules. In practice, templates include such elements as introduction, explanation, example and assessment. Assembly also allows to join other components of learning experience, such as chat rooms, discussion forums, etc.

[3] Metadata is analogous to a card catalog, whereas the content is analogous to books.

Catalog Manager: catalog management is the process of defining the learning offered to different audiences, establishing learning plans (degree paths, certification paths), establishing the business processes for registering learners and making the offered catalog accessible to the target audiences. This is quite a simple process that consists in releasing a small number of learning products to internal employees, or in the case of large education institutions (e.g. universities), delivering thousands of instructor-led courses to a large and varied learner audience. Catalog manager components include information on access rules, restrictions, prices and so on.

Learning Planner: learning can be planned by learners, teachers, advisors or human resource managers. The common elements of planning include: a) learning target; b) assessment of existing learning or skill level of the learner (e.g. by evaluating education history); c) evaluating the education level with respect to the learning target (skills gap analysis); d) creating the learning offerings for the learner. Learning plans should be viewed as the core part of a learner's profile and stored as such for the ongoing progress tracking.

Learner Registrar: the learner registrar component provides learners with access to learning offerings, a simple click on a catalog item with the instructor's approval (checking availability and prerequisite, payment calculation, payment processing, etc.).

Delivery Environment: provides the learners and instructors with access to learning content and a learning environment (chat, email, multimedia players, collaboration tools, application sharing, etc.). It also provides navigation through the content (either under the learner's control, under the instructor's control or under the control of the delivery system itself).

Collaborative Environment: if eLearning delivery systems are built entirely around synchronous delivery and collaboration, it is called *virtual classroom*. The *virtual classrooms* try to replace the physical environment and interaction of a classroom with an online setting. The technological approaches for virtual classrooms are quite different than those for Web-based course delivery environments that are aimed primarily at asynchronous delivery.

Assessment and Testing Engines: this is an integrated element of learning content and it can also be managed by a separate process. The storage, assembly, delivery and recording of the assessments are arranged by an independent component, the *assessment engine*.

Learner Profile Manager: the learner profile covers information on personal data, learning plans, learning history, certifications and degrees, assessments of knowledge (skills and competencies), and the registration and progress related status. The learner profile manager manages this profile, updates learner information and makes learner information available to other components.

4. SUMMARY

Summing up, the above chapter touches on many issues reflecting the evolution of the role of learning and knowledge in modern economies. There are several forces pushing towards computer- and web-based learning, among which: globalisation; socio-cultural, demographic, economic and political changes; as well as technological advancements, such as computer and Internet technology, corporate drivers, etc. In the increasing importance of the learning process when it comes to improving the standard of living, the competitive economy becomes a knowledge economy or knowledge-driven economy. The participation in a knowledge-based economy and society requires gaining and renewing skills sustainably. Therefore, lifelong learning plays a major part in our education and training processes, within schools, universities and the business environment. It is also the key to strengthening Europe's competitiveness and improving the employability and adaptability of the workforce. eLearning can be an important supportive tool for traditional learning and training programs, because of its many advantages, such as cost-effectiveness, asynchronous and aspatial delivery of the learning content, and a personalised and self-guided training approach, etc.

CHAPTER II

SELECTED MACROECONOMIC DRIVERS BEHIND eLEARNING IN POLAND

1. GENERAL MACROECONOMIC INDICATORS

Poland was one of the first countries in Central and Eastern Europe (CEE) to reach a breakthrough in the transition from a planned economy to a free market system (see basic country data in Annex I, Table 1). Although the effects were quick, the radical reforms plunged the country into a short-lived recession (Bychawski 2006). The beginning of the transition witnessed a sharp decline of economic activity: GDP decreased by 11.6% in 1990 and 7.0% in 1991. In 1992, Poland returned to positive rates of economic growth, accelerating to more than 6% annually in the middle of the 1990's. In 1994–1997, the average GDP per capita growth amounted to 6.4%.

Later, in 1998–2001, this dynamic was lost due to the slowdown in the structural reforms and increasing income gaps. The year 2004 was very successful in terms of GDP growth, which reached a 5.3% growth rate and was followed by a significant decline in 2005 – 3.2%. Poland's GDP grew by 6.1% in 2006 and estimates indicate around a 6% growth in 2007 (Figure 6).

According to the macroeconomic forecast that covers the period of 2005–2020, the average economic growth rate will amount to 5.0%. This means an increase of the annual real convergence rate from the current level of 2.2% to 2.5%. The growth of GDP, consumption and investments will occur as a result of the inflow of Union transfers. In terms of supply,

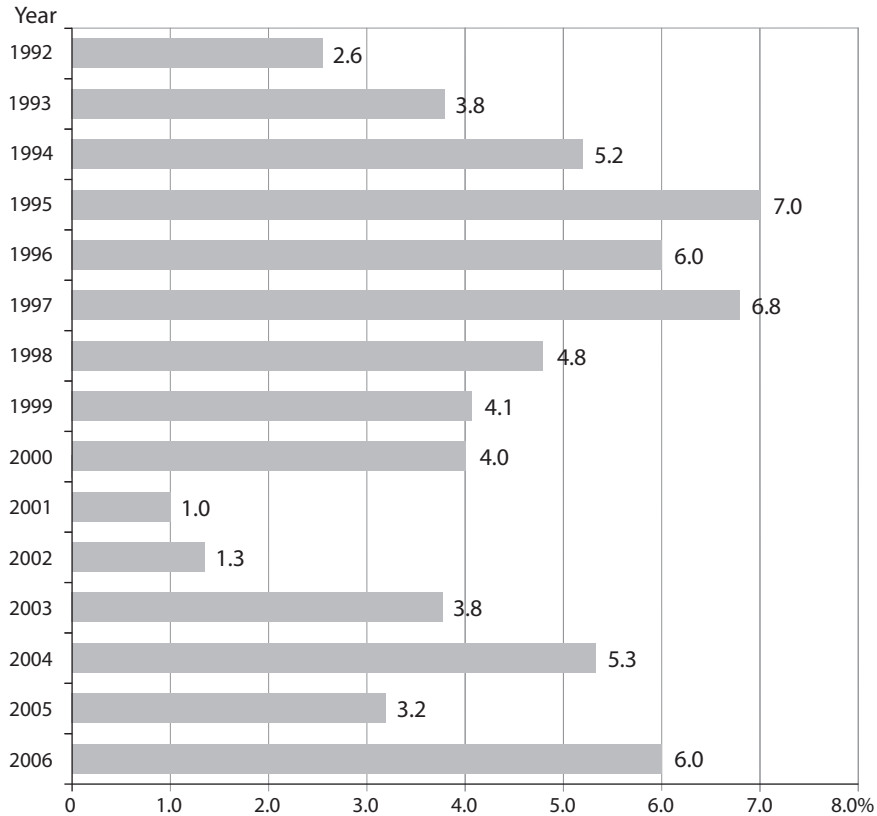

Figure 6. Growth of GDP in years (1992–2006**)**

Source: Central Statistical Office, Warsaw 2006.

an increase of the long-term growth rate will be possible due to the integration with the European Union (an additional 0.4 percentage point of the growth rate), a positive impact of the human capital (that will increase the potential growth by 0.3 percentage point) and an improvement in the coordination of macroeconomic policies (a contribution of 0.1 percentage point to the growth rate; *Poland. International Economic Report 2003/2004*). The basic source of economic growth in terms of demand will be investments and domestic consumption. The growth of the private consumption rate will be slightly slower than the GDP growth rate and will, on average, amount to between 2.9% in 2005–2006 and 5.0% in 2007–2013 and 2014–2020 (Macroeconomic forecast 2005; Annex I, Table 2).

A low and stable inflation rate, despite the accelerated economic growth and fiscal expansion, was a significant achievement of the Polish monetary policy in the second half of the transition. The years 2001–2003 were a period of a considerable reduction in the inflation rate: the average annual inflation rate dropped from 5.5% in 2001 to 1.9% in 2002

Table 2. Poland – selected indicators

Change compared to previous year	2002	2003	2004	2005	2006
GDP (real; in %)	1.4	3.8	5.3	3.2	4.6
Industrial output (real; in %)	1.1	8.4	12.6	4.0	8.7
Inflation rate (in %)	1.9	0.8	3.5	2.1	1.3
Gross fixed capital formation (real; in %)	–6.8	-0.1	6.3	6.2	8.2
Consumer prices (yearly average; in %)	1.9	0.8	3.5	2.1	1.3
Unemployment (yearly average; in %)	20.0	20.0	19.1	18.2	17.3
Budget balance (in % of GDP)	–3.3	–4.8	–3.9	–3.8	–4.2
Merchandise exports (in mn EUR)	49 338	53 836	65 847	77 562	93 268
Merchandise imports (in mn EUR)	57 039	58 913	70 399	79 804	97 164
Current account (in mn EUR)	–5 399	–4 108	–8 670	–4 130	–6 273
FDI (inflow, net; in mn EUR)	4 371	4 067	10 292	7 703	11 093
Gross foreign debt (in % of GDP)	38.70	43.70	46.20	43.50	40.60
Average exchange rate: PLN/EUR	3.85	4.40	4.53	4.02	3.82
Average exchange rate: PLN/USD	4.08	3.89	3.64	3.23	3.14

Sources: National Bank of Poland, Warsaw 2006; Central Statistical Office, Warsaw 2005.

and 1.3% in 2006. EU inflation ticked up from 2.1% in 2004 to 2.3% in 2005 and 2.2% in 2006, mostly due to the energy price hikes (Table 2; Eurostat 2006).

This positive trend should not, however, overshadow the negative trends in the Polish economy, such as high unemployment (Table 2). Manufacturing is slightly strengthening and unemployment is dipping from 16.6% in 2005 to 13.6% 2006[1]. The job redundancy affected mostly

[1] Seasonally adjusted unemployment rates (%), total males and females (Eurostat 2006).

all the people who were least productive, whereas those employed improved their productivity and, as a consequence, the real salary level only slightly reacted to the strong increase in the unemployment rate. In the group of unemployed people aged 30–44 years, the female unemployment rate is higher than the male unemployment rate by almost a half. Education does not seem to protect women against unemployment. Unemployed women are better educated than unemployed men. Over 50% of unemployed women have secondary, post-secondary or tertiary education, while the respective percentage among men amounts to about 32%. Since the year 2003, the number of unemployed people has been systematically decreasing in Poland, however the overall output still remains under its potential level (Central Statistical Office, 2006).

On the supply side, the main driving force was the rapid expansion of the industrial production and service sectors through privatisation and liberalisation processes. Poland exhibits the highest productivity in the trade and manufacturing sectors (wholesale, retail and repair of motor vehicles) in the last decade. A high increase of productivity is related to significant qualitative changes, which occurred in the structure of the Polish economy since the beginning of the nineties. The average quality of capital, the level of management and culture, and the productivity of labour have improved enormously. The share of the service sector in the total GDP has grown from less than 50% before 1989 to 59.3% in 1992 and over 66% in 2006 (Central Statistical Office, 2006).

On the demand side, growth was mostly co-related to export expansion and private consumption. The early transitional recession led to a substantial decline in private consumption and investments. In 1993–2000, Poland experienced high rates of growth in all the three components of GDP, particularly investments (which increased by more than 20% in real terms). In the period of economic stagnation between 2001–2002, their contribution was heavily negative and could not be compensated by a positive contribution of the individual consumption. However, 2006 was another breakthrough year in terms of the total investment volume, which reached EUR 4.79 billion (*Poland. Commercial market review 2007*).

Foreign savings in the form of direct investment (FDI) fluctuating annually from approximately 2% to 6% of the GDP, constitute a substantial source of funding of investments in Poland, especially in the context of a relatively low level of domestic savings. The FDI inflows to Poland were obviously affected by the global trends, but some domestic factors should be blamed as well. One of the main reasons is the slowing down of the privatisation process since 2000. The latter trend was due to at least two reasons: firstly, the most attractive assets had already been privatised; secondly, there wasn't a clear concept of privatisation (*Poland. International Economic Report 2003/2004*). In 2004 and 2005, Poland once again became an attractive place for FDI. Poland's membership in the

EU25 (with its 454 million people) and the country's economic potential (5.4% growth in 2004, an estimated 3.5% growth in 2005 and a projected 4.5% growth in 2006), increased its attractiveness. The total cumulative investments in Poland are estimated to have reached approximately EUR 11.1 billion in the year 2006 (www.paiz.gov.pl).

The accession to the EU has been perceived by many firms to have reduced the investment risks of Poland. One of the sectors with active FDI participation is the electronic sector. It is estimated that the number the foreign owned firms in the above sector exceeds 250. Among them are well known international concerns such as Thomson Tubes and Displays S.A., Royal Philips Electronics N.V., France Telecom, Alcatel, Vivendi Universal, Lucent Technologies Network Systems, Siemens AG, and Flextronics International. Electronic firms in which foreign capital is engaged, belong as a rule to the group of large and medium-sized enterprises (employing more than 49 people each), whereas the group of small firms consists mainly of Polish owned enterprises (www.paiz.gov.pl).

The development of net exports of companies was quite the opposite to the development of investments. The growth of exports should be perceived as an optimistic factor, since it proves the ability of producers to operate in different and highly competitive foreign markets (Table 2).

One of the biggest trends affecting the size of the eServices[2] market is the outstanding growth of the Internet services. Poland has always been a net importer of ICT products, and has been running a long-term deficit of the total value of ICT trade since the early transition period. In the meantime, Poland has significantly increased its expenditure on the IT market. Poland's expenditure on the IT market increased by 25% in the last two years. In 2005 the IT market in Poland reached EUR 4.62 billion (PLN 17.6 billion), whereas in 2002 this was EUR 3.28 (PLN 12.5 billion; Table 3).

Table 3. The total IT market in Poland 2002–2006 (in billions of EUR and PLN)

	2002	2003	2004	2005	2006*
EUR	3.28	3.59	4.09	4.62	5.25
PLN	12.50	13.70	15.60	17.60	20.00

Source: "Rzeczpospolita" of 24th March 2006, * – "Rzeczpospolita" of 2nd February 2007.

Many giants in the technology world are investing in the learning market and providing advanced products and tailored services. These

[2] Provision of services via the Internet. eServices include "e-commerce", yet may also include non-commercial services, such as eGovernment services, www.wikipedia.org. Retrieved from http://en.wikipedia.org/wiki/E-Services

companies, which are expected to contribute significantly to eLearning, include AOL, Yahoo, Microsoft, IBM, AT&T, Sun Microsystems, Oracle, and Harcourt.

It is forecasted that the IT market will double within a five-year period (2006–2010). In 2006 the IT market observed an increase of 13% and 12% is forecasted for the year 2007 ("Rzeczpospolita" 2006). According to the data of 2006, the IT market reached EUR 5.26 billion (PLN 20 billion). In 2006, almost 230 million personal computers found a buyer. It is an increase of 10.5% with respect to 2005. The dynamic of the market has been slowing down continuously (16% in 2005). In Poland the sale has increased by almost 30% and amounted to 1.8 million sold PC's. During the second quarter of 2006 the market observed a 38% growth with respect to 2005.

CEE countries can be divided into several parts, each representing a distinct level of IT-maturity and market potential. The three Eastern EU-countries with the largest economies, i.e. Poland, Hungary and the Czech Republic, have attracted the most attention from IT providers. These countries have the best IT infrastructure and they have the biggest market potential (Gartner Inc. 2006).

International competitiveness rankings

The problem of the economy is the low and deteriorating position of Poland in the international competitiveness rankings. *The World Economic Forum* ranking placed Poland in one of the last positions among European countries in the 2006–07 *Global Competitiveness Index* (GCI) – the 48th position (well behind Estonia (25th), the Czech Republic (29th) and Slovenia (33rd) – Central and Eastern Europe's top performers; see Annex I, Table 3). The weakest points of Poland in this ranking were; the negative assessment of public institutions; wasteful government spending; and inflexible labour markets. The country was relatively positively assessed in terms of technological advancement.

In the opinion of the experts of the World Economic Forum "Poland could build on its reasonably good innovative capacity, which stems from a healthy and well-educated labour force, good penetration rates of the latest technologies and the relatively high importance that business gives to spending on R&D" (World Economic Forum, press releases, 2006).

The IMD World Competitiveness Yearbook 2007 (WCY) analyses the ability of nations to create and maintain an environment that sustains the competitiveness of enterprises. According to the IMD WCY data results, Poland fell down from the 50th rank in 2006 to the 52nd in 2007. The top CEE performers were Estonia, the Czech Republic and the Slovak Republic. Those countries have displayed a strong improvement in their competitive performance and ranked 22nd, 32nd and 34th respectively (*World Competitiveness Yearbook 2007*).

Population development

The most important factor affecting the labour market and the development of information society is the demographic structure. The demographic growth trend in Poland has been stable since the second half of the nineties, and by 2005 it was already the seventh year in a row in which a real decline in population was recorded, as well as the third one with a negative birth rate. In the period of 2000–2005, as a result of a low birth rate and a negative balance of foreign migrations, the population of Poland dropped by over 106,000. At the end of 2005 it amounted to approximately 38.2 million people (Central Statistical Office, Warsaw 2006). It is, however, a significant growth in comparison to the first half of the twentieth century (Table 4).

Table 4. Population changes in thousands in 2000–2005

Specification	2000	2003	2004	2005
	in thousands			
Population	38 263	38 219	38 191	38 157
Actual increase	–10	–28	–17	–17
Natural increase	10	–14	–7	–4
Live births	378	351	356	364
Deaths	368	365	363	368
Net of international migration for:				
Permanent residence	–20	–14	–10	–13
Immigration	7	7	9	9
Emigration	27	21	19	22

Source: Central Statistical Office, Warsaw 2006.

The Polish nation is ageing. In the years 1990–2004 the number of children and youngsters (0–17 years of age) declined by 8.5 percentage points to approximately 21.2% of the whole Polish population. Whereas the number of people of working age, 63.5% of the total population, increased by over 2.2 million. Similarly, the life expectancy of the female population increased over the last ten years, especially in rural areas (Annex I, Table 4).

The number of people in an economically inactive age (men aged 65 and over, women aged 60 and over) has also been increasing in the last ten years. Since 1990 that number increased by 940,000. At the end of 2004 the proportion of this group in the total population amounted to 15.3%, i.e. 2.5 percentage points more with respect to 1990. Consequently, it is

estimated that in the years 1996–2005 the working age population has increased by a total of 2.15 million people (Central Statistical Office, Warsaw 2006).

The upward trend mentioned above will continue until 2010, when it will reach its maximum at the level of 27.3 million people (currently 26.7 million). As a result of those processes, by 2020 the population of Poland will decrease by approximately 2.5 million people with respect to 2000 (Annex I, Figure 1). The ratio of the number of elderly people at an economically inactive age to the number of people of working age will nearly double and will amount to 37% (in 2004 it was 19%; Central Statistical Office, Warsaw 2006). It is also worth noting that among the increasing number of elderly people there will also be people unable to live without help, including the disabled and people requiring constant care. This will constitute a challenge in terms of the health care system and social policy.

The number of people changing their domicile permanently dropped in the 1990s, which was directly linked to the difficult situation in the labour market. In the context of a general decrease in population mobility, a contrary trend can be observed when looking at the migration from urban areas to rural areas (Central Statistical Office, Warsaw 2006). The increasing tendency of the urban population to move to rural areas became visible in the mid nineties and was partially caused by the wave of returns forced by adverse changes in family or professional situations and more comfortable conditions outside towns and cities.

As a consequence of Poland's accession to the EU, the situation of Poles taking up employment in the Member States has partially changed. The first year of the EU membership did not cause any massive wave of Polish migration abroad. In 2004 some 500,000 people (mostly young people) took up work abroad, i.e. slightly more than in the previous years. Seasonal migrations prevail (over 80%), above all to Germany (approximately 324,000). So far, the EU enlargement has not caused any increased inflow of foreigners into the Polish labour market (Wysokińska 2003).

2. MAJOR EDUCATION INDICATORS

Over 9 million pupils and students enrolled in education establishments (excluding pre-primary education) in Poland in 2004, compared to 8.8 million pupils in 1998. This positive trend was due to the expansion of educational opportunities (more private education institutions) as well as an increase of the adult population in the process of education (Annex I, Table 5; Eurostat 2005).

The proportion of four-year old children in pre-primary education amounted to 34% (2004). It means that less than one out of two children aged four in Poland was enrolled in pre-primary education. A similar situation was observed in Ireland and Finland.

Relatively high pupil to teacher ratios are considered a success of the primary education in Poland. In 2004 the ratio of pupils per teacher made up less than 13 in Poland, with only better results in Denmark – 11 pupils, next were Italy, Luxembourg and Hungary and the worst results were recorded in the United Kingdom – over 21 pupils[3] (Annex I, Figure 4).

Data on education attainment show that in 2005 some 90% of the Polish population aged 20 to 24 had at least completed an upper secondary level of education. Moreover, only 5% of those aged 18 to 24 (6.9% of men and 4% of women) were early school leavers (Eurostat 2006; Annex I, Figure 4).

Lifelong learning and a continuing vocational training are becoming increasingly important in Poland[4]. In 2006 the number of Poles who participated in lifelong learning activities varied between age groups, from 40.8 % for those aged 25 to 34 to 16.2% for those aged 55 to 64. Similar values were recorded for the EU10 and EU15; 51.6% and 40% for those aged 25 to 34 and 31.7% and 19.5% for those aged 55 to 64. Gender differences in lifelong learning activities were rather small; as for Poland these stood at 30.6% for women and 29.4% for men (Eurostat 2006).

3. GENERAL ICT USAGE INDICATORS

There was a big gap in the average level of technology between Poland and the EU. But in the last 10–15 years Poland has progressed significantly in this area and is "catching up" intensively with the more technologically advanced European countries.

Even though Poland has the biggest IT market, compared to all the other new EU member states, it had a three times lower ratio than the EU average in terms of the number of computers per 100 citizens. In 2005 the ICT expenditure in Poland reached 5.5% of the GDP.

Internet penetration in households

The percentage of households that have Internet access at home and the number of broadband connections were very low with respect to the

[3] The pupil-teacher ratio is calculated by dividing the number of full-time equivalent pupils by the number of full-time equivalent teachers teaching at ISCED level 1: only teachers in service (including special education teachers) are taken into account, Eurostat 2007.

[4] Lifelong learning statistics include formal education and non-formal education and training, which includes self-training (e.g. computer-based learning/training, online Internet based web education, making use of educational broadcasting or offline computer-based tapes or disks or visiting facilities aimed at transmitting educational content (library, learning centres, etc.).

Table 5. Selected ICT development indicators in 2006 in Poland, EU10 and EU15

	Poland (%)	EU10 (%)	EU15 (%)
Internet access rates for households	36	39	54
Broadband access rates for households	22	24	34
Computer access rates for households	45	49	64

Source: Eurostat 2006.

overall average of the EU15 (Table 5). However, the Internet penetration has been growing continuously, starting from 22% in 2004 and reaching a level of 36% in 2006. In terms of Internet access, the number of households equipped with a personal computer and a broadband Internet access in Poland has been steadily increasing. This trend was in particular notable in the hauseholds with children.

According to the Eurostat data for 2006, 45% of Polish citizens have a computer, whereas in 2005 some 40% of the surveyed households had a personal computer. The percentage was considerably higher in urban areas(49%) than in the rural areas (30%). Over 93% of enterprises were equipped with computers (2006). Almost 36% of households and 89% of enterprises have access to Internet of which 22% of households and 46% of enterprises have a broadband connection. In 2006 over 43% of the respondents used a computer regularly and 34% used the Internet on a regular basis (Eurostat 2007).

The relatively low penetration rates could be explained by a high cost of Internet connections (one of the highest in Europe put in relation to the average household incomes in Poland), a highly monopolised market and a delayed EU law harmonisation process.

The International Telecommunication Union Report presents the latest results for the Digital Opportunity Index (DOI) for 2006. Europe has achieved the largest overall gain in digital opportunity over the last two years, followed by the Americas, which made an especially remarkable progress in 2006. Poland, with its 52nd place, appeared to be behind some transition countries such as Latvia, the Czech Republic, Bulgaria and Russia[5].

[5] The Digital Opportunity Index (DOI) is a valuable tool for benchmarking the most important indicators of the information society advancement. The DOI is based on 11 ICT indicators, grouped in 3 clusters: opportunity, infrastructure and utilisation. The DOI has been compiled for 181 economies over a period of three years from 2004–2006 (a longer time series, for the period 2000–2006, is also available for 62 leading economies), International Telecommunication Union, www.itu.int

Similarly, Poland has performed much worse in comparison to other EU members with respect to the diffusion of PCs, Internet connections, phone lines, mobile subscriptions and TV sets, and the share of population on line. The latter is reflected in the low index of the UN Telecom Index – 0.25%, exceeding only Lithuania, Bulgaria and Romania (Annex I, Figure 5; eUser – Public Online Services and User Orientation, 2005).

Taking the monthly income of households into account, an understandable relationship can be observed between income and the amount and proportion of households with a personal computer: within the group of households with a net monthly income of over EUR 1,889 (PLN 7,200) as many as 86% possess a computer. The percentage is also high in the group of households with a net income between EUR 882 (PLN 3,361) and EUR 1890 (7,200) – 77%, but a distinctly lower percentage can be observed in families with an income between EUR 378 (PLN 1,441) and EUR 881 (PLN 3,360) and below EUR 378 (PLN 1,441) – 48% and 21% respectively (Table 6).

According to a survey conducted in 2006 by the Central Statistical Office, there was a strong correlation between equipping a household with a personal computer and dependent children. In the group of households consisting of two adults without children, only 36% owned a computer, while in the group of such households with children the ratio was 65%. Also nearly half (47%) of the households with children had Internet access.

Internet penetration in enterprises

In terms of Internet access, the number of broadband Internet users in Poland has been steadily increasing between 2001–2007. The take-up rates for the dial-up access via an analogue modem were similar among all the enterprise groups and equalled 60% for large enterprises, 60% for medium ones and 50% for small enterprises (Figure 7).

The results of the survey on the usage of ICT in enterprises conducted in 2005 and 2006 showed that the level of indexes of computer utilisation and access to the Internet was generally high; therefore, indexes in 2006 did not increase significantly. The percentage of companies using computers in 2006 amounted to 93%, but having Internet access to 89% (a growth in relation to the previous year, correspondingly by 0 and 2 percent; Figure 8).

In almost all analysed business sections the share of companies with Internet access has increased in 2006 with respect to 2004. The exception was the section "Informatics", where this percentage in 2006 amounted to 98% and decreased by 2% with respect to 2004, which could be perceived as a mistake in statistics. The business activity with the most Internet access is financial intermediary, media related industry (film, radio and TV) and informatics (Figure 9).

Table 6. Households equipped with a personal computer by location, income and composition (%)

	Mobile telephone		Mobile telephone with access to Internet		Personal computer		Internet	
	2005	2006	2005	2006	2005	2006	2005	2006
Total	62	74	23	31	40	45	30	36
Type of households								
Households with children	78	93	31	42	56	65	38	47
Households without children	55	66	20	26	33	36	27	31
Towns with area of living								
over 100,000 of population	68	79	32	38	49	56	40	46
up to 100,000 of population	62	74	22	30	40	46	32	36
Rural areas	55	69	16	18	30	36	19	25
Net monthly income groups for 2005 in EUR (PLN)								
Above 1,889 (7,200)	95		59	41	86	73	71	68
Up to 1,889 (7,200)	89		48	35	77	69	67	54
Up to 881 (3,360)	72		26	22	48	43	37	30
Below 378 (1,440)	44		14	10	21	16	14	12

Source: Central Statistical Office, Warsaw 2007.

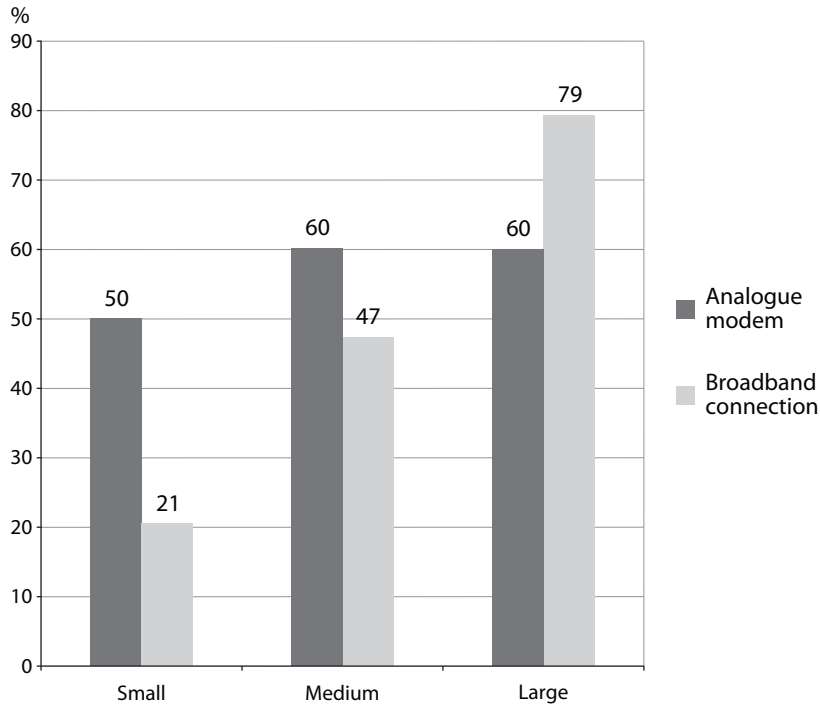

Figure 7. Type of Internet connection used by enterprises in the year 2004

Source: Central Statistical Office, Warsaw 2005.

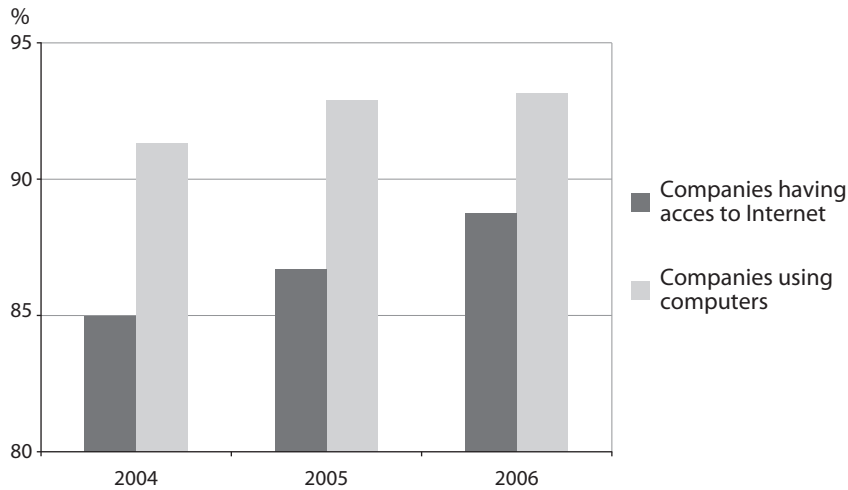

Figure 8. The percentage of companies using computers and having Internet access in the years 2004, 2005 and 2006

Source: Central Statistical Office, Warsaw 2007.

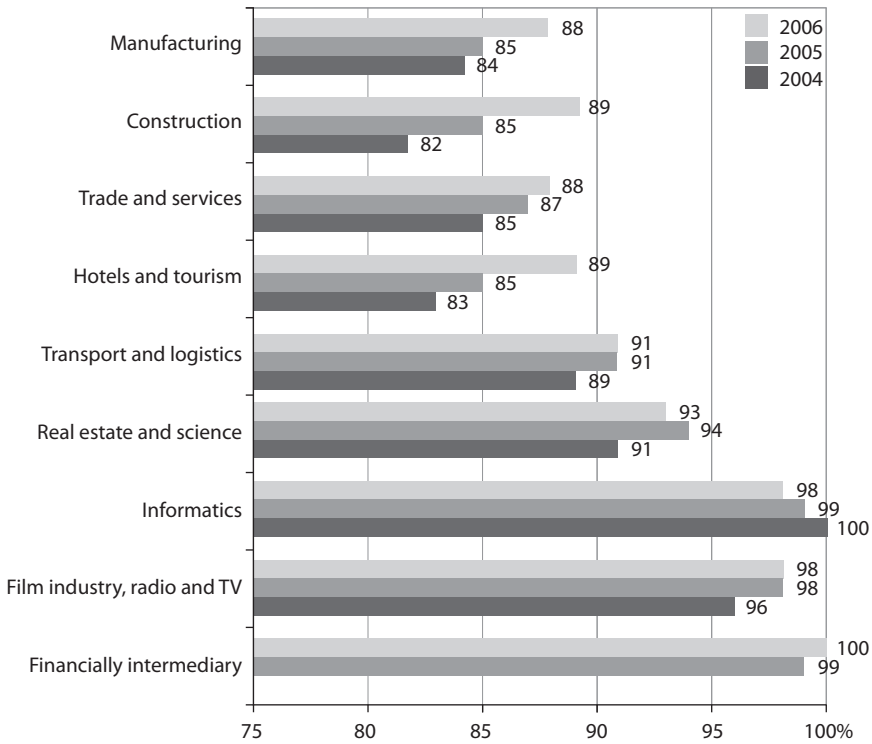

Figure 9. Percentage of companies having Internet access in 2004, 2005 and 2006 according to activity

Source: Central Statistical Office, Warsaw 2007.

The take-up rates for the dial-up access via an analogue modem were similar among all the enterprise groups and equalled 60% for large enterprises, 60% for medium ones and 50% for small enterprises (*ICT usage in enterprises in 2004*, 2005).

A significant disparity can be observed in the percentage of enterprises with a broadband connection depending on the size of the enterprise. The highest increases were scored in small enterprises, from 21% in 2004 to 39% in 2006, followed by the relative increases in middle-sized and large enterprises from 47% to 71% and from 79% to 92% (Central Statistical Office, Warsaw 2007).

Internet penetration in schools

Almost all Polish schools (93%) have Internet access (2006). However, only 28% use broadband connection. As a result Poland ranks second last among the 27 countries (25 EU-countries plus Iceland and Norway; Figure 10).

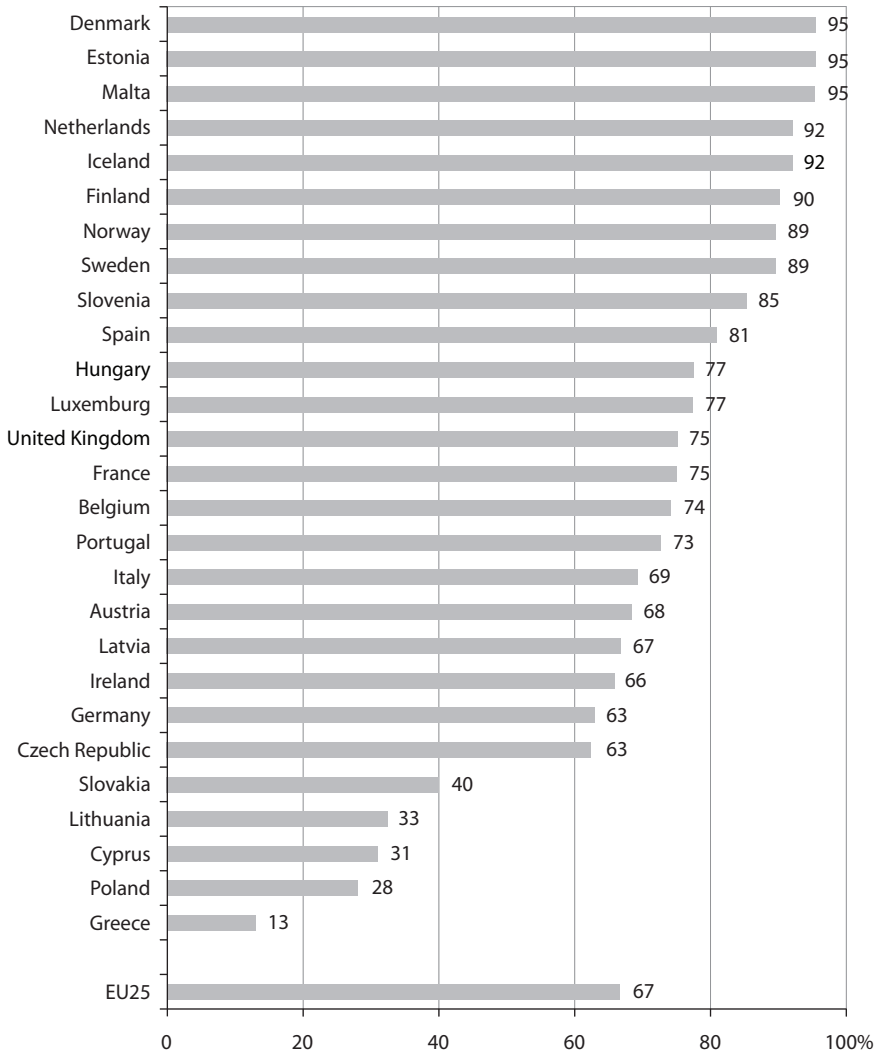

Figure 10. Percentage of schools with broadband Internet access in Europe 2006

Source: Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

The largest percentage of schools is still connected to the Internet by a narrowband connection; five-fold more than the European average. The penetration is the highest among upper secondary schools (40%) and vocational schools (42%), while only 20% of primary schools have a broadband Internet connection (Figure 11).

There is also some notable variation regarding broadband access between urban and rural areas: 40% of schools in populated areas have broadband access compared to 21% of schools in less populated areas.

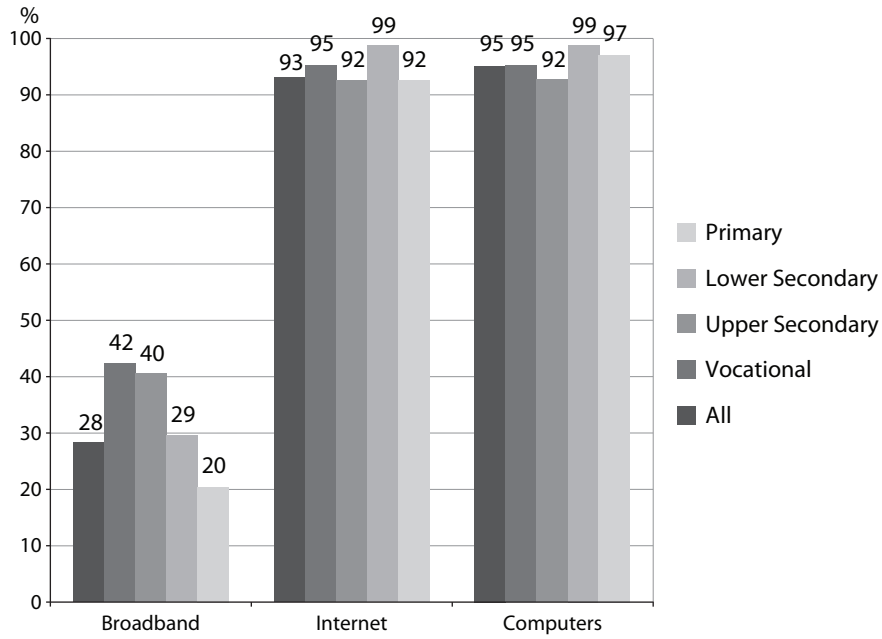

Figure 11. Percentage of schools using computers, Internet connection and broadband Internet access according to school type in Poland (2006)

Source: Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

In 2006 some 68% of schools had a website, 33% provided e-mail accounts for teachers and 19% did so for pupils. Moreover, schools with a broadband access to Internet had a relatively more sophisticated ICT infrastructure, including a school website, the use of LAN or the availability of intranet (*Use of Computers and the Internet in Schools in Europe 2006*; see more in Annex I, Tables 11–17).

4. SUMMARY

Summing up, in the last ten years Poland has been observing positive rates of economic growth, a relatively low inflation and intensive FDI inflows. Unemployment has remained the biggest problem of the Polish economy in the last ten years, which, together with the ageing population and increasing labour migration abroad, will create the main challenge for the Polish labour market. The role of human capital is increasing in the current phase of liberalisation, integration and particularly in the scientific and technological revolution in Poland, which is directly connected with the expansion of an ICT and knowledge based economy.

For this reason, a high quality of education at all levels, offering a wide range of eLearning programs, as well as increased spending on research and development will act as one of the key growth stimulants. According to the recent available data for 2006, there was a considerable difference between enterprises and households equipped with computers and Internet – 93% and 45% respectively (Eurostat 2007). Almost all Polish schools use computers for teaching (95%) and have Internet access (93%). However, only one-third uses Internet via a broadband connection. There is an understandable relationship between the income per capita among households and the proportion of households with a personal computer. In conclusion, the stable economic growth of the Polish economy during the last decade has created a solid basis for a further increase in the number of computers and Internet users, as well as for the expansion of eServices in both the business and public sectors.

CHAPTER III

THE PLACE OF eLEARNING IN THE CURRENT POLISH EDUCATION SYSTEM

1. DESCRIPTION OF THE EDUCATION AND TRAINING SYSTEM

The Ministry of National Education implements the state education policy and coordinates the work of departments and administration offices. The Ministry cooperates with regional authorities and other relevant units involved in running the education system. The 16 Education Superintendents (one in each of the regions) are the chief education officers at regional level. The Superintendents are responsible for the general administration of education in a given region. They are appointed and supervised by the Head of Province (who is subordinate to the Prime Minister). The Ministry of National Education is responsible for implementing and organising the education system in Poland. It prepares concepts of new legal acts and strategies in the field of education and sport development. The administrative division allows for an effective work coordination. The detailed structure of the Polish education system is presented in Figure 12.

Primary schools and lower secondary schools

In 1999 the introduction of the school system reform was initiated (the Education Act of the 8th of January 1999 with later amendments). As a result of the introduction of the new education system in the year 1999/2000,

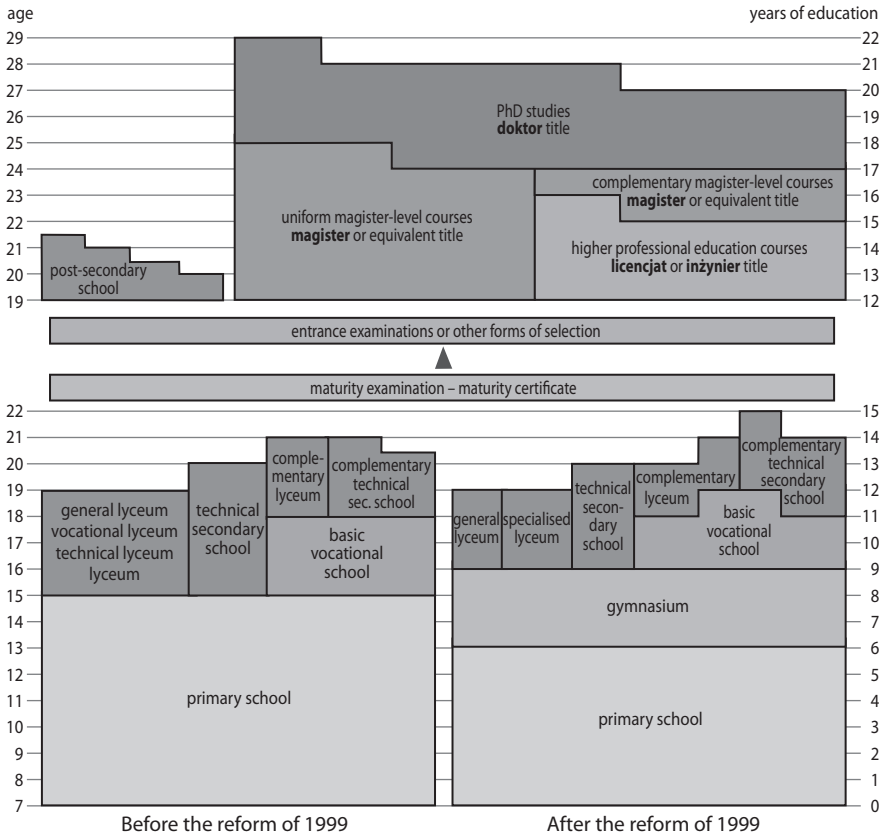

Figure 12. The Polish education system (for the school year 2004/05)
Source: www.buwiwm.edu.pl/educ/schemat.htm

the 8-year primary school was replaced by a 6-year primary school and a 3-year lower secondary school (Education System Reform Act)[1].

Upper-secondary schools

In the school year 2002/03 a system of upper secondary schools started to function. It included a 2–3-year basic vocational school, a 3-year general secondary school, a 3-year specialised secondary school and a 4-year technical secondary school. In the year 2004/05, a supplementary general school and a 3-year supplementary technical school was offered to graduates of basic vocational schools. Moreover, since the school year 2003/04 the upper secondary education also covers art schools leading to

[1] The 8th of January 1999 Education Act – enactment of the Act introducing the reform of the school system with later amendments (Ustawa z dnia 8 stycznia 1999 roku – Przepisy wprowadzające reformę ustroju szkolnego), Journal of Laws, No. 12, item 96.

a professional certification, which until the school year 2002/03 (and in the case of graduates – until the school year 2003/04) had been classified as vocational secondary (post-primary) schools.

Public and non-public schools

Primary schools and lower secondary schools can be public, non-public with the rights of a public school and non-public. A non-public school can obtain the rights of a public school if it implements the minimum program, and if it applies the principles of classifying and promoting pupils and students as established by the Ministry of National Education, i.e. allowing students to obtain state certificates or diplomas (Ministry of Education, www.men.edu.pl). Central (government) entities and local self-government entities can only administer public schools.

Foreign-owned education institutions

Foreign private entities are allowed to establish education and training facilities in Poland by registering with a provincial school Superintendent's Office. Private education institutions, whether Polish or foreign-owned, are authorised to issue Polish diplomas, they have to meet the same requirements as state-run schools and they are regulated by provincial and national education authorities. Private businesses that provide education services are not considered to be equivalent to state-run schools and are not obliged to meet the same requirements. Moreover, provincial or national education authorities do not regulate them. There is no ownership limitation in such ventures.

Post-secondary school

The Ministry of National Education in Poland is responsible for all matters related to post-secondary education. The education at post-secondary level is available to the graduates of 2-year general secondary schools, 2-year supplementary general secondary schools, 3-year specialised secondary schools, 4-year technical secondary schools and 3-year supplementary technical secondary schools. At the post-secondary level students are trained in a variety of vocational fields, including technical, allied health and business. Programs at these types of institutions last from 1 to 2.5 years.

Higher education schools

According to the Education System Act[2], two types of higher education schools can be distinguished: public (state) schools, which offer free

[2] The Education System Act of the 7th of September 1991 (Ustawa z dnia 7 września 1991 roku o systemie oświaty), Journal of Laws, No. 95, item 425.

education within the framework of the core curricula; and non-public schools (the curricula is approved by the Minister of National Education). Non-public schools ask for tuition fees and are financed by those fees. Funds can also come from private enterprises and foundations. All certificates issued by such schools are recognised by all other schools and universities.

Adult vocational training and adult general education

Adult vocational training and adult general education can be provided both in "in-school" and "out-of-school" forms. Vocational training and general education for adults in "out-of-school" forms can be organised by public or non-public education institutions. There are two forms of vocational education and training:

- The most popular form is based on an employment contract between an employer and a young worker. The employer is responsible for the organisation of the training. The practical training is organised either at the employer's enterprise or, if the employer cannot ensure suitable conditions for such a training, at the Continuing Education Centre, Practical Training Centre, at a school firm, school workshop, school lab or at an individual firm.
- The other is a school-based form of training in which practical training takes place outside school or at the employer's place, and is based on a contract between the employer and the school head. In this case the school is responsible for the organisation of the training.

The coordination in the field of adult education depends on the activities of the Department of Vocational and Continuing Education. The Minister is responsible for cooperating with other Ministers (Minister of Economy and Labour, Minister of Social Policy, Minister of Culture and Minister of Health). In Poland the general vocational training and adult education have an "out-of-school" form (except postgraduate studies) and are provided by schools for adults and higher education institutions, public centres of continuing and practical training, and Labour Offices. At the end of December 2004, there were 86 institutions with accreditation (the highest number was noted in the Silesia region) that offered continuing education in an "out-of-school" form (www.men.gov.pl, 2007).

Career guidance and counselling on continuing education are some of the objectives of the National Resource Centre for Vocational Guidance (NRCVG), a member of the Euro guidance network. Two closely cooperating departments are responsible for the implementation of the activities of the NRCVG in Poland: The National Centre for Promoting Vocational Education and the Vocational Counselling Division at the Department of Labour Market (www.mg.gov.pl)[3].

[3] Ministry of Economy, Warsaw 2007.

In the year 2006/07 there were 14,503 primary schools, 7076 lower secondary schools and 2451 general secondary schools. In the school year 2000/01 these numbers were 16,766, 6295 and 2292 schools respectively (Table 7).

In the school year 2004/05, there were 447 non-public general upper secondary schools (173 private, 102 church and 172 civic), and 340 non-public vocational secondary and basic vocational schools – 2,042 non-public schools altogether. The pupils of non-public primary schools make

Table 7. Selected education indicators in 1995–2007 (number of schools)

Specification of schools:	1995/96	2000/01	2005/06	2006/07
Primary	19 823	16 766	14 572	14 503
Lower secondary	–	6 295	7 031	7 076
Special upper secondary (post-primary)	–	–	286	338
…basic vocational	2 625	2 372	1 778	1 760
…general secondary	1705	2 292	2 485	2 451
…supplementary general secondary	–	–	87	92
…specialised secondary	-	–	1 530	1 416
….technical secondary	4 687	5724	2 668	2 220
….supplementary technical secondary	–	–	234	253
arts (leading to a professional certification)	143	185	209	215
post-secondary	1 432	2 567	3 731	3 738
tertiary	179	310	445	448
for adults	1 900	2 932	4 127	3 666
primary	135	21	10	8
lower secondary	–	72	130	137
basic vocational	97	151	119	113
general secondary	330	978	1162	1 021
supplementary general secondary	–	–	954	1 096
technical secondary	1 338	1710	851	350

Source: Central Statistical Office, Warsaw 2007.

up 1.7% of the total number of pupils attending primary schools, pupils of non-public lower secondary schools – 2.3%, pupils of non-public general upper secondary school – about 3.8%, and the pupils of non-public vocational secondary schools and basic vocational schools – 1.8%.

In the school year 2004/05, there were 340 non-public vocational secondary schools and basic vocational schools. In the same academic year there were 140,410 adults enrolled in 1,869 secondary vocational schools and over 171,000 enrolled in 1,819 upper secondary schools. Some one thousand adults still had to complete primary school.

According to statistics for the school year 2006/07, there were 448 higher education institutions altogether with 1,927,700 students enrolled in them (Table 8).

Table 8. Higher education institutions by type and number of students in 2004/05 and 2006/07

Higher education institutions by type	2004/05		2006/07	
	Institutions	Students (in thousands)	Institutions	Students (in thousands)
Universities	17	563.1	18	550.5
Technical universities	22	331.0	22	318.9
Agricultural schools	9	107.6	8	92.0
Schools of economics	93	407.7	95	406.2
Teacher education schools	17	111.8	17	117.4
Medical academies	9	48.8	9	53.1
Maritime schools	2	11.5	2	10.5
Academies of physical education	6	28.2	6	29.0
Schools of arts	22	15.1	21	14.9
Schools of theology	14	10.4	14	10.7
Higher vocational schools	181	224.7	193	244.5
Other	37	79.5	36	80.0

Source: Central Statistical Office, Warsaw 2007.

This is a significant increase with respect to 2005/06, where there were only 427 higher education institutions. In 2007 the majority of graduates from upper secondary schools – 550.5 thousand – were enrolled at universities, followed by 406.2 thousand at schools of economics and 224 thousand at higher vocational schools.

In general, the number of students has been decreasing over the past few years. This trend will have a further impact on the Polish education system. Some schools will need to close their activity; some subjects or age groups will need more teachers, others less. However, the falling number of students should theoretically free up teaching resources that can then be re-allocated *(Education and training…* 2006).

Structure and education of teachers

In general, the number of teachers and instructors has been increasing steadily since 1995/96. In 2006/07 there were 186.3 thousand primary school teachers, 49 thousand general secondary school teachers and 48.1 thousand technical school teachers (Table 9).

Maintaining and improving the teaching quality and the education system relies on adequately competent and motivated teachers.

All teachers in Poland must have a higher degree education. Additional training is required for particular levels of teaching. A primary school teacher is required to graduate from the first or second cycle studies (they last 3 or 5 years) or from teacher training colleges (they last 3 years). Lower secondary school teachers are required to have a bachelor or a master degree. Upper secondary school teachers are required to have a master degree.

Teachers working on all levels of education are often required by their employers to have completed an approved training program. Most

Table 9. Teachers and instructors in schools in 1995–2007 (in thousands)

Specification of schools	1995/96	2000/01	2005/06	2006/07
Primary	323.5	226.4	187.5	186.3
Lower secondary	–	70.1	114.5	114.7
Basic vocational	34.1	28.2	12.4	13.5
General secondary	34.7	45.6	47.2	49.1
Specialised general secondary	–	–	11.0	9.6
Technical secondary	54.6	61.5	44.8	48.1
Tertiary	67.0	79.9	99.4	100.2

Source: Central Statistical Office, Warsaw 2007.

universities provide training for future specialists in the area of continuing education and adult education at teacher training faculties. At the present moment, the forms of training include: three-year teacher training colleges; teacher training schools (pedagogical academies); and teacher education faculties at universities.

Since 2004 the teacher training standards have been modified. The Polish Ministry of Science and Higher Education introduced changes for students starting their teaching careers in September 2004. These changes include: an increased number of hours of professional training; the requirement to be competent to teach two subjects; required ICT competencies; and the required ability to speak a foreign language (*National summary sheets on education system…* 2006)[4].

2. THE PARTICIPATION IN LIFELONG LEARNING AND TRAINING ACTIVITIES

In terms of participation in lifelong learning activities, Poland is doing worse than most of its EU counterparts. In general, 30% of the Polish population has participated in some form of learning activities, which is almost the EU10 average, yet still significantly less compared to the EU15 (2005). Almost 27% of the Polish population has done some form of informal learning, which is a standard average for the EU10 countries (27.2%). A survey on the participation in informal learning based on education attainment and working status revealed that, in general, the participation of employed people in lifelong learning activities was bigger in comparison to the participation of unemployed people (34% with respect to 20.6%). Moreover, 14% of the employed carried out their study processes in libraries or learning centres. The relative number for the unemployed amounted to 12% (2005; see more in Annex I, Table 19–22; Eurostat 2006).

Women seem to do slightly better than men, both in terms of participation in some form of learning activities and in terms of informal learning. The latter indicator is higher for the group of Poles between 25 and 34 years of age compared to the same group of other representatives of the EU, whereas learning at a later age, between 45 and 54, seems to be less popular in Poland. Moreover, informal learning in Poland is more likely to occur among those, who are already employed than among those, who are seeking a job. This trend is quite the opposite in the EU15.

[4] B2, B2+ Common European Framework, see more in: *National summary sheets…* (2006).

Lifelong learning plays an important role in improving the professional skills and competences of the labour force. The most popular form of acquiring and developing knowledge in Poland is informal education and non-formal education in "out-of-school" programs. Informal education and "out-of-school" education offer its participants greater possibilities to adjust the training content, time and location to their individual needs.

According to the data of the Eurostat Labour Force Survey 2006, only 5% (2005) of the Polish population aged 25–64 participated in some form of education and training four weeks prior to the survey (Figure 13).

Adult learning in "out-of-school" programs is most often financed by employers, whereas one third of adult education participants finance training with their own means.

The analysis of adult learning must take into account the situation of the labour market. It is important to underline that over 30% of those employed have a post-secondary or vocational secondary education degree. Only 22% of those who have a post-secondary or vocational secondary degree cannot find any employment (with respect to 31% of those with only a basic vocational degree).

A completed education is an important factor affecting the further education activity of adults. Individuals with higher education levels participate more frequently in adult learning. Another factor that determines the participation in adult learning is the economic sector in which individuals are employed. The share of participants in adult education was the highest in the following sectors: financial mediation, real estate, public administration, transport and communication. More importantly, participation in adult education occurs more often in occupations that require high qualifications – professionals, technicians, legislators, senior officials, managers, etc. (*Thematic review on adult learning…* 2004).

The role of education broadcasting in the process of studying is equally important in Poland as it is in the EU15 countries. However, Poles are keener on studying in libraries or learning centres (both men and women) in comparison to their peers in the EU15.

Over 38% of the enterprises (with respect to 36% in 2004) that were surveyed, used the Internet for training and education in 2006. This rate was the highest for large enterprises – 43% (6% more than in 2004), while for medium and small enterprises these proportions were 32% and 22% respectively (compared to 46% and 32% in 2004; Central Statistical Office 2007).

Taking into consideration the Internet usage for training and education purposes according to the NACE classification, the highest rate was noted in the division of computer and related activities – 62% in 2006 (in comparison to 56% in 2005). The second group of firms with the highest usage of Internet for training purposes is the group of hotels and other

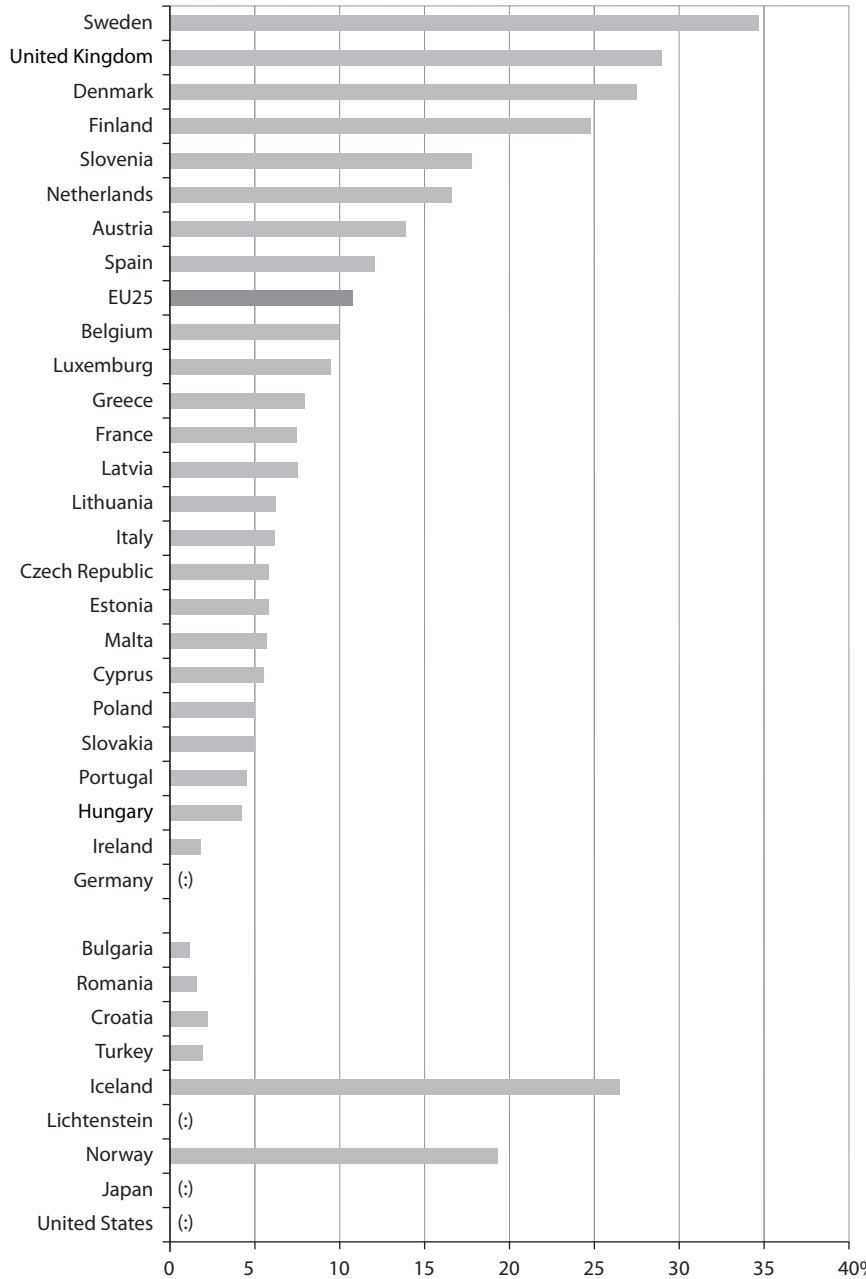

Figure 13. Participation of adults in lifelong learning[5] (2005)

Source: Labour Force Survey, Eurostat 2006.

[5] Percentage of population aged 25–64 participating in some form of education and training four weeks prior to the survey.

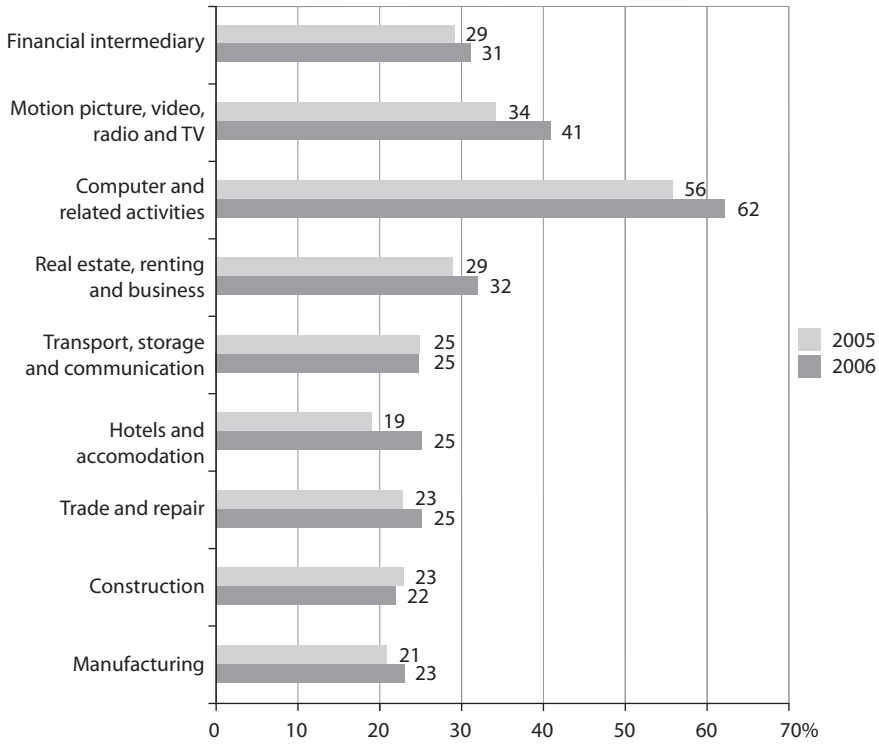

Figure 14. Enterprises using Internet for training and education purposes classified according to activity in 2005 and 2006 (percentage of each group)

Source: Central Statistical Office, Warsaw 2007.

provisory accommodation activities – an increase from 19% in 2005 to 25% in 2006. The proportions for other activity profiles did not vary much, ranging from construction (from 23% to 22%), trade and repair (from 23% to 25%) up to 41% in the video, radio and TV activities (compared to 34% in 2005; Figure 14).

For example, the share of hotels and other provisory accommodation amounted to 32%, the manufacturing sector to 34%, and certain progress could be noticed in real estate, renting and business activities – 43%.

3. ICT SKILLS AND ATTITUDES TOWARDS ICT USAGE

Only for 8% of the households one of the major obstacles in working out ICT skills was the lack of technical facilities (necessary infrastructure). Some 7% of the total households did not have access to the Internet, because their family members had the chance to access the Internet somewhere else. Therefore, it seems reasonable to claim that the

usage of ICT by individuals depends not only on the costs of Internet, the availability of equipment (hard- and software), or the prices of Internet connections, but results also from individual skills – the ability and competence to use information and communication technologies (see Annex I, Figures 11–12). These skills are comprised of computer and Internet skills.

As far as the individual level of computer skills is concerned, Poland's score – with a few exceptions – is worse compared to the EU25 and EU15 average. For example, only 53% of the Polish population has used a mouse to launch programs such as the Internet browser or word processor (EU25 – 66% and EU15 – 64%). However, it should be mentioned that within one year the value of this indicator rose in Poland by 10 percentage points (43% in 2004). Similarly, the percentage of Poles in 2005 who have used copy or cut and paste tools to duplicate or move information on the screen reached 34%, whereas the average in the EU25 amounts to 49% and 52% in the EU15. Some 21% of individuals in Poland can use basic arithmetic formulae to add, subtract, multiply or divide figures in a spreadsheet. Average figures concerning these skills reach 35% in the EU25 and 38% in the EU15. Poland again has the lowest score compared to the EU25 and the EU15 average with respect to the percentage of individuals who have compressed files. Only 16% of the Polish population can conduct such tasks (26% in the EU25 and 28% in the EU15). Only every twentieth Pole has used a specialised programming language, whereas this average is 9% in the EU25 and 10% in the EU15 (Central Statistical Office, 2006).

Unfortunately, in the category of the individual level of Internet skills, Poland's score was also the lowest. The share of Poles who have sent an email with attached files increased over the last year by 3 percentage points and now reaches 30%, although it is still 17 percentage points lower than the corresponding number in the other new EU member states (47%; Central Statistical Office, 2006). Between 2005 and 2006 Poland witnessed the most significant increase in the number of people who have used peer-to-peer file sharing for exchanging movies, music, etc. It amounted to 4 percentage points, whereas for the EU15 it was on average 1 percentage point and for the EU25 2 percentage points (Central Statistical Office, 2006). As far as the percentage of individuals who have created a webpage is concerned, Poland scored worse than the EU25 and the EU15, but only very slightly (8% compared to 9% in 2006).

The results of the survey conducted by The Polish Central Statistical Office in mid 2007 showed positive trends in growing ICT skills. The people that were surveyed claimed that they possessed certain computer skills, which they had applied while using the computer in the 12 months prior to the survey – nearly every second person (44% in 2006 in comparison to 34% in 2004), whereas some 38% (32% in 2004) knew

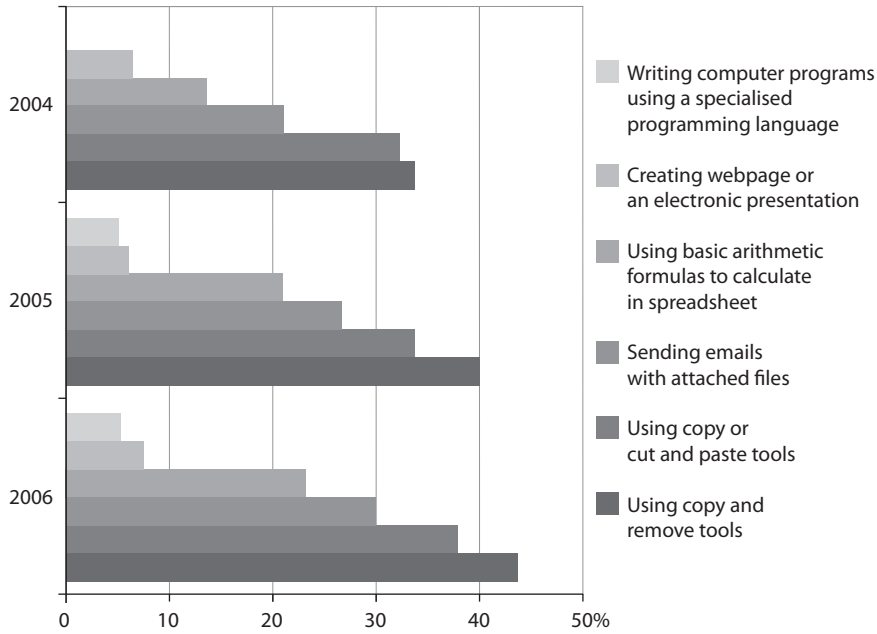

Figure 15. Activities carried out by computer users in the age 16–74 in 2004–2006 (percentage in the last 12 months)

Source: Central Statistical Office, Warsaw 2007.

how to use copy, cut and paste tools (Figure 15; *ICT usage in enterprises in 2004, 2005*).

Some 30% (21% in 2004) of the people who had used the computer in the last 12 months had sent emails with attachments during that time (in 2004 this was 50% of men and 47% of women). More complicated operations had been carried out even more rarely. 24% of the people (14% in 2004) used arithmetic formulae to work out calculations in a spreadsheet. 8% of the respondents (7% in comparison to 2004) declared to have created webpages or multimedia presentations.

The lowest proportion was reported for writing computer programs with specialised programming language – 5% in 2005.

In 2006, one third of the Polish population aged 16–74 (almost ten million) developed their computer skills independently. Almost the same number of respondents received help from family members, friends or relatives, whereas only 15% of the people that were surveyed used specific literature and book instructions (Figure 16). The means to obtain computer skills differed in particular age groups. For example, 80% of those in age 16–24 learnt how to work with computers and Internet in high school. In the age groups of 45–54 and 55–64, the most frequent way of learning computer skills was through the support of family

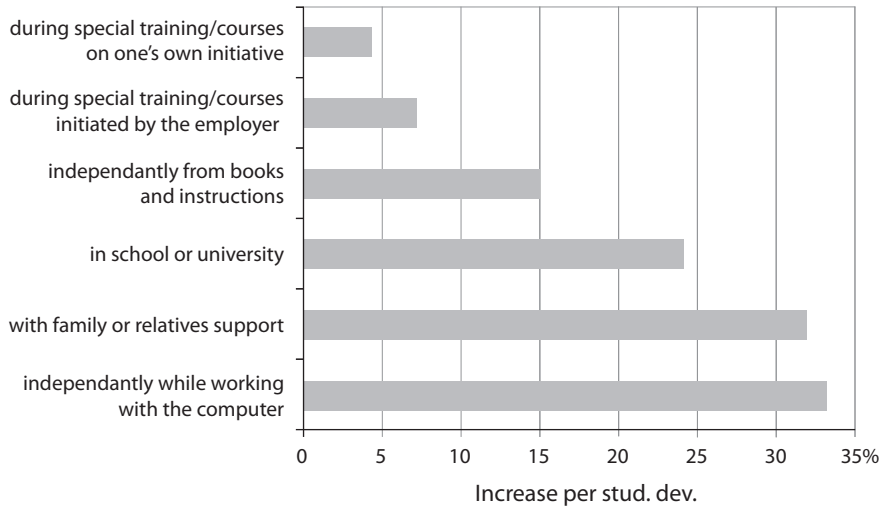

Figure 16. Most popular ways of developing digital skills in the age group of 16–74 in Poland (2006)

Source: Central Statistical Office, Warsaw 2007.

members and friends (25% and 16% respectively to the age group) as well as own practice (22% and 13%). The least frequent way of gaining computer and Internet skills was through special training and courses initiated by the employer (10% and 8%). The participation of adults in computer courses on their own initiative was the least popular way of learning – 5% of the people aged 16–74. However, the latter way of learning was relatively more popular in the case of the age group of 25–44.

Internet usage varied also depending on the professional activity, education, age and living location. Every third person in Poland (in the age of 16–74) regularly uses the Internet (34% in 2006). The group of regular Internet users has increased in the last two years from 6.5 million to 10 million. The most dominant group of this population is presented by pupils and students (81%), people with a postsecondary degree (72%) and inhabitants of big cities (48%). There is also a slight differentiation between the Internet usage of men and women – women use the Internet significantly less (32%) than men (36%). The survey data for 2004 revealed that 54% of women and 42% of men (aged 16–74 and who have used the computer in the last 12 months) had participated in a computer-training course (Central Statistical Office, 2005). As women are becoming more active in ICT in the labour market, they have also become more aware of the different perspectives resulting from ICT training. The overall high level of education of women in Poland also contributes to the potential pool of women with skills and interested in IT careers (Academy of Education Development Project, www.aed.org).

4. SUMMARY

In conclusion it can be stated that Polish people are doing worse in terms of lifelong learning activities than most of their EU counterparts. However, a positive trend can be observed in the improvement of ICT skills. Nearly every second person in Poland possesses certain computer skills. Some of the most frequently mentioned obstacles to Internet access were the lack of specific needs for Internet use or the cost of Internet. The role of education broadcasting in the process of studying is equally important in Poland as it is in the EU15 countries. However, Poles are keener on studying in libraries or learning centres (both men and women) in comparison to their peers in the EU15. In terms of the participation in lifelong learning activities, Poland is doing worse than most of its EU counterparts. The latter indicator is higher for the group of Poles between the age of 25 and 34 in comparison with the same group of other representatives of the EU, whereas learning at a later age, between 45 and 54, is less popular in Poland. Women seem to do slightly better than men. Moreover, participation in informal learning in Poland is more likely to occur among those, who are already employed than in the case of those, who are seeking a job. This trend is quite the opposite in the EU15. A completed education is an important factor affecting the further education activity of adults. Since 2004 the teacher training standards have been modified. These changes contributed to a greater promotion of the importance of the role of ICT competences and the command of a foreign language in the professional training of teachers.

CHAPTER IV

OVERVIEW OF eLEARNING RELATED INSTITUTIONS AND INFRASTRUCTURE IN POLAND

1. THE INSTITUTIONAL STRUCTURES AND RESOURCES OF eLEARNING

Traditionally, eLearning has not played an important role in Poland and is still at a very early stage of development. Nevertheless, the increasing importance of eLearning has been noticeable in the official documents of Polish government bodies over the last few years. To date, no official eLearning strategy has been worked out. There are also no regulations in the present education law supporting studies through the Internet. At the same time, different actions aiming to support eLearning as a pedagogical tool have been taken both by various public and non-public actors. The institutions responsible for the development and implementation of eLearning could be divided into those financed by public sectors and those financed by private sectors.

Major public players involved in the provision, control and financing of eLearning services

The public units include: The Ministry of Science and Higher Education, The Ministry of National Education, general inspectorates of education, The Ministry of Culture, The Ministry of Environment, The National Accreditation Board and The Education System Development Foundation (or the Bureau for Academic Recognition and International Exchange).

The Ministry of Science and Higher Education prepares projects and controls the implementation of new legal acts and strategies in the field of higher education. A detailed description of the activities of the Ministry that are related to eLearning is presented in Table 10. For selected abstracts of legal acts see Annex II – *Legal texts and other documents*.

The Ministry of National Education is responsible for implementing and organising the education system in Poland; it creates a legal, organisational and technological basis for the development of the information society and continuing learning. The Ministry of National Education defines the development directions for the information society and creates a legal, organisational and technological basis for this development. It also coordinates and monitors the development activities and the promotion of the information society in Poland. The Ministry also manages the matters concerning distance education and the work of Internet portals, which provide citizens with access to public information.

The public administration and education institutions cooperate with private actors on regional and national levels. A preferred way of cooperation is for example: "clustering" (joining the local institutions for building the critical mass) of local projects. The projects are realised with the participation of local administrations, universities and companies. They receive funds for organising specific courses, such as workshops, for conferences, for broadband access to the Internet in public locations, etc.

Other major public players involved in the provision, control and financing of eLearning services are major Polish universities, such as the University of Science and Technology in Krakow, the Maria Curie-Sklodowska University in Lublin, the Warsaw University, the Warsaw School of Economics, the Academy of Humanities and Economics in Łódź and others. Table 10 presents a sample of randomly selected higher education institutions that are most actively involved in the provision, control and financing of eLearning services.

Other higher education institutions that offer courses over the Internet include: The Koszalin University of Technology (StudiaNET project – www.studianet.pl), The University of Łódź (Polish-American Management Centre – www.pamctr.uni.lodz.pl); The Kielce University of Technology (Centre for Continuing Education – www.cku.tu.kielce.pl); The West Pomeranian Business School (Information Studies through the Internet in cooperation with the Finus Company – www.finus.com.pl); The Economic-Humanistic Higher School in Bielsko-Biała (The Centre for Internet Studies – www.euczelnia.edu.pl); The Warsaw University of Life Sciences (eSGGW Project – www.e.sggw.waw.pl); The Nicolaus Copernicus University in Toruń (IT Education Centre – www.mat.uni.torun.pl/rsei); The School of Management and Banking in Poznań (www.wszib.poznan.pl); The School of Business–National-Louis University in Nowy Sącz (www.wsb-nlu.edu.pl); The University of Szczecin (Distance Education Study Centre – www.cnz.univ.szczecin.pl); The Polish Open

Table 10. Major public players involved in the provision, control and financing of eLearning services

Name of actor or institution	Description
Governmental institutions	
Ministry of Science and Higher Education www.nauka.gov.pl	■ establishing a legal framework for the provision of eLearning services provision in the higher education institutions; ■ setting the standards for the application of methods and techniques of distance education in higher education institutions; ■ controlling the implementation of the legal regulations and standards related to the methods and techniques of distance education; ■ assessing the quality of the education process, including teaching, organisation and the provision process of eLearning services (conducted by The State Accreditation Committee).
Ministry of National Education www.men.gov.pl	■ Defining the courses of action for the information society development; ■ Creating a legal, organisational and technological basis for the development of the information society; ■ Coordinating and monitoring the activities concerning the promotion and development of the information society in Poland, including the ones related to the realisation of an e-democracy program; ■ Planning the rules and procedures for the funding of the information society development projects; ■ Managing the application procedures for the funding of the information society development projects and the evaluation of the realisation of these projects; ■ Managing matters related to information education; ■ Managing the work of Internet portals, which provide citizens with access to public information; ■ International cooperation aiming to strengthen the development of the information society.

Education institutions	
Maria Curie-Skłodowska University in Lublin and the Academy of Humanities and Economics in Łódź www.puw.pl	The Maria Curie-Sklodowska University in Lublin (UMCS) and The Academy of Humanities and Economics in Łódź (AHE) joined their eLearning forces and started the Polish Virtual University (PUW) as a common unit and project. This University was one of the first public academic institutions to provide online studies and courses. The University gives courses using the eLearning method.
Centre for Development of Distance and Permanent Education of the Warsaw School of Economics www.e-sgh.pl	The Centre is a department of the Warsaw School of Economics (SGH). The Centre aims to organise, promote and develop SGH e-learning activities among students and SGH personnel, and for the training for companies through: encouraging and organising projects concerning online education and lifelong learning; carrying out research concerning e-learning; developing the e-learning platform www.e-sgh.pl; creating and implementing the appropriate tools for and methods of teaching; creating and running a multimedia library; organising seminars and conferences concerning online education and lifelong learning; editing the e-learning magazine "e-mentor" and other publications concerning online education and lifelong learning; and organising education projects and trainings, also for companies. The Centre has organised a few editions of a preparation course to test part-time MA studies, an English course for part-time students and many others. Lecturers of the Warsaw School of Economics cooperate with the Centre by completing their traditional lectures via the e-learning platform.
Centre for Open and Multimedia Education of the Warsaw University (COME UW) www.come.uw.edu.pl	The Centre was established in order to support, promote, and organise open and distance education. The Centre aims at broadening the accessibility to academic education and overcoming the barriers of geography and time. COME carries out research on the utilisation of modern technology, such as ICT, in education; in order to increase the efficiency of instruction and to enhance the motivation of all students from all geographic and socio-economic backgrounds. The Centre promotes and coordinates the activities of the Warsaw University concerning the open multimedia education, by conducting open multimedia and R&D activities on the new methods of implementation and efficient application of new education techniques, as well as on how to help the teaching staff to face the education standards. Some courses are free of charge.

Centre for Distance Learning of Warsaw University of Technology (OKNO PW) www.okno.pw.edu.pl/	The Warsaw University of Technology was the first among Polish universities to provide online undergraduate studies as well as several postgraduate studies. The Centre offers eLearning courses in three faculties: Electrical Engineering, Electronics and Information Technology and Mechatronics, and in the following specialisations: Industrial Information Technology, Computer Engineering, Multimedia, Mechatronics, Biomedical Engineering.
Distance Education Study Centre at the University of Science and Technology (AGH) www.oen.agh.edu.pl	The Distance Education Study Centre (DESC) belongs to the European network of cooperating distance education centres established within the framework of the Multi-Country Program in Distance Education that was implemented in 1998–1999. The objective of the Centre is to coordinate activities undertaken by the faculties of the University within the range of open, distance and flexible learning, e-learning, lifelong learning, professional development of engineers, and knowledge updating. In 2004, the Distance Education Study Centre became a Centre of Excellence in eLearning – "CeL". The CeL conducts research in international cooperation, especially within the European Union programs, with the aim of developing knowledge in priority fields (for the economy and state policy) such as: health and life; energy, ecology, new materials; and information and communication technology (eLearning in particular). The Centre maintains close contacts with similar centres at home and abroad, as well as with international organisations. It promotes lifelong learning and analyses the effectiveness of eLearning methods.

Source: www.einclusion-eu.org; www.cren.pl/index.php; www.come.uw.edu.pl

University in Warsaw (www.wsz-pou.pl); The Polish-Japanese Institute of Information Technology in Warsaw (www.pjwstk.edu.pl); The Poznań School of Banking in Poznań (www.wsb.poznan.pl); The Polonia University in Częstochowa (Interactive Internet Studies – www.e-edukacja.pl); and The Internet Academy of Business in Konstancin (www.isbiz.pl).

Only a few of the above major education institutions conduct advanced R&D works on eLearning. A large number of them have just discovered the advantages of eLearning, and have just started to implement their first projects and initiatives. For a detailed description of those projects and initiatives see chapter IV.2.

In addition to the above-mentioned institutions, an important role in the provision, financing and promotion of eLearning services is played by public vocational and lifelong learning centres, such as the National Resource Centre for Vocational Guidance. Two closely cooperating departments are responsible for the implementation of the activities of the National Resource Centre for Vocational Guidance in Poland: the National Centre for Promoting Vocational Education and the Vocational Counselling Division. The mission of the National Centre for Promoting Vocational Education (Krajowy Ośrodek Wspierania Edukacji Zawodowej i Ustawicznej) has been established by the Ministry of National Education and is to maintain the quality and standards of vocational education in accordance with the labour market expectations and the state education policy. The Centre is also involved in the collection, processing and distribution of educational information related to vocational education and training. The Centre provides detailed information (also through a search engine on its website), especially on training opportunities offered by the Centres of Continuing Education and the Centres of Practical Education (about 250 institutions situated all over the country). Whereas the Vocational Counselling Division at the Department of the Labour Market of the Ministry of Economy and Labour (Wydział Poradnictwa Zawodowego Departament Rynku Pracy Ministerstwa Gospodarki i Pracy) cooperates with Centres for Information and Career Planning, which are specialised units of the province labour offices. They collect and provide information concerning the available occupations, the labour market, vocational qualifications, and they assist clients in making vocational decisions.

The public centres offer general and vocational education to youth and adults as well as practical vocational trainings in practice firms. The public centres of continuing and practical training offer eLearning courses in Continuing Education Centres (Centra Ksztacenia Ustawicznego), Practical Education Centres (Centra Ksztacenia Praktycznego) and Labour Offices. Another public entity that is involved in delivering eLearning related training and applications is for example the Education Centre of the Science and Technology Park in Szczecin. The Park develops web portals and organises training of computer basics. The

Szczecin Business Portal (www.e-mis.szczecin.pl) instructs how to run any kind of business activity; The Centre for testing computing programs (www.cto.spnt.pl) delivers ready-made applications.

Public expenditure on eLearning applications

Information on the annual expenditure of the public sector and the private sectors on eLearning applications is not available. Similarly, there is no access to the research results on the price levels and affordability of the eLearning solutions for the target groups. The main task of the Ministry of National Education, in terms of eLearning, is to provide schools with computer hardware and software. According to the estimations of The Polish Supreme Chamber of Control (NIK), this assignment has been carried out in an economic and precise manner. It is important to underline that the central form of providing equal standards of software for schools, apart from rationalising costs, required activating school organs to the additional supply of computer hardware for schools, financed from the local municipal budgets. As a result, the number of schools with Computer Studies in their school curriculum grew radically in the period of 1999/2000 – 2003/2004 (as of January 2004), from 8,137 to 18,223 (a growth of 123.9%), including 9,950 computer laboratories (54.6% of the total number) that were funded from central budgetary supplies. The following number of schools received computer laboratories financed from the central budget in the period 2000–2004: 2,583 units of elementary schools, 4,994 units of lower secondary schools and 1,973 units of post lower secondary schools.

The provision of schools with computer hardware results from the contracted authorizations in budgetary acts of the Ministry of National Education for the period of 1998–2004. The sum of the state budget designated for computer supplies in school laboratories has been increasing steadily, reaching its highest level in 2004 – EUR 36.75 million (PLN 140 million; Table 11).

While analysing the annual expenditure on eLearning from the public sector in general, one needs to consider that the total number of

Table 11. The sums designated for the supply of computer laboratories in schools, financed from the state budget in 1998–2004 (in millions of EUR and PLN)

Year	1998	1999	2000	2001	2002	2003	2004
EUR	24.95	7.87	26.24	15.35	22.40	10.50	36.75
PLN	95.00	30.00	100.00	58.50	70.00	40.00	140.00

Source: Supreme Chamber of Control 2005 (www.nik.gov.pl).

schools has been increasing annually. For example, in 2003 the number of lower secondary schools grew by 282, whereas the number of computer laboratories grew by 188. The latter phenomenon complicates the assessment of the demand for computer laboratories even more.

From the year 1999 onwards, all educational activities carried out by the three levels of local governments are being financed in the framework of general subsidy from the State Budget. In the year 2000 a uniform system for the allocation of funds, using an algorithmic formula based on the number of pupils, was adopted for the whole education system.

The financing of training for pupils differs from the financing of training for young workers. If the trainee has a pupil status, the costs of the practical training are covered by the school-running body. These resources cover, among others, the salaries of the practical vocational training instructors. The pupil is not remunerated. If the trainee has the status of a young worker, he or she receives wages from the employer, of which the sum is calculated on the basis of the amounts defined by the government.

Adult education in public schools is financed from the territorial self-government resources. Education activities carried out by territorial self-government units are supported by the education part of the general subvention, defined in the Annual Budget for a given year. New opportunities in training services come from both the public sector and individual companies (e.g. foreign investors) seeking to upgrade the skills of their workforce. Both sectors benefit from education seminars, technical seminars and management sessions provided by training companies to the middle and top management, sales personnel and clerical staff.

Government ministries and independent government entities also have annual training programs, aiming to improve the performance standards and the skills of employees. These programs cover the needs of various levels of civil servants, from senior executives (under secretary level) to mid-level executives (directors and controllers) and lower levels (Ministry of National Education).

Other types of financial aid offered by the European Union include scholarships and grants for eLearning projects. The competition for grants concerns three eLearning domains: the promotion of digital society skills, supporting the cooperation between universities and IT service providers. The average grant per domain is EUR 170,000 (maximum EUR 300,000), EUR 500,000 (up to EUR 1 million) and EUR 250,000 (up to EUR 500,000) respectively.

The state and structure of the advancement of eLearning related services are being monitored by the Ministry of National Education and The Supreme Chamber of Control (NIK). Moreover, The Supreme Chamber of Control evaluates the activity of the MNE regularly. The Supreme Chamber of Control (NIK) promotes economic efficiency and effectiveness in the public service to the benefit of the Republic of Poland.

Major non-public vocational and business actors involved in the provision, control and financing of eLearning services

The most rapid growth in the provision of eLearning services is taking place in the non-public and private sector. The number of private companies and non-public institutions involved in the provision of eLearning services increases every day. Some of the non-public training and lifelong learning institutions include: the Association of Vocational Training (Związek Zakładów Doskonalenia Zawodowego), the Polish Association of Adult Education (Towarzystwo Wiedzy Powszechnej), the Polish Economic Society (Polskie Towarzystwo Ekonomiczne), Folk Universities (Uniwersytety Ludowe), the Association of Polish Artcraft (Związek Rzemiosła Polskiego) and Labour Offices (Public Employment Service).

A random sample of some of the major private players involved in the provision of eLearning services is presented in the Table 12.

Table 12. Major private players involved in the provision, control and financing of eLearning services

Name of the Institution	Description of the activity
MyNetwork Polska Sp. z o.o. (MyNetwork Poland Ltd.)	MyNetwork Polska Sp. z o.o. (MyNetwork Poland Ltd.) is a company that provides other companies, and governmental and non-governmental institutions with advanced tools in the field of information technologies, including eLearning applications and solutions. In the field of eLearning the company renders services, such as trainings and consultations. Broad experience in this matter allows the company to work out standards and unique applications supporting production and training implementation.
Umbrella	Conducts eLearning training for the public and commercial sector.
Brand IT	This service provides the possibility of gaining access to over 3000 e-trainings in a cheap and effective way. The company offers various forms of vocational training for enterprises and public administration units.
TEAMNET	Conducts eLearning training, consulting and marketing services for the public and commercial sector.
4 system	Offers professional help in implementing eLearning methods to companies all over the world. Also introduces systems for eLearning courses for companies with more than 5000 employees.

Source: www.einclusion-eu.org

A private sector partner for online training courses is ComputerLand, a stock company in Warsaw. The company has already gained some experience in eLearning, having previously implemented an electronic training program for its personnel and for some of its customers (such as a Polish bank). Since 2000, ComputerLand has been operating a commercial hosting centre, WebInn, which offers eLearning opportunities. For the Umbrella Project training, WebInn provides servers, data communication and a processing platform (Lotus Learning Space), and offers a 24-hour guarantee on the quality and reliability of its information links. According to Mr. Tadeusz Buchacz of the Umbrella Project, the market cost of a traditional training is about EUR 420 (PLN 1,600) per person. The estimated cost of the eLearning courses of this project is about EUR 52.5 –100.5 (PLN 200–400) per person.

2. STRATEGIES, POLICIES, ACTION PLANS AND PROJECTS

There are a number of strategies and legal documents addressing the development of lifelong learning and eLearning in Poland. The most relevant of them are listed below.

The main strategy aiming to promote the implementation of eLearning in Poland is *The Development Strategy for Lifelong Learning up to the year 2010* (*Strategia Rozwoju ksztacenia ustawicznego do roku 2010*). This strategy defines the goals and tasks of the education policy in Poland up to the year 2010. The principal aim of the Strategy is to fit the lifelong learning development directions into the context of the idea of lifelong education and a knowledge-based society. The accomplishment of strategic goals is based on particular priority actions. Two of them are interlinked with the field of eLearning: 1. an increased accessibility to lifelong learning and 2. improving the quality of lifelong learning.

The prior goal of the program *The Strategy on the Development of Information Society – ePoland for the Years 2004–2006* (*Strategia Informatyzacji Rzeczpospolitej Polskiej – ePolska na lata 2004–2006*) is to prevent information exclusion. This goal must be achieved by ensuring technical possibilities that allow for a full participation in the information society of the "middle generation", the disabled and those in need of additional training. The exercising of the strategic goal is based on particular fields of action. The second goal concerns the eLearning domain. It describes the priority activities, among which teleLearning, which is to support the programs that will equalise the education chances of the youth regardless of their background, and adult education programs aimed at decreasing unemployment and gaining new qualifications for new jobs or improving the qualifications that have already been acquired. The following activity results are expected: offering basic studies (at least supplementary) in the form of teleLearning (via any

medium, e.g. television), creating education portals for students and teachers, as well as offering basic qualification improvement courses.

The Strategy on the Development of Information Society – ePoland for the Years 2004–2006 was developed by the Ministry of Scientific Research and Information Technology and aims at developing a competitive knowledge-based economy and at improving the quality of life of citizens through the efficient implementation of information technology among all the areas defined as "development of valuable content and services accessible via the Internet". The strategy facilitates distance learning, including adult training (especially on the use of ICT). It also calls for the setting up of a legal basis for the standardisation and accreditation of distance learning courses. On the basis of the ePoland Strategy, the Ministry of National Education proposed a strategy on the development of eLearning (adopted in October 2004). The document basically mirrors the provisions of the ePoland Strategy regarding the eLearning area.

The ePoland Strategy – The Strategy on the Development of Information Society – ePoland for the Years 2004–2006 – mentions only projects that have to be implemented, but does not introduce a long-term vision and aims in the area of eLearning. The strategy also does not mention how those projects are supposed to be financed. There is also a lack of information about the state of realisation of the current eLearning projects. The separate eLearning projects are too small and therefore do not lead to any institutional or regulative changes on either University or Ministerial level.

The Strategy of Education Development for 2007–2013 covers the strategic activity entitled: *The development of the distance education system on different levels – from primary up to higher education*. This document underlines that distance education, mainly for adults, must be treated as an equally important education process, as long as it leads to the approved and confirmed qualifications. Institutions that offer distance learning are subject to supervision and control of accreditation, just like all other schools and education units. Therefore, the strategy emphasises the need for further development of proper quality standards and internal systems for the control of distance learning.

The National Strategy for the Increase of Employment and Human Resources Development for the years 2000–2006 (*Narodowa Strategia Wzrostu Zatrudnienia i Rozwoju Zasobów Ludzkich w latach 2000–2006*) is a policy directive, whose realisation should contribute to an increase in effective employment, therefore also limiting unemployment and its negative results. It proposes activities mainly of an educational, legal and economic nature, aiming at the improvement of the quality of human resources. The strategy describes the necessary conditions for the functioning of lifelong learning for adults, among which: the introduction of new education forms and methods, such as teleLearning;

the adjustment of the didactical base to new tasks, through modernizing it and preparing the staff to carry out the new tasks. The development of a flexible and effective adult education system is planned not only through the diversification of education offers, resulting from an open-minded attitude towards changing the socio-economic needs, but also through the individualisation of the education path and the diversification of education forms and methods. There is a need to improve the essential level of lifelong learning institutes, by making their operations more efficient and adjusting them to the socio-economic needs. Moreover, many organisational changes, such as complementing traditional education with teleLearning and module learning, have to be implemented both in the "in-school" and "outside-school" forms.

The priority *Continuing education and eLearning* of *The Strategy for Development of Higher Education in Poland until the Year 2010* (*Strategia Rozwoju Szkolnictwa Wyzszego w Polsce na rok 2010*) is the development of distance learning (including eLearning) as well as the introduction of e-diplomas and mechanisms for the accreditation of eLearning courses, which are crucial for the further development of eLearning in Poland.

In order to address the lack of a coherent lifelong learning strategy, *The Strategy for the Development of Continuing Education until the Year 2010* was adopted by the Council of Ministers in July 2003. It was the first document of this rank that dealt with the problems of continuing education and lifelong learning in Poland. In 2003 the School Education Act was amended in order to define basic concepts concerning continuing education, and to insert reference to continuing education, adult education and training, in both the "in-school" and "out-of-school" forms, including distance education. Training, re-training and the improvement of vocational qualifications can be financed from the Labour Fund (a state fund). The District (local) labour offices are responsible for offering training schemes and other forms of professional activity to the unemployed and other job seekers.

The objectives of the "i2010" initiative of the Commission were one of the most important reference documents while working on the final version of *The Polish National Development Plan for the years 2007–2013*.

Within the strategic aim focused on *Education and vocational training of adults working with youth*, the *State Strategy For Youth For The Years 2003–2012* (*Strategia Państwa dla Młodzieży na lata 2003 – 2012*), which was adopted in July 2003, facilitates the preparation of education materials including distance learning curricula and computer education programs for the self-training of teachers.

On the basis of the above strategies and legal acts (e.g. the Act on the Education System), the Ministry of National Education issued a Regulation on acquiring and improving general knowledge and skills by adults in the "out-of-school forms". The Regulation sets rules for organising

distance learning (rules and conditions for recruiting participants for eLearning courses).

A major step forward, in the development of eLearning in higher education, was attained by including the provisions obliging to define rules for use of ICTs in higher education courses in the Act of Higher Education.

In 2000, during the session in Lisbon, the European Council confirmed that the European Union was facing fundamental changes, resulting from globalisation and the development of a knowledge-based society. Taking action in order to increase the competitiveness of the European economy and building a knowledge-based society was mentioned among other things. The way of achieving the main objectives of the Lisbon Strategy in the area of education, is presented in the program of works called *Education and Training 2010* adopted by the Ministers of Education and the European Commission in 2002. Three groups of objectives were formulated: improving the quality and effectiveness of the education systems in the EU, facilitating universal access to education systems and opening education systems for the environment and the world.

The above mentioned Polish strategies bring to mind such EU policy documents as the *eEurope 2002* and *2005 Action Plans*, *eLearning: Designing tomorrow's education*, *eLearning Action Plan*, *Community eLearning Program*, etc. The above mentioned documents give high priority to the development of computer and ICT skills among pupils, teachers and trainers, as well as to the provision of education institutions with computers and broadband Internet connections. The development of eLearning also constitutes an important element of the Operational Program – *Development of Human Resources* – a component of the National Strategic Reference Framework for the implementation of EU funds for the period 2007–2013 (see more in Annex III). The program aims at building an open and knowledge-based society by ensuring favourable conditions for the development of human resources in courses of education, training and work. The prior aim of a "high quality of education responding to the requirements of the labour market" provides eLearning tools, such as: the development of innovative curricula, methods and the organisation of education (including distance education) and the promotion of a high quality of continuing and vocational education, including the promotion of distance education.

The Strategy for Development of Higher Education in Poland until 2010 underlines the significance of the clarity of the rules of education stages and guarantees their comparability with education in other member states of the EU. The education strategy aims at developing systems of assessing the quality of education and clearly specified rules of acceptability of education processes and the skills of its participants. One of the main objectives of the strategy is to increase the mobility

of pupils, students and teachers. Hence, summing up the Polish education strategy, as well as the Program *Education and Competence*, which is a tool in its implementation, it can be stated that both fully fit into the framework of the Bologna Declaration (see more in Annex III).

On the 28th of December 2006, the Ministry of Education announced a call for proposals (Call for proposal – Distance learning centres in rural areas nr 9/2.1a/2006) for the Measure 2.1. *Increasing access to education – promoting lifelong learning* within Priority 2. Development of a knowledge-based society of the Sectorial Operational Program *Human Resources Development*. One of the main objectives of the Measure 2.1 *Increasing access to education – promoting lifelong learning* is the development of the distance learning tools. Moreover, the promotion of ICT use in the education process would improve the quality of education, which would strengthen the future employment of students. Therefore, the set up of an external examination system, a support of the vocational guidance and counselling for students, teachers' development, accreditation of education institutions and the creation of a system of statistical education data collection are the priorities of this measure.

One of the expected results and impacts of the implementation of Priority 2 is an increase in the usage of ICT by teachers in the teaching process, from 26.4% in 2002 to an expected 32% in 2004–2006 (Sectorial Operational Program, *Human Resources Development*).

Table 13. The expected results/impacts of the Implementation of Priority 2 of the Sectorial Operational Program *Human Resources Development 2004–2006*

Priority 2: Development of a knowledge-based society	Value in the base year (2002)	Results of the period 2004–2006 (value for the end of 2006)
The % share of teachers prepared to use ICT in the teaching process	26.4	32.0

Source: *Sectorial Operational Program Human Resources Development 2004 – 2006*, Brussels-Warsaw, January 2004, p. 148.

Another initiative supported by The European Social Fund, is "The Development of Lifelong Learning and Adult Education", including distance learning. The types of projects covered by this initiative are: working out education programs for particular studies and specialisations at university level, as well as conducting R&D activities related to the efficiency of distance learning.

One of the justifications for the selection of the Priority, was that in rural areas the level of education was lower than in urban areas. The data concerned people with primary education or uncompleted primary

education (43.3%), with basic vocational education (29.2%), secondary and post-secondary education (22.4%), and only 4.3% with higher education (Sectorial Operational Program, Human Resources Development 2004–2006, www.npr.gov.pl).

The deadline for submitting applications was set for 16 February 2007. The aim of the project was to set up and equip some 250 distance learning centres in rural areas with computers and Internet access. In all the centres, an expert was to be employed in order to enable people in rural areas to use the possibilities of lifelong learning and online education. Therefore, the beneficiaries (such as primary, lower secondary and upper secondary schools, kindergartens and local, regional and central education administrations) could, without the need for their own contribution, count on almost EUR 12.16 million (PLN 49.35 million; European Social Fund 75% and the state budget 25%; Call for proposal: „Distance learning centres in rural areas", nr 9/2.1a/2006).

However, the full benefits from the above mentioned adjustments to the EU policy and legislation could only be obtained if the administration was properly organised and had adequately skilled staff to implement the policy actions. However, the biggest difficulties were not in the legislation, but in the mindsets and in the rigidity of the administration.

Following the guidelines of the Lisbon European Council, the importance of an information society and eLearning in particular have also been recognised in the *National Development Plans for the years 2004–2006 and 2007–2013*.

The *National Development Plan for the Years 2004–2006* (*Narodowy Plan Rozwoju 2004–2006*) has launched two Sectorial Operational Programs: *Improvement of the Competitiveness of Enterprises*, *Development of Human Resources* and the Integrated Operational Program of Regional Development in the area of R&D and computerisation, entitled *Knowledge-Computerisation-Competitiveness: Poland on the way to a knowledge-based economy*.

The main objective of the Sector Operational Program of *Human Resources Development* (SPO RZL) 2004–2006, within the NDP 2004–2006, is building an open, knowledge-based society by providing favourable conditions for the development of human resources through education, training and work. Education actions have been planned as a part of Priority 2 of the Program entitled *Development of a knowledge-based society*, and they are as follows: Action 2.1 entitled: *Increasing access to education – promoting lifelong education* and Action 2.2 entitled *Improving the quality of education in relation to the needs of the labour market*. The institution in charge of implementing the above Actions is the Ministry of National Education (*National Development Plan 2004–2006*).

The purpose of Action 2.1 – *Increasing access to education – promoting lifelong education* is promoting education throughout one's whole

life by increasing access to education at all levels – from pre-school education to lifelong learning of adults, especially taking into account the needs of people living in rural areas. The following types of projects have been planned as part of Action 2.1:

- alternative forms of pre-school education (pilot implementation of the project in towns, where access of children to pre-school education is limited. The aim of the project is preparing children for the start of their school careers);
- school subsidies for development projects (within projects of such type, schools gain skills of localising problems, programming actions and improving the situation). Specific programs for schools concern developing basic skills of students, helping students with particular learning difficulties and ensuring education compliancy with the needs of the local labour market;
- eLearning centres in the countryside (the purpose of such centres is to provide people living in rural areas with the possibility of lifelong learning online);
- examining the level of preparation of 6-year-olds for school education;
- purchase of modern specialist equipment, enabling the teaching process of students with special education needs;
- Internet centres of multi-media information in schools and pedagogical libraries – providing IT hardware and software;
- education portals on the Internet – updating the resources and increasing the contents of the portals with new education elements for students and teachers of post-junior schools;
- developing programs, didactic materials and a methodology for eLearning (post-junior level);
- creating teaching programs on eLearning methods for given courses and degree levels, as well as conducting surveys on the effectiveness of eLearning.

The purpose of Action 2.2 – *Improving the quality of education in relation to the needs of the labour market* – aims to raise the quality of education in order to increase the skills of students for further employment, by spreading the use of ICT in the process of educating, training and accrediting education institutions, as well as by developing a system of collecting and analysing statistical data on education. The following types of projects have been planned as a part of Action 2.2:

- equipping primary schools, junior schools, post-junior and post-secondary schools (including special schools) as well as teacher training centres, Lifelong Learning Centres (CKUs) and Practical Training Centres (CKPs) with computer equipment;
- equipping psychological and pedagogical advisory centres with specialist computer equipment and programming;
- creating a data base of accredited institutions;

- equipping Lifelong Learning Centres, Practical Training Centres and selected vocational schools with specialist locations for conducting external vocational examinations;
- supporting the system of external examinations: preparing teachers to conduct external examinations, publishing information materials for students (about external examinations), conducting surveys on external examination results;
- giving career advice to students: creating and distributing methodical and didactic materials for professionals, and career planning for students;
- modernising equipment of the Central and District Examination Boards, such as computer devices and specialist programming for conducting external examinations;
- conducting surveys on the level of basic skills among the pupils of the 3rd grade of primary school;
- postgraduate courses for graduates beginning to work as teachers in the area of: Information and Communication Technologies, foreign languages and teaching two subjects (this module of studies is addressed to primary and junior school teachers);
- further training courses for teachers in the field of ICT, foreign languages, special pedagogy and the methodology of general and vocational subjects;
- preparing teachers to fulfil the role of a professional advisor as a part of postgraduate courses;
- training the administrative staff of the education system in the area of the accreditation procedure;
- developing new program foundations, innovative teaching programs (including module ones), as well as education packs for vocational training;
- creating a guide of accreditation procedures for facilities providing lifelong learning in extra-curricular forms;
- monitoring the work of accredited institutions;
- developing a system of collecting and analysing statistical data on education.

The total spending planned for Action 2.2 was EUR 450.5 million (EUR 337.9 million came from the European Social Fund (ESF) and EUR 112.6 million from the state budget). The spending for Action 2.1 amounted to EUR 278 million (EUR 208.5 million came from the ESF and EUR 69.5 from the state budget).

Three courses of action have been selected in the *National Development Plan for the years 2007–2013 (NDP)* (*Narodowy Plan Rozwoju na lata 2007–2013*) within the *Knowledge and competence* priority: *Increasing access to education*, *Supporting the openness of the education system* and *Better quality of education*. Based on the above, priority areas of the Operational Program *Education and Competence* have been

formulated, ensuring their full compatibility with the national strategic document – NDP 2007–2013. The NDP 2007–2013 highlights the importance of the Information Society and the improvement of competence, and it anticipates two Operational Programs. The first OP – *Education and Competency* aims at increasing the level of society education, the propagation of pre-school education, increasing the number of people participating in vocational trainings, increasing the employment of graduates and increasing the efficiency of education management. The second OP – "Science, modern technologies and information society" aims at increasing the efficient use of R&D expenditure in the fields that will contribute to the socio-economic development, the development of scientific personnel quality, the increase of the position of Polish science in the national and international economy, the increase of the involvement of private capital in research and development activities and gross domestic product (GDP), and to better results of the increasing public and private sector investments in information and communication technologies (National Development Plan 2007–2013). The program places emphasis on the development of eServices in the following thematic lines (Eisco 2005 – European information society conference):

The Polish National Development Plan for the years 2007–2013 aims at promoting a knowledge-based economy, including:

- the development of eServices in eBusiness, eGovernment, eLearning, eHealth and other sectors of the economy;
- a common access to electronic PA services – broadband infrastructure, ICT infrastructure for R&D, multi-platform access to eServices, software and equipment for telemedicine;
- the development of digital content, which is crucial to the competitive position of Poland in the EU, the development of entrepreneurship, and social and economic cohesion.

At the same time, the Lisbon objectives were reflected in the Polish education policy as well as in the objectives of the education policy, determined by the European Union within the Bologna Declaration, or the Copenhagen Declaration. On 17 March 2004, Poland ratified the Lisbon Convention on the Recognition of Qualifications concerning Higher Education in the European Region (Council of Europe Convention of April, 11th, 1997, CETS No.: 165).

On 19 June 1999, Poland signed along with 29 other countries the Bologna Declaration, in which the central theme is to create a European Area of Higher Education (Official Information from the Ministry of Science and Higher Education for the Bologna Process; www.kbn.gov.pl/proces_bolonski). Poland's contribution in the ongoing Bologna project is carried out by representatives of the Central Council on Higher Education as well as the State Accreditation Commission, in the form of seminars and other meetings with the countries that have signed the

Bologna Declaration. These meetings are organised in order to realise the different points of the Declaration. A special Bologna Process Council has been formed in Poland. It is an advisory and opinion providing body, which supports the Minister in the matters related to the Bologna Process. It is formed by the representatives from the above-mentioned institutions. *The Higher Education Law* takes into account the principles and postulates of the Bologna Process (Bołtruszko et al. 2004).

- a three-cycle study system;
- the possibility of transferring and accumulating achievements in the study process among various higher education institutions, in accordance with the ECTS standards;
- the issuance of diplomas other than the traditional ones and the issuance of the Diploma Supplement.

In general, Poland has witnessed beneficial transformations in higher education. The dynamic implementation of the objectives of the Bologna Process is remarkable, especially the introduction of the Diploma Supplement and the growth of mobility. Some examples of these beneficial transformations include: an extensive network of higher education institutions (approx. 400), such as "From Berlin to Bergen and beyond", which offer a wide accessibility of higher education, resulting in a higher education enrolment rate (47%); a dynamic increase in the number of students (the number of students has grown four times since 1990 to the level of over 1,800,000 in 2004); an increase in scholarship assistance and loans in order to include students from all kinds of higher education institutions and all forms of study; a wide and diverse education offer; and the implementation of an education quality evaluation system (establishment of the State Accreditation Committee). However, further steps are needed, such as: a further increase in general character of and access to higher education; further actions to raise the quality and effectiveness of higher education (a change of teaching standards, the development of new fields of study, new education methods); the adjustment of education to the labour market requirements (the development of enterprise and creativity, the development of cooperation between entities involved in education and science, as well as the development of economy and labour personnel; the development of lifelong learning; and more openness of the higher education system to educating in the area of the EU and in third countries (a wide participation in European education programs such as: Socrates-Erasmus, Erasmus, Mundus, etc., introducing and widening the offer of education in foreign languages, further popularisation of the objectives of the Bologna Process in the academic environment).

The most important ex post survey related to eLearning policies concerns the evaluation of the MNE, with respect to the supply and distribution of computer equipment in schools in budgetary acts over the years 1998–2004.

The main task of the MNE was to provide equipment for schools (computers and software), which was bought through one call for tenders, as indicated in the national budget for 1998–2004. The Supreme Chamber of Control stated in its report, that the given task had been realised with economic prudence, efficiency and diligence. In the years 1998–2004, over EUR 101.6 million (PLN 387.1 million) was spent on that purpose. However, the central purchase approach of equipment with the same standard and software allowed to receive a better price for each item. Thus, it was possible to equip more schools than previously expected. The number of schools equipped with computers increased in the years 1999/2000–2003/2004 from 8,137 to 18,223 (by 123.9%), including 9,950 computer labs (54.6% of all).

In the period of 2004–2006, the Ministry of Education previewed the purchase of computer and programming equipment for schools and education institutions worth EUR 412.16 million (PLN 1.57 billion). The total spending should proceed within 4 projects. According to the NIK, by December 2006 only two of the mentioned projects had been implemented. The first project entitled *The Equipment of Lifelong Learning Computer Centres and Centres of Practical Education* worth EUR 73.45 million (PLN 279.84 million; 18% of the total value of the projects) and the second project entitled *The Special Computer and Programming Equipment for Pedagogical and Psychological Consulting Offices* worth EUR 51.53 million (PLN 196.35 million; 13% of the total value of the projects).

The NIK experts have not, however, conducted an external audit. The commitment to the other two projects was very low. By December 2006, *The utilisation of financial resources for the Computer laboratories for schools* project, worth in total EUR 3.51 million (PLN 13.38 million), amounted to 32.1% of the value previewed, whereas for the fourth project – *The Equipment of School and Pedagogical Libraries with Multimedia Information Centres*, worth in total EUR 0.48 million (PLN 1.84 million), about 54.8% of the planned resources had been used. According to the NIK, the above structure of expenditure gave evidence to the potential threat of not taking full advantage of the planned expenditure by the end of 2006.

According to the NIK, the main irregularities in the MNE's activities, the school superintendent's offices and public schools are:

- transferring the payment without checking the quality of the computer and programming equipment;
- reluctance in inquiring about the quality guaranteed and not executing the contractual penalties;
- introducing unfavourable changes to the supply contracts; not compliant with existing regulations of accountancy, etc.

The NIK has also negatively evaluated the activity of ten headmasters out of 49 controlled schools and education units (20.4%) in the sphere of the receipt of purchased computer and programming equipment. In

the general opinion of the NIK, the above mentioned irregularities have not caused significant constraints in the functionality of equipment delivery to schools and education institutions.

The latest audit of the NIK ("Information on the control of the central purchase of computer equipment for schools and education centres" from December 2006, No. 163/2006), reveals that there were several positive trends in the MNE activities on improving ICT skills of teachers and their utilisation for learning processes. Between 1998–2002, the Ministry organised some 19 postgraduate studies with an IT specialisation for teachers, financed with public research grants. Starting from 2000, the above mentioned program was supplemented with the obligatory 30 hours of training courses for teachers on the use IT tools for didactical purposes. In 2000–2004, some 9,223 teachers went through such training financed by the MNE (EUR 5.63 million – PLN 21.47 million). In the same time there were another 31 postgraduate courses with 3,320 participants.

Within the regional education initiatives, financed by the local self-governments (provinces) in 2000 and 2001, over EUR 0.4 million and EUR 0.96 million (PLN 1.5 million and PLN 3.67 million) was spent on teacher trainings in the area of IT (3,397 and 14,670 of teachers participated in the courses). The results of a survey conducted in schools by the NIK revealed a shortage of qualified teachers in almost every fifth school.

Major public and private initiatives in eLearning: their aims, financing and results

The market of eLearning services in Poland is very young and has been developing over the last few years. The eLearning courses are offered by both public and private education and by research institutions that develop distance education activities in Poland. The projects are being financed by both public, including EU, and private funds. A detailed description of eLearning projects at higher and vocational education level is presented below.

Polish Virtual University (PUW)

PUW is a joint project of the Maria Curie-Sklodowska University in Lublin and The Academy of Humanities and Economics in Łódź (www.puw.pl). The Academy of Humanities and Economics in Łódź (AHE) and the Maria Skłodowska Curie University in Lublin (UMCS) joined their eLearning forces and started the Polish Virtual University (PUW) as a common unit and project. The main aim of the project was to build the necessary resources that would enable both institutions to provide online studies and courses. At the moment the AHE offers undergraduate online studies in 4 departments and more than 750 students study this way. More than 100 e-courses are available and used as a support for traditional

teaching, or are offered as separated courses on the Internet. In October 2002, the Polish Virtual University started its first bachelor degree program in Marketing and Management, with the diploma awarded by the Academy of Humanities and Economics in Łódź. Marketing and Management Advanced courses: public administration management, human resources management, company management and corporate finance and banking. Among other courses are: Negotiations, Basics of Interpersonal Communication, Polish Language and Culture, Information Technology in Teaching – all are aimed at teachers willing to learn more on how to use a computer and the Internet in a classroom.

Virtual Technical University (www. magisterskie.okno.pw.edu.pl)

This is the second remarkable project providing online undergraduate studies in computer science as well as several postgraduate studies. The Virtual Technical University project was started in December 2002 by 7 technical universities from Poland: AGH University of Science and Technology in Kraków, Białystok Technical University, Gdańsk University of Technology, Warsaw University of Technology, Kraków University of Technology, Poznań University of Technology and Wrocław University of Technology. The Virtual Technical University is not an independent university, but rather a project, whose main goal is to establish and develop a higher-level education system based on Internet and multimedia techniques.

Open and Multimedia Education Centre at the Warsaw University (www.come.uw.edu.pl)

The Centre for Open and Multimedia Education (COME UW) is a Warsaw University project whose aim is to provide online postgraduate studies and courses. The project was introduced in 1999. The goal of the Centre was to promote public access to academic education via modern ICT. The Centre offers eLearning courses for engineering studies. The enrolment for the studies is open all year round. The specialisations offered include: computer sciences, electronics, telecommunications and robotics. The postgraduate studies include: tools and techniques of virtual education, as well as information science and Internet techniques.

Warsaw School of Economics eLearning program

The program of eLearning courses in the Warsaw School of Economics (SGH) started in 2001. Up to now there were only elective courses offered. In 2005, the eLearning courses started to be supplementary to the program of extramural studies. In order to implement the eLearning program, special preparatory training was offered to teachers

and promotional activities were launched, e.g. the establishment of an eLearning laboratory for students and teachers.

SGH students can also participate in 16 online courses dedicated to: corporate governance, negotiations, e-marketing, finance, leadership, the European Union, mass-media, regions, quality management, the development of the economy, e-learning and others. Detailed information (in Polish) can be found on: http://www.e-sgh.pl/oferta_pwo.php (Dąbrowski 2004). The School is also active in promoting online education all over the country, especially by publishing the eMagazine – "eMentor".

Distance Education Study Centre at the University of Science and Technology (www.oen.agh.edu.pl)

At the University of Science and Technology (AGH) there are different eLearning initiatives that promote modern information and telecommunication technologies. The University organises a competition called "Notes in Internet", where the best education websites prepared by students are rewarded. In 2004, the Distance Education Study Centre at AGH became a Centre of Excellence in eLearning – "CeL". The CeL conducts research in international cooperation, especially within the European Union programs, with the aim of developing knowledge in the priority fields for the economy and state policy, such as: health and life; energy, ecology, new materials; information and communication technology. The aims of the CeL are to: conduct scientific research in the field of eLearning; maintain contacts with similar centres at home and abroad as well as with international organisations; maintain cooperation with enterprises and administrations; promote lifelong learning; and analyse the effectiveness of eLearning methods.

Polish-American Management Centre in Łódź (*European University Continuing Education, The Managers Handbook*, http)

In 1995 the collaboration between the Faculty of Management at the University of Łódz and the RH Smith School of Business at the University of Maryland (USA) resulted in the Polish-American Management Centre (PAM Centre). A grant from the United States Agency for International Development (USAID) funded the project. PAM Centre activities include the development of study programs and training used in long distance education. The technical facilities at the PAM Centre and at the University of Łódz support these distance learning activities. The main service offered by the PAM Centre is a two-year postgraduate study program, called the Executive Masters of Business Administration (EMBA). This program is meant for senior management personnel.

New technologies installed at the PAM Centre and the experience gained with them were the impulse for starting the Postgraduate

Principles of Long Distance Learning Studies at the University of Łódź. These studies are organised in cooperation with the Faculty of Education Sciences and are meant for teachers, administrators and education organisers who intend to use new technologies in their work. Students become familiar with a wide range of education issues, both theoretical and practical, concerning long distance learning (LDL). The program includes the following subjects: LDL technologies/techniques, psychological and pedagogical aspects of LDL, communication, teacher's role in LDL, methodology of LDL, organising and administering LDL programs, and legal issues. During practical classes the student-teachers create programs for different subjects adapted to LDL. They learn how to prepare LDL class scenarios, how to use Internet applications for LDL (BBS, WebCT), and how to prepare and run video conferences.

IT studies through the Internet – The West Pomeranian Business School (WPBS)

The WPBS also offers studying possibilities in the eLearning system. The students of the WPBS have the possibility of participating in eLearning studies – with the specialisation Tourism Economics and Organisation or Information Technologies. One of the aims of distance learning at the WBPS is to facilitate the study programs for special needs students. The WPBS is also a partner of the Science and Technology Park of Szczecin within the project "E-course: German language in economic communication", which is financed by Interreg IIIA. The idea of the E-course is to support the ability of the Polish SME to cooperate with German companies. Training is provided through the Internet and is aimed at SME owners and employees. The training process is managed through the e-learning platform (www.centrumedukacji.eu).

StudiaNET at the Koszalin University of Technology

The project called StudiaNET, run by the Distance Education Centre of the Koszalin University of Technology, supports daily and extramural studies via the distance education systems for defined courses. The eLearning platform enables to gain the advantages of interactive programs with the possibility of direct contact with the instructor. The Technology Park of the Koszalin University of Technology also offers postgraduate study programs. A part of the studies can be carried out via the eLearning platform. The eLearning courses can be downloaded with the tool "WBTExpress" (http://www.studianet.pl).

The Polish Centre of Logistics Competence – POLLOCO

The aim of this project is to support the development of logistics, and the implementation of its related initiatives and projects. As a result of

this project, some 150 competence centres and research teams in various spheres have received the status of POLLOCO Competence Centres. The POLLOCO project has already invested into the supply and the establishment of professional LMS (Learning Management System) platforms– Learning Space 5.0 of the IBM Company as well as equipment for distance studies and virtual conferences. The type of courses and the number of people participating in a particular course offered by the Centre is presented in the table below (Table 14).

Table 14. The number of people participating in a particular course

Course	Number of people
Inventory management	over 90
Stocks management	over 70
Transport means	over 90
Storehouse infrastructure	over 85
Storehouse management	over 65

Source: Kraska 2005.

The main argument supporting the start of such courses was the lack of logistics courses in Poland that use the distance learning method. The demand for such knowledge was confirmed by the annual number of over 1000 students participating in such courses that were run using traditional methods in the Centre of Logistics Education.

The Dynamic Entrepreneurship Program in the Kozminski Business School (www.kozminski.edu.pl)

The aim of the program is to train students to launch business ventures grounded on the knowledge and experience acquired during the course of studies. The website dedicated to the textbook – www.nowybiznes.edu.pl – is an integral part of the portal. The service offers supplementary resources and examples, as well as detailed scenarios permitting a step-by-step development of a new business. A separate section of the mentioned website is addressed to the course instructors. Apart from additional assignments and teaching tips, the site offers technical tools enabling the instructors to run Teaching Programs with the help of this electronic platform. The website generates promising opportunities for students from various academic centres to develop and share entrepreneurial ideas and consequently provides excellent grounds for cooperation among young people with various academic backgrounds (www.cieslik.edu.pl).

Other public and non-public initiatives and actors promoting eLearning

Poland is participating in the **eTwinning program** of schools in Europe. One of the objectives of the program is to promote teacher training by strengthening and developing networking among schools. The eTwinning of schools also helps to update the professional skills of teachers and trainers regarding the pedagogical and collaborative use of ICT. Internet-based learning communities contribute to improving intercultural dialogue and mutual understanding (eLearning Program).

Poland has been very active in the eTwinning program, with 1,779 teachers and 1,747 registered schools within the program (Annex I, Table 14). It is the one of the best results, only topped by Spain and Italy. One of the incentives for schools to undertake eLearning initiatives, is the award offered by the European Union for promoting one of the three eLearning domains: digital literacy, cooperation between universities and the service supporting the learning process. The average amount of the first grant is EUR 170,000 (at maximum EUR 300,000), the second grant – EUR 500,000 (up to EUR 1 million), and the third one – EUR 250,000 (up to EUR 500,000).

The aim of the **IKONKA project** is to establish open Public Internet Access Points (PIAPs) in local libraries and community centres across Poland. The project is financed by The Ministry of Higher Education and Science (MNiSW) and is aimed at enabling public Internet access in small towns and villages. The network of public Internet access points covers 534 public libraries in 11 regions. The project is specifically targeted at solving the problems created by digital division, by providing free Internet access and computer training. The project was initiated in the Podlaskie Province in 2003, where 117 (out of 118) local authorities applied for participation. The project is spreading throughout Poland and application processes are on their way in other provinces as well. In 2006, about one thousand libraries already applied for participation in the project. The project often provides the only public access to the Internet in certain regions of Poland.

The Polish Internet Library is the largest digital library in Poland with 25,350 digitalised entities, in 2006 reaching the number of 30,000 entities. The free of charge Polish Internet Library was officially started on December 21st 2002 (www.pbi.edu.pl). Its online collection comprises over 9,000 titles of literary works, mainly school lectures and Polish classical literature. The Library is constantly updated with new collections. The complete Library Catalogue includes academic publications, sheet music, maps, paintings, photographs and other graphics materials, as well as scientific periodicals. The Library is also rich in scientific and documentary films, museum resources and theatre performances.

Out of the three projects only one, i.e. **The Internet laboratory in every community** (correspondingly in every lower secondary school and every school) was finished by the end of the reviewing process by the NIK, providing over 2,480 computer laboratories in 1998. It was initially planned that these computer laboratories would be dedicated to primary school buildings where lower secondary schools had been planned.

The next initiative, realised in the subsequent years 1999–2003, concerned Internet laboratories. As for the year 2004, out of 6,423 lower secondary schools, some 4,930 had computer laboratories, i.e. 76.7%. In the year 2001, EUR 15.22 million (PLN 58 million) was devoted to this purpose, which differs from the initially planned amount – EUR 26.7 million (PLN 102.77 million).

According to the register conducted by the MNE for 2004, there were 9 non-public initiatives supporting eLearning. The list of non-public programs supporting eLearning is presented below (Table 15).

Table 15. List of registered non-public programs supporting eLearning

Nr	Title of program	Website
1	Intel – learning towards the future	www.intel-nauczanie.pl
2	Interkl@sa – polish education portal	www.interklasa.pl
3	Internet w Szkołach – Presidential Project	www.prezydent.pl
4	Education and Development Program of Information Society – Poland-Europe-Polonia ("Polska-Europa-Polonia")	www.waw.org.pl
5	Interszkoła	www.interszkola.pl
6	Multimedia in didactics	www.kana.gliwice.pl/ siemens-dydaktyka
7	SzkołaNET – School of Creativity	www.szkolanet.pl
8	Linux in schools	www.linux.com.pl/lws
9	Cross-school Internaut Club (Międzyszkolny Klub Internautów – M_K_I)	e-szkola.net

Source: Ministry of National Education (www.men.gov.pl), 2006.

The aim of these initiatives is to increase students' accessibility to computers and to the Internet, as well as to raise students' competence and skills. One of the important programs to be mentioned in particular is the Interkl@sa Program. The Program was started in 1998. The goal of the Program was to equip Polish schools with computers connected to the Internet. As a result, over 70 thousand PCs were placed in schools within the frame of this Program. The Program created an

institutional cooperation platform for IT companies (i.e. Intel, Microsoft, Sun, Vulcan, YDP), and for schools that wanted to prepare their pupils for the use of modern ICTs as well as to provide equal education opportunities irrespectively of the location of the school. The Program Interkl@sa launched a number of noteworthy initiatives in cooperation with different partners: *Teaching for the future*, *Notebook for the teacher*, a Polish education portal (www.interklasa.pl), European Community information centres, local information academies. The Program has also contributed to the extension of the offered IT courses for secondary schools and municipal education centres. As a result of an agreement with the Association of Polish Districts and Cisco Systems, 300 Local Information Technology Academies have been established at secondary schools and other education institutions (Skulimowski 2005).

The Interkl@sa Portal Platform has gained education and financial support from the Polish American Freedom Foundation and the National Foundation for Computer Literacy (OFEK). In cooperation with the Teachers Training Centre in Łódź, the Interkl@sa Program launched a pilot phase of the Computer Long Distance Training Program. The program provided training assistance for 3,000 teachers (1,500 participants of the Computer for Teacher Program and 1,500 cooperating with the Interkl@sa Portal). Teachers are trained to use ICT tools for teaching and for their own work. The program contained two phases: the eLearning phase and the face-to-face phase. The training of teachers was organised near their places of residence (Training for Trainers on eLearning PT/05/B/F/PP-159147; www.interklasa.pl).

The IT and eLearning service providers cooperate in building an information society. Some good examples of this cooperation include such initiatives as: The Ikonk[@] Program, The Umbrella Project, The WebInn Hosting Centre and others.

The Ikonk[@] Program, for example, aims at enabling free access to modern technologies such as the Internet and its education resources. The *Intel® – Teaching Towards the Future* program helps to train teachers. The above mentioned community projects contribute to supporting the eLearning method and the development of the information society.

The Umbrella Project works in cooperation with a private sector company called ComputerLand, which uses the project as a tool for exploring the eLearning market. So far, training courses have been completed by about 300 people, who have enrolled in the courses on their own initiative. Although the numbers are smaller than initially expected, the experience gained from the project is positive.

The WebInn Hosting Centre, which belongs to ComputerLand, is a communication and processing platform for distance learning, servers and links, and offers technological guarantees. The availability of professional infrastructure is extremely important, because it ensures adequate quality of training. The partnership with the Umbrella Project

is a typical pilot undertaking. The experience gathered up till now is very encouraging (*How to Build Open Information Societies*). The online eLearning courses have already been completed by hundreds of local self-government authorities, central administrations, police units, and business representatives (to a smaller extent). The purpose of such courses is to share quality management knowledge, to demonstrate the benefits of implementing a quality system consistent with the ISO 9000 standards, and to provide a new outlook on work methods and performance within the offices or companies of trainees. The implementation of a quality management system in administration will result in more efficient operating of public offices, better work organisation, improved transparency of adopted procedures and higher reliability. As a consequence, it also facilitates the obtaining and absorbing of, for example, European Union aid funding. Finally, it leads to more effective and user-friendly workplaces.

Public initiatives aimed at promoting eLearning among business actors

Outside of higher education there were also several other good eLearning practices, e.g. a free knowledge portal in economy, created by the Polish National Bank (NBP). The NBP (www.nbportal.pl) offers, free of charge, the 4 following eLearning courses: *The Economy around us*, *The Euro is approaching*, *Financial analysis* and *Credits*. This portal was launched in November 2003, but it has already ranked among the most popular educational portals in Poland.

eLearning as a pedagogic tool is also being used in the training process organised by the Polish Agency for Enterprise Development (PARP). The portal Akademia PARP – www.akademia.parp.gov.pl – offers online training for every person interested in getting to know the principles of entrepreneurship (how to establish a firm, business plan, etc), market research, structural funds for enterprises, the rules of participation in public procurement, and industrial safety in small and medium-sized companies (SMEs). The project particularly aims at teaching SMEs how to use modern technologies.

Initiatives aimed at promoting eLearning in specific groups

In the framework of programs aimed at specific groups, there are a few initiatives in Poland that focus on the disabled or inhabitants of remote areas. Some of such initiatives are run by the Education and Professional Activation Centre for the Disabled and the SOS Children's Villages Association. Thanks to The Education and Professional Activation Centre, mathematics and computer science teachers with physical disabilities are provided with free computer courses for the disabled. Such courses

prepare them for a more efficient competition in the labour market. The Centre also runs the *Internet for the Disabled* portal. The total support (EUR 133,860 / PLN 510,000) obtained for software and learning materials from Microsoft was used to establish two computer rooms in Warsaw, to improve the qualifications of instructors and to add new services.

The SOS Children's Villages Association aimed at enhancing computer literacy in the Lubelszczyzna region. The main goals were to prevent "computer illiteracy" and to minimise its potential consequences. The Association is meant to integrate children and young people living in villages with the local communities.

3. LEGAL FRAMEWORK SUPPORTING eLEARNING

There is no legal base for eLearning in Poland. However, some minor and very specific regulations may be found.

The Act on Higher Education of 27 July 2005 (Journal of Laws, No. 164, text 1365) allows universities to conduct teaching with methods and techniques of distance learning education. According to article 9 of this Act, the Minister responsible for higher education has to specify, by the means of a regulation, training in information technology, including its use in the specialisation areas for which students are trained. The Minister promulgated this regulation in 2004 (Journal of Laws, No. 207, item 2210). These regulations, in force since 1 October 2004, have introduced changes in the standards of teacher training, in the subjects of teacher training, in the number of practical training hours, as well as in the syllabus and skills required (advanced knowledge of a foreign language and using IT). Another important change is the requirement to prepare teachers to teach two subjects at higher vocational study courses. Moreover, all higher education institutions shall have a library and an information system based on the library. The organisational and operational arrangements of the library and the information system in a higher education institution, including the rules on access for persons other than staff, doctoral students or students of the institution, were subject of the above regulations (see Annex II).

Moreover, according to Article 164, courses taught as a part of degree programs may also be delivered using distance education methods and techniques. The Act authorises the Minister of Science and Higher Education to lay down, by regulation, the requirements to be fulfilled in order to deliver courses using distance education methods and techniques. These requirements also aim at ensuring that higher education institutions provide adequate access for students to courses delivered using distance education methods and techniques, and that such courses account for a suitable proportion of the total course load for, as appropriate, full-time programs and part-time programs. The Minister of

Science and Higher Education fulfilled his obligation only two years after the Act on Higher Education entered into force and adopted on 25th September 2007 a regulation on the requirements to be fulfilled when delivering courses using distance education methods and techniques (Journal of Laws, No. 188, item 1347).

The regulation states that courses may be delivered using distance education methods and techniques in all fields of studies for students participating in full-time programs and part-time programs. However, the Minister of Science and Higher Education imposed many requirements on higher education institutions that deliver courses using distance education methods and techniques. A higher education institution that is willing to provide such a form of education must fulfil all of the conditions listed below.

It must:

- have academic staff prepared to deliver courses using distance education methods and techniques;
- ensure access to information technology infrastructure and programming, which enable synchronic and a-synchronic interaction between students and academic staff;
- provide course materials in electronic form;
- ensure that each student has the possibility of a personal consultation with the teacher that delivers the course in the seat of the higher education institution;
- ensure an ongoing control of the learning progress, verify the knowledge and skills of students by taking final examinations and course works from a particular course in the seat of the higher education institution;
- ensure an ongoing control of the activity of teachers that deliver courses.

Furthermore, the higher education institution is obliged to organise a series of training courses for students, which will prepare them for the participation in courses that make use of distance education methods and techniques. That means that additional courses have to be organised before the start of the actual courses that make use of distance education methods and techniques.

Similarly, the regulation of the number of teaching hours for full-time programs and part-time programs using distance education methods and techniques is also controversial. It amounts to 40%, 60% or 80% of the total number of teaching hours defined in the degree program requirements for a given field and level of study, and is conditioned by the authorisation of higher education institutions to confer the academic degrees (doctor, doktor habilitowany).

The above mentioned criteria for the number of teaching hours for programs using distance education methods and techniques, provoked serious doubts in terms of their impact on the further eLearning

development in Poland. The requirements to be fulfilled in terms of the curricular contents for each field of study are similar for all higher education institutions and are defined in the program requirements, which are binding to the same extent for all higher education institutions. For the method of delivering the course it makes no difference if the higher education institution is or is not authorised to confer academic degrees; the same applies for the number of study fields. Therefore, this regulation discriminates education institutions that do not have such an authorisation, even if they have fulfilled all the requirements to conduct studies in a particular field.

Furthermore, the criteria of having or not having the authorisation to confer academic degrees violates the equality of all legal entities before the law, especially in the case of public and non-public higher education institutions. Most of the big public higher education institutions have gained the authorisation to confer academic degrees a long time ago, whereas smaller non-public higher education institutions rarely have such an authorisation. Moreover, the current regulation puts non-university higher education institutions that have no authorisation to confer academic degrees in the worst position, , while eLearning is mostly applied in vocational training.

According to the regulation of the Ministry of National Education regarding teaching plans in public schools, the first compulsory information technology lesson takes place in the fourth class of primary school, continues for 3 years in the lower secondary school and for 3 years in the upper secondary school. So for over nine years pupils are taught information technology 2 hours each week (The Regulation of the Ministry of Education and Sport regarding teaching plans in public schools, dating 12th February 2002; Journal of Laws, No. 15, item 142).

However, there is no regulative framework on how to evaluate the work of e-teachers. For example, teachers still receive their salaries based on the number of hours spent in personal contact with students, which does not reflect the specific features of eLearning and the role that teachers have in it. There is no regulation on the legal conditions that must apply when using methods and techniques of distance learning. The obligatory qualification requirements and professional advancement are regulated by art. 9 and art. 9a – 9i of The Teachers Chart of 26 January 1982 (Journal of Laws, No. 3, item 19).

Poland has significantly improved its legal framework regarding intellectual property protection. Yet, the level of intellectual property rights (IPR) protection in Poland remains unsatisfactory. Insufficient copyright and trademark enforcement constitute the principal problems.

According to the International Intellectual Property Alliance (IIPA), Poland suffers from high rates of piracy. This is due to the weak control of the eastern border and large outdoor markets. Poland is a member of the Madrid Agreement on the registration of trademarks and the

prevention of false or deceptive indications with respect to the source of goods. Since 1991, Poland has also been a member of the Madrid Agreement on the international registration of trademarks. A registered trademark is valid for 10 years from the date of filing (and may be renewed), unless it is proved that for five consecutive years the trademark has not been used. Poland is also a member of the Stockholm Text of the Paris Convention on the Protection of Industrial Property as well as a signatory to the Patent-Cooperation Treaty (since 1990).

On 22 August 2001 the new Industrial Property Law of 30 June 2000 (Journal of Laws, No. 49, item 508) came into force, which replaced four previous items of legislation (Laws on Inventive Activity, Trade Marks, Integrated Circuit Patents and on the Patent Office). The new legislation does not significantly change the regulations applied to industrial and commercial intellectual property rights (The United Nations Industrial Development Organisation). The Industrial Property Law also regulates the protection of inventions through patents and utility models. Applications are filed with the Polish Patent Office. The patent or protection right of a utility model gives the owner the exclusive right to exploit the invention on the territory of Poland while it is valid. Registered patents are valid for 20 years from the date of filing (art. 63). The right of protection of a utility model is valid for 10 years (art. 95). Patents are granted after examining whether an invention is new, whether it involves original research and whether it can be commercialised.

The copyrights in Poland are protected by The Copyright and Related Rights Act of 4 February 1994 (Journal of Laws, No. 24, item 83), substantially revised in 2000 and 2004. The law meets contemporary international standards and corresponds to the principles of free trade in intellectual property. The scope of copyright protection has been broadened considerably. The new law covers not only the protection of author's rights as understood traditionally, but also related rights. The new owners include producers of sound and video recordings, TV and radio stations as well as artist performers. The law also provides protection of intellectual property in the area of science, technology and manufacturing (such as computer programs, industrial designs, etc.). The protection mechanism of computer software is similar to the one used in the EU countries. The time period during which intellectual property rights are protected was expanded to 70 years after the author's death, and in the case where the copyright belongs to somebody else, to 70 years after its distribution. The law also provides a general compensation if losses are incurred by authors, performers or producers. This can be caused by uncontrolled mass reproduction for personal use (at home). The new revised law gives ground for more efficient procedures for enforcing copyright protection. It strengthened copyright protection in Poland considerably. By meeting the international standards the intellectual property rights protection creates favourable conditions for foreign investments

making use of property rights. Moreover, the law regarding protection against unfair competition protects Polish and foreign companies from such activities as attempts to convince the public that goods or services originate from someone other than the true producer or supplier.

The Act on Electronic Signature from 18 September 2001 (Journal of Laws, No. 130, text 1450) specifies the conditions of the use of electronic signatures. It includes the legal effects of using electronic signatures, the principles of provision of certification services and the principles of supervision. Certification attestation will involve an electronic attestation, which links authenticity verification data to a certification –service provider or an authority referred to in Article 30, paragraph 1, and will confirm the identity of such provider or authority.

Additionally, The Law on Protection of Personal Data (LPPD) implemented rules that regulated the collection and exchange of personal data (Journal of Laws, No. 133, item 883). According to article 40 of the LPPD, all administrators of personal data must register such databases with the General Inspector of Personal Data. Consequently, individuals have the right to access their personal data (to correct or delete them). With the implementation of the LPPD, Poland introduced the European Directive 95/46 on data protection to the internal law (Directive 95/46/EC of the European Parliament and of the Council, dating 24 October 1995, on the protection of individuals with respect to the processing of personal data, and on the free movement of such data).

4. DEDICATED ICT INFRASTRUCTURES AND APPLICATIONS

An overview of the ICT infrastructure in Poland reveals the following features: insufficient access to computers and the Internet in the Polish society; a considerably high cost of IT services; a poorly developed market; and a slow elementary and high-school computerisation process, to be completed in 2007. The situation improved significantly in 2005 – 41% of the population declared to have a personal computer, with respect to 24% in 2004 (www.Money.pl/gospodarka). However, this is still much below the average level of the NMS in terms of the number of public Internet access points. Internet accessibility is measured in terms of the number of public Internet access points per 1000 people.

An important element of the provision of eLearning services is the ICT infrastructure of academic institutions. Fast Internet for Polish Science (dedicated high speed fibre optic) was built within the PIONIER project (Polish Optical Internet Network). The project aimed to deliver a countrywide optical network, connecting all academic and metropolitan networks in the country, and to provide scientists with access to an advanced network infrastructure (including supercomputers). The PIONIER Network covers: 5 high performance computing centres (HPC),

22 metropolitan area networks (MAN) located in main research centres, over 700 academic units including universities, institutes of the Polish Academy of Sciences, hospitals, libraries, industrial R&D institutes, and at the length of about 3,000 km (optic fibre). The current topology of the PIONIER network is presented in the graph below (Figure 17).

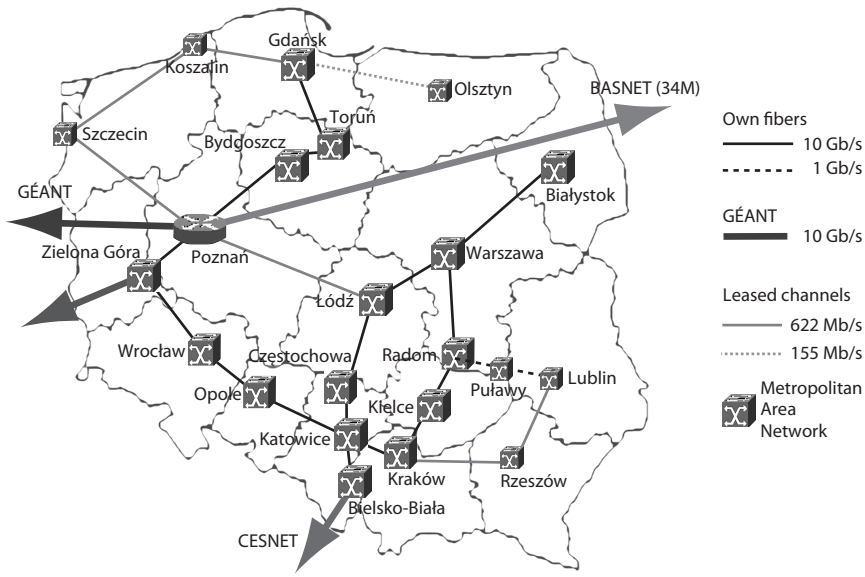

Figure 17. The current topology of the PIONIER network

Source: www.pionier.gov.pl

The project has greatly contributed to the development of ICT infrastructure for science and to the promotion of the idea of an information society in Poland. The Poznań Supercomputing and Networking Centre (PCSS) – www.man.poznan.pl – is the coordinator of the PIONIER project. The main providers of the Internet services include: Telekomunikacja Polska S.A., Netia S.A., Energis and mobile communication companies (GPRS/EDGE/UMTS). In comparison to other EU member states, the prices of the services offered in Poland are relatively higher.

In general, only one fifth of the households in Poland have Broadband Internet access. In towns with more than 100,000 inhabitants over half of the population aged 16–74 use the Internet regularly – at least once week (55% in 2006 in comparison to 47% in 2004). In towns of less than 100,000 inhabitants this number amounted to 45% in 2006, with respect to 38% in 2004, whereas in rural areas the ratio was 31% in 2006 and 21% in 2004 (Central Statistical Office, 2007). In conclusion, Internet access of households varies significantly depending on the region. This confirms that the Internet is a possible threat of social exclusion in the less developed regions.

The relatively low penetration rates are partly explained by the high cost of Internet connections, relatively one of the highest in Europe (in relation to average household incomes in Poland). In comparison to other countries, including the NMS, Poland has the highest cost of Internet access, measured as a % of monthly salaries it comes down to an average of 20.5%. From the EU and associated countries only Bulgaria had a relatively higher cost of Internet access[1].

A strong improvement in ICT infrastructure has taken place over the past 5 years in all European schools. A European wide survey carried out among head teachers and classroom teachers showed that almost all European schools (96%) had Internet access by the year 2006. The highest shares of broadband connections in schools were noted in small countries like The Netherlands, Estonia and Malta (around 90%), whereas Greece, Poland, Cyprus and Lithuania had the lowest broadband penetration rates at schools in the EU25 (less than half of the EU25 average of 70%).

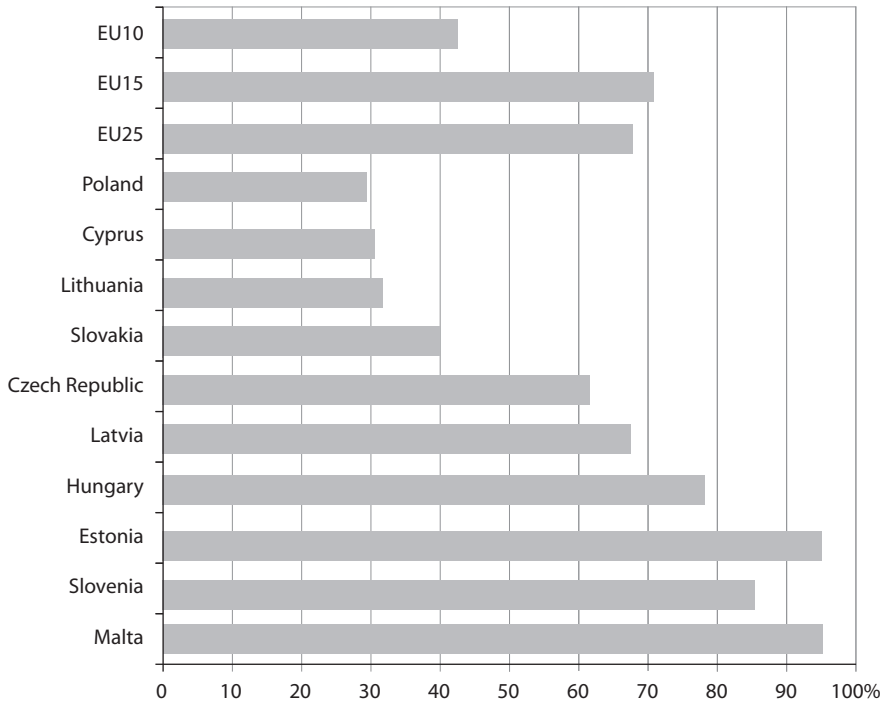

Figure 18. Percentage of schools having broadband Internet access in 2006

Source: *Head Teacher Surveys 2006*, Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

[1] Source: eEurope+ Telecommunication and NSO Survey, June 2004.

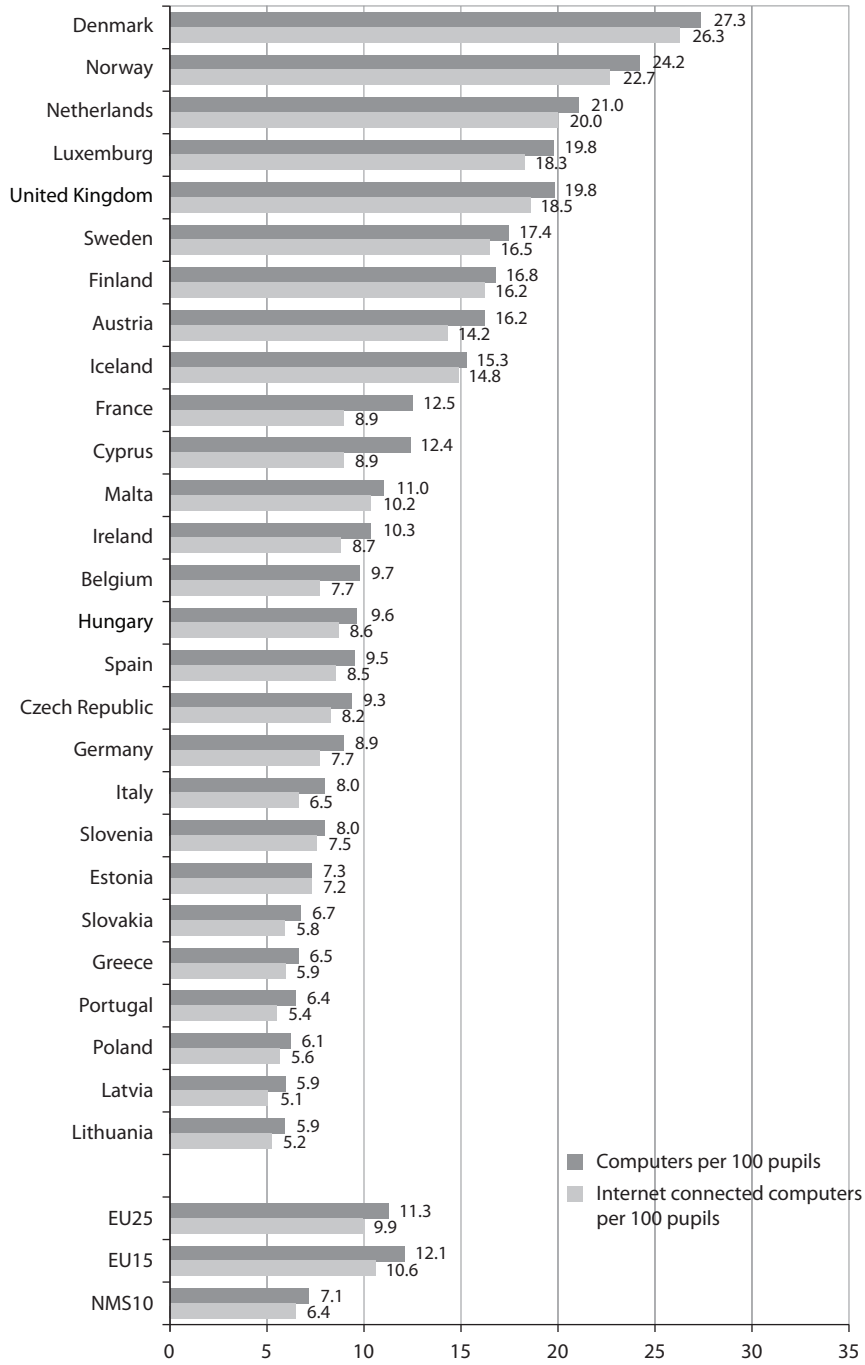

Figure 19. Number of Computers per 100 pupils in European schools (2006)

Source: *Head Teacher Surveys 2006*, Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

In 2006, on average, there were 6.1 computers per 100 pupils in Polish schools. There were 5.6 Internet connected computers per 100 pupils, which is significantly below the EU25 average (9.9; Korte and Hüsing 2007). This situation, however, appears in all the 10 new EU member states. The measurement in 2006 showed that there was still progress to be made, since on average 14 pupils had to share one computer in schools (almost twice as many compared to the situation in the old EU member states).

These differences are even more emphasised when comparing Poland to the frontrunner countries of the EU, such as Denmark, the Netherlands, the United Kingdom and Luxembourg. Only 4 to 5 pupils had to share one computer in the mentioned countries. There were no major differences established in the Internet penetration rates between schools located in rural areas and those in urban areas. However, schools located in densely populated areas are still more likely to have broadband Internet access than those with a smaller population density.

5. eLEARNING SERVICES

Some of the major impediments to the implementation of eLearning in schools in Poland, is the still insufficient access to computers and the Internet, considerably high costs of IT services, and the slow progress of the elementary and high-school computerisation process (which is due to be completed in 2007). Another impediment to the implementation of eLearning is the lack of computer equipment and Internet access in small regions and rural areas. The schools and households that were best equipped with computers and Internet access were all situated in bigger Polish regions (provinces) such as Mazowsze and Śląsk.

There are two other important issues that have to be analysed: the question of open-source products and of licensed products. Open-source products (the non-commercial solutions) include: LRN, Moodle, ILIAS, Claroline, Manhattan Virtual Classroom, Fle3 Future Learning Environment, Atutor, TinyLMS, Spaghetti Learning. They are used by the following institutions: the AGH University of Science and Technology, the Gdańsk Technical University, the Maria Curie-Skłodowska University in Lublin, the Warsaw Agricultural University (SGGW), the Gdynia Maritime University, the Adam Mickiewicz University in Poznań, the Łódź University, etc.

Licensed products (the commercial solutions) include: Oracle iLearning, IBM Lotus Learning Management System, Tegrity WebLearner, Saba Learning Enterprise, LMS MyLearning, Learning Environment Online. A detailed description of the non-commercial and commercial solutions is presented in the Table 16.

Table 16. Non-commercial and commercial solutions

Non-commercial solutions	
Name	**Description**
LRN	An open source e-learning system developed at MIT, based on AOLserver and OpenACS.
Moodle	A course management system (CMS) – a free, open source software package designed using sound pedagogical principles, to help educators create effective online learning communities.
ILIAS	A powerful web-based learning management system that allows users to create, edit and publish learning and teaching materials in an integrated system with their normal web browsers.
Manhattan Virtual Classroom	A fast, stable and effective course management system that runs on Linux and other Unix-like systems.
Claroline	A free application based on PHP/MySQL allowing teachers or education organisations to create and administrate courses through the web.
Fle3> Future Learning Environment	Is a server software for computer supported collaborative learning (CSCL).
Atutor	An Open Source Web-based Learning Content Management System (LCMS).
TinyLMS	A lightweight learning management system for SCORM compliant learning content.
Spaghetti Learning	Docebo is an open source eLearning suite that contains an LMS (for online courses) and a CMS (for web portal building).

Table 16. cont.

Commercial solutions	
Name	**Description**
Oracle iLearning	The Oracle iLearning Subscription service is an internet-based learning platform for internal company wide employee training.
IBM Lotus Learning Management System	Lotus learning products deliver flexible, Web-based learning management and delivery systems that integrate live, asynchronous and self-paced content delivery.
Tegrity WebLearner	Multidimensional eLearning system.
Saba Enterprise	A premier Human Capital Management (HCM) software and service provider, using a people-centric approach to increase productivity and performance.
LMS MyLearning	The LMS MyLearning Platform, LMS class (Learning Management System) authoring tool, is a multifunctional eLearning platform created in Java (J2EE, EJB) technology that cooperates with databases of Oracle, MS-SQL, and Postgre SQL.
Learning Environment Online (LEO)	Young Digital Poland designed LEO to be a comprehensive and versatile Internet based eLearning platform, which allows effective management of complex eLearning and eTeaching processes.

Source: web-based own elaboration.

All available eLearning applications are Internet database applications. However, none of the above mentioned solutions represent the dedicated client application type. The interaction with the e-platform user is conducted with the help of a search engine, which enables access to data, regardless of the user's current location. All the eLearning platforms employ both the commercial and open-source databases, from Postgre SQLi to Oracle 10i (most of them operate using several sorts of databases). The eLearning technology itself lacks the innovative development solutions – all the technology has been used worldwide for a long time. This results in a stable functioning of these platforms.

There are no official statistics available on eLearning activities at elementary, secondary or higher education levels. The main suppliers of eLearning platforms are higher education institutions, such as universities: The Distance Learning Centre at the Warsaw University of Technology, The Open and Multimedia Education Centre at the Warsaw University, The Distance Education Study Centre at AGH – the University of Science and Technology, The Polish Virtual University (PUW) – a joint project of the Maria Curie-Skłodowska University in Lublin and the Academy of Humanities and Economics in Łódź; The Warsaw School of Economics eLearning program, The Distance Education Centre at the Gdańsk University of Technology[2] and others.

Information on eLearning courses is provided within elementary and secondary education by the Polish non-commercial education portal www.interklasa.pl. The Interkl@sa Program is nationwide and involves the cooperation of schools, teachers, students, etc. Interkl@sa has participated in providing schools with computers and Internet access, in organising teacher trainings and in promoting the use of ICT in education. The portal offers:

- daily and weekly news;
- an eLibrary;
- presentations and lesson plans;
- educational animations;
- a list of links;
- tests, quizzes and educational games;
- information on projects involving international school cooperation;
- free mailboxes;
- the possibility of participating in discussion groups or chats;
- an Interactive School Map (with over 26,000 Polish schools);
- a Virtual Class – an innovative eLearning tool.

In terms of higher education, the main eLearning courses are provided by the AHE (the Academy of Humanities and Economics in Łódź) and the PWU, as well as the Warsaw Technical School with its OKNO

[2] According to the Rector's Regulation of 31st December 2004, The Distance Education Centre at the Gdańsk University of Technology was dissolved.

project. This was the first project developed by Polish higher education institutions. It offers undergraduate computer science studies and a few postgraduate programs. The COME, established at the Warsaw University, deals with eLearning by providing several postgraduate courses. From private higher education institutions, the Warsaw-Sased Polish-Japanese Institute of Information Technology offers online undergraduate computer science studies and the WSB-NLU College in Nowy Sącz offers an online master program in marketing and management. In some cases eLearning complements extramural studies. Such programs were introduced by the Warsaw School of Economics and the Poznań School of Banking.

There is no data on the number of enterprises offering distance learning courses or training. However, among the most popular courses are: office programming training, system and databases administrators, as well as basic office tools (courses in Word, Excel, PowerPoint, Outlook). In recent years, among the very popular courses were preparatory courses for the Certificate of the European Computer Driving License (ECDL). There are also eLearning courses offered in English (e.g. WiedzaNet offers courses in English on computer systems). Other courses include finance and management, legal affairs, etc. (offered by companies like Incenti, Oracle, SABA). According to the results of a survey conducted in 2005 among micro firms (employing not more than 9 people), the Internet was one of the most important sources of training and education (Żołnierski 2005).

In order to achieve a strong position in a given field, one needs to constantly renew one's knowledge and skills, and additionally gain the certificates that confirm the acquired qualifications. That is why companies such as Cisco, Microsoft, IBM, Novell, Intel, HP, Raiffeisen Bank and Allianz have worked out the world renowned online certification programs functioning as a form of workplace training. The ones who obtain such certificates are commonly considered experts at given fields.

About a dozen employees of the National Police Headquarters took part in training courses run by the Umbrella Project. Police Superintendent Tomasz Szankin of the National Police Headquarters in Warsaw (a participant in a quality management course and a promoter of Internet training in the police): "Why Internet? The cost of this form of training is not too high and people do not have to interrupt their normal work. This is important, because the budget assigned for the professional improvement of the police is, unfortunately, quite small".

In spite of the relatively low availability of computers at Polish public offices and low Internet accessibility in Poland, technological shortages were not found to be a big obstacle for office personnel participating in eLearning courses. If needed, adequate equipment can somehow be made available within a specific unit. A more serious obstacle may be

caused by psychological resistance. When organising a training course, one must know how to prepare it, so that various technology phobias or unwillingness are overcome by the prospective trainees.

A few Polish companies (e.g. YDP Poland) offer very high quality eEducation products and export them. Last year, the PUW team in the AHE prepared an eLearning concept and strategy for Mobile Centres of Vocational Information, established by Polish Voluntary Work Corps, which are going to be realised in the coming years. These are all good signs for the future prospects of eLearning in Poland.

Several of the leading training companies are currently starting to offer courses via local Internet service providers. In the near future eLearning and multi-media training are expected to become an essential training medium. A variety of institutions from the European Union countries, Canada and the United States are engaged in training services through distance learning and local satellite programs. They enter the Polish training market through joint ventures or business cooperation contacts with local entities, or by establishing foreign-owned enterprises. The location of training companies: Warsaw – 39%, other major cities (Lublin, Łódź, Kraków, Poznań, Wrocław and Gdańsk) – 40%, and the rest of the country – 21% (Central Statistical Office, 2005).

Description of the nature of eLearning services

eLearning in Poland requires legitimisation most of all. The Polish Parliament is currently working on two bills concerning the higher education system. The presidential bill – the higher education law – assumes the introduction of regulations related to eLearning as an element of Lifelong Learning. The other bill, submitted by the MPs, does not mention eLearning at all. Both bills are controversial and widely discussed.

Two types of eLearning content can be specified in Poland – one focusing on higher education and the other one on professional skills. They can be divided as follows:

University or other higher education institution programs that last several years and culminate in B.A./B.Sc. or M.A./M.Sc. titles, as well as postgraduate courses – for example the extramural engineering studies at the Warsaw Technical University, which is an entirely Internet-based four-year university program. This content type concerns predominantly economics, foreign language learning, psychology, management and exact sciences.

The second content type concerns improving the professional qualifications of clients. It includes:

- Short courses aimed at developing specific (frequently professional) knowledge and skills, for example the BBC and Interia English

language course available on the Web. The course is free of charge and consists of 117 lessons, and students learn by listening to them in MP3 or Real Audio format and working with the text and vocabulary online.

- Internal large company programs aimed at meeting the training needs of employees. The Microsoft Virtual Learning Machine (Microsoft Poland) web cast and workshop system can serve as a good example in this field.

The role of assessment and accreditation techniques in eLearning services

Assessment and accreditation techniques play an important role in eLearning and the whole information society as such. The increasing demand for professional certificates, especially concerning IT specialists, is an important factor for the development of distance learning.

Certificate courses include, for example: MCSP – Microsoft Certified System Professional, MCSD – Microsoft Certified Solution Developer, MCAD – Microsoft Certified Application Developer, CLS – Certified Lotus Specialist R6 Application, Development, PCLP – Principal Certified Lotus Professional (PCLP).

The European Computer Skills Card (ECSC, in Polish EKUK – *Europejska Karta Umiejętności Komputerowych*) is, in turn, a tool serving for the assessment of its user's computer skills and for obtaining the European Computer Driving Licence (ECDL). The ECSC is handed to all the students before passing their first exam and updated when they pass the subsequent tests. After passing all the seven exams, students send their ECSCs to the Polish ECDL Office and obtain the ECDLs[3]. In 2006, the number of exams testing particular skills was especially high in 2 and 3 modules (Annex I, Table 12).

The total number of exams held at national level was 190,364 in 2006. Cities like Warsaw, Rzeszów, Lublin and Poznań are the most attractive for ECSCs and the ECDL exams (Annex I, Table 13).

On the basis of the ECDL statistics a general conclusion can be drawn – this form of certification is becoming increasingly more popular. Local training centres are preparing for the introduction of this certification form on a large scale.

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[3] The ECDL certifies that its owner can successfully solve basic computer-related problems and do the necessary research concerning: 1. Basic IT knowledge, 2. Computer literacy, 3. Text processing, 4. Spreadsheet-related knowledge, 5. Databases, 6. Management- and presentation-related graphic projects, 7. Services in the IT networks.

Specific eLearning issues and solutions

Universities in Poland are autonomous and can provide and decide on their own curricula and strategies of teacher training. Their programs of initial teacher training are various, but all take new technologies and ICT skills into account. Local governments together with the head teachers are responsible for the in-service teacher training. These services can be divided into two groups: teacher training and language related training.

Teacher training services – the development of ICT and the availability of eLearning services have resulted in changes in teaching practices. This refers to the improvement of the technical and didactical skills of teachers. The obligatory qualification requirements and professional advancement is regulated by art. 9 and art. 9a – 9i of the Teachers Chart (The Teachers Chart of 26 January 1982 (*Ustawa z dnia 26 stycznia 1982 r. – Karta Nauczyciela*; Journal of Laws, No. 3, item 19). The position of the teacher in elementary schools, gymnasiums and post gymnasium schools can be occupied by a person who, apart from medical and health requirements, must meet moral principles, must have obtained a higher education degree with the necessary pedagogical preparation and must possess the additional skills necessary to conduct a teacher's job (including ICT). Currently, academic teacher training services that are connected with eLearning platforms are provided by the Polish Virtual University, Microsoft and Intel.

Finally, both teachers and parents must be aware of possible threats to privacy and security on the Internet. However, the contribution of Internet to education might create a dilemma over its ethics. But the information delivered via ICT is never verified and neither are their users. The Foundation "Dzieci niczyje" is a social campaign started in February 2004, whose aim is to protect children and youth against sexual abuse and fight the distribution of child pornography. The initiators wanted to address the problem to the general public and to educate children, parents and teachers about safety on the net. The action reached over 15 thousand children who took courses on safety on the Internet. Over 70 thousand copies of promotional material were distributed. A project of similar character was carried out by the "Kidprotect" foundation, within the program *Wiedz@ Chroni Dzieci*. The foundation gives 20–25 minute workshops at primary schools and lower secondary schools on the threats related to Internet access and on how to avoid them.

Language training services are necessary because of the vast availability of services in other languages and the negative impact of the lack of English knowledge on ICT literacy skills. As far as the availability of services in other languages is concerned, eLearning is generally

conducted in English, such as the Microsoft courses. Higher education institutions offer their services predominantly in Polish. Such a situation results from the initial stage of eLearning development in Poland and the low demand for education in languages other than Polish. The Internet issues of the Ridna Mova quarterly, as well as the information on the activities of the Interkl@asa Portal, can serve as examples of eLearning services provided in a minority language, in this case Ukrainian and Polish.

ICT-enabled teaching and learning is often seen as an important vehicle for the development of the English language competence by teachers and learners. In many countries, where English is not an indigenous or dominant language, science and mathematics instruction is- delivered in English, which raises the important issues related to learner equity, access to education and professional career.

The command of foreign languages is closely connected with the level of education of citizens, their income and place of residence. The CBOS survey revealed that 87% of the Polish managerial staff claims to have a good command of foreign languages, whereas only 48% of citizens running their own businesses master foreign languages. More than half of city and town inhabitants speak foreign languages, whereas in the case of rural inhabitants this is only a third.

The eLearning services in Poland are provided in the Polish language. In some eLearning programs at higher education level, some courses are also provided in English. The courses provided in English or other languages are mostly optional. This is a rather favourable condition for promoting eLearning services in Poland, as 58% of Polish citizens admit that they do not speak any foreign language. The highest percentage, 23% speaks Russian and 16% speaks English. Polish citizens start learning foreign languages mainly for professional reasons. Around 80% of the Berlitz School students in Poland admit that they started foreign language courses because it was necessary in order to secure their jobs. However, the lack of the command of English still has a significant impact on the acquisition of ICT skills in Poland.

ICT Readiness of Teachers – the ACM Model

The aim of ACM model, developed by Viherä and Nurmela (2006) in 2001, was to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools" (Viherä and Nurmela 2006). The typology accounted of the three main categories of preconditions, which have to be met by a school in order to make use of computers and the Internet in the teaching process in classrooms and computer labs. The mentioned categories include: access

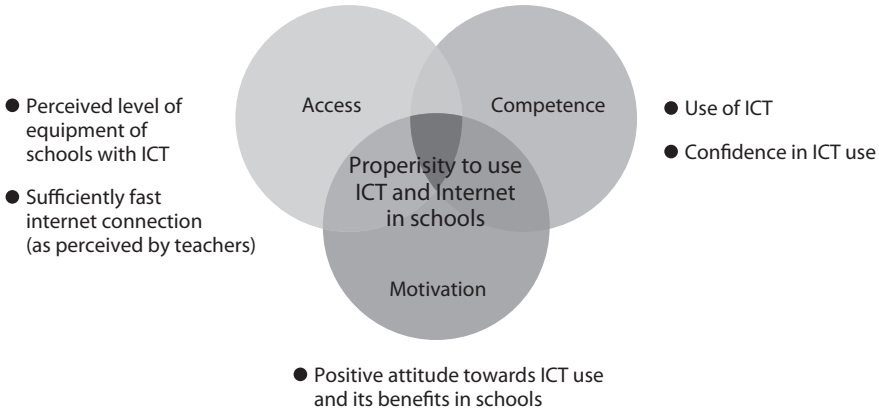

Figure 20. The Access-Competence-Motivation Model

Source: *Head Teacher Surveys 2006*, Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

to computers and the Internet at school; competence in using computer software and the Internet, and applying it for teaching purposes; motivation measured by the opinion that using computers in classrooms results in significant learning benefits (Figure 20)[4].

50% of Polish teachers have sufficient access to the Internet at school, the necessary competence in using ICT in class and are motivated to use it (with respect to the European average of 38%). This gives Poland the 4th place among the top countries in Europe (the UK as the best performer had noted 60% and Latvia as the worst 15%; Figure 21).

Insufficient Internet access at schools and poor motivation of teachers to use ICT are the most critical issues for the promotion of eLeaning in European schools. The situation of Polish teachers was very similar to the overall situation in the EU25 in terms of insufficient Internet access. 20% of the European teachers indicated insufficient computer equipment and the low speed of the Internet connection at their school to be the key barriers. However, when it came to measuring motivation, the Polish performed relatively better.

However, the results of the Viherä M-L. Nurmela model need to be treated with some caution, since they were based on the self assessment of teachers with respect to the level of ICT equipment at schools. In this respect, the actual situation still places Poland behind all the other European countries (see more in Annex I, Table 18).

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[4] Access is to be understood as a perceived level of computer equipment at schools and the teachers' satisfaction of the equipment status.

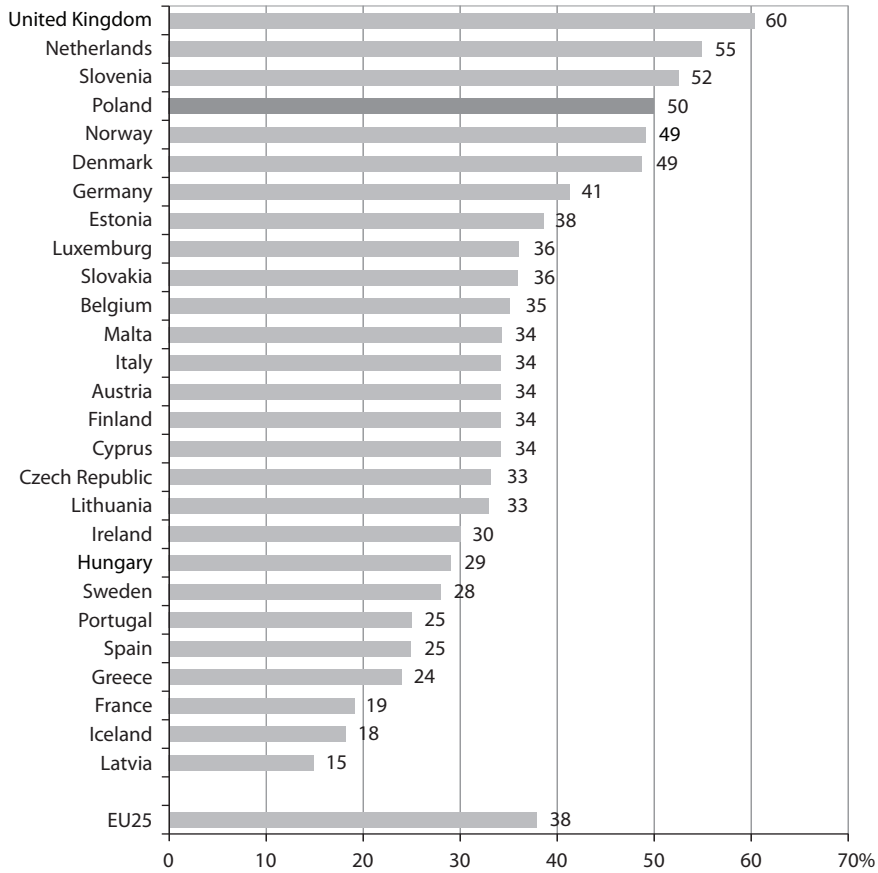

Figure 21. ICT Readiness of teachers in Poland[5] (2006)

Source: *Head Teacher Surveys 2006*, Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

Acceptance and usage of eLearning services by teachers

The survey shows that an increasing number of Polish teachers accept eLearning as a pedagogical tool. Yet most of them do not accept one particular teaching method and instead apply multiple approaches to learning (blended learning), using a wide range of different materials for teaching purposes. The learning material used by most Polish teachers (85%), includes offline eLearning materials such as CD-ROMs (see more in Annex I, Tables 17).

The motivation of teachers to use ICT in class is very high in Poland: 92% of Polish teachers saw significant learning benefits for pupils in using computers in class and said that pupils were more motivated and

[5] Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator).

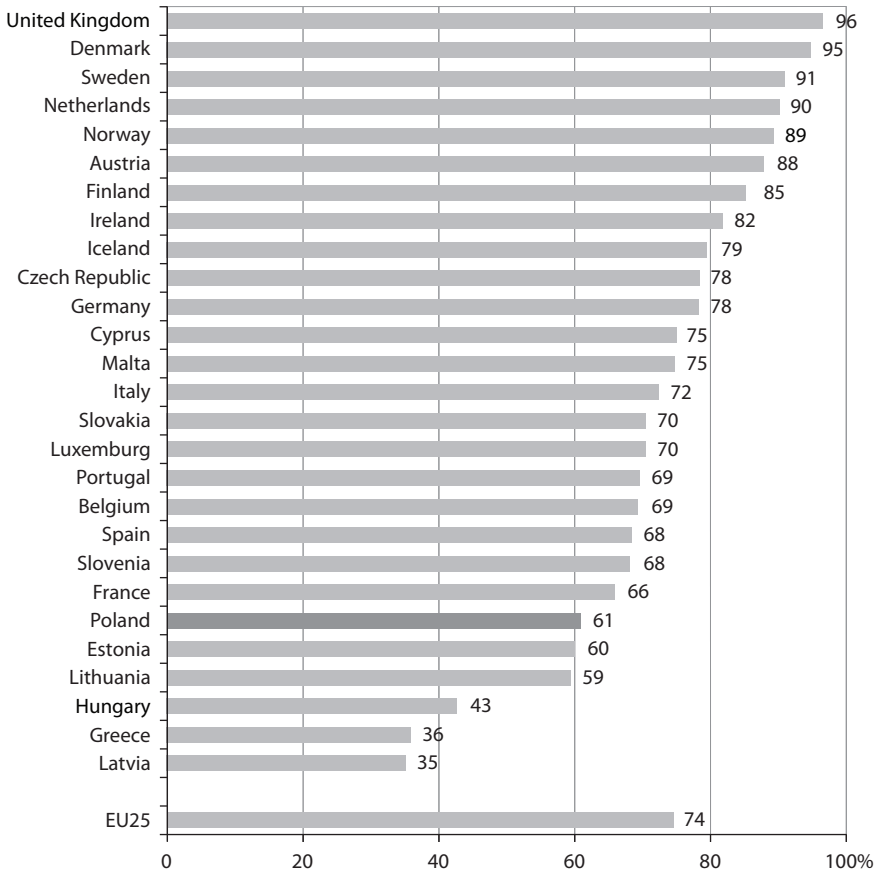

Figure 22. Percentage of teachers who have used computers in class in the last 12 months (2006)

Source: *Head Teacher Surveys 2006*, Information Society and Media Directorate General, European Commission, empirica LearnInd, Brussels 2006.

attentive when computers and the Internet were used in class. Only 4% did not see significant learning benefits for pupils from using computers in class.

Teachers working in schools in urban areas are more intensive ICT users compared to those in rural areas. The usage of eLearning services also depends on the age of the teacher. The older the teachers, the less use they make of computers and the Internet in schools. While 57% of the younger teachers are heavy ICT users in class (in more than 50% of their lessons), for those older than 20 this figure is 43%. Overall, 61% of teachers used computers in the last 12 months (2006; Figure 22).

The survey also revealed that the majority of Polish teachers are pretty satisfied with the technical access means in their schools. 78% stated

that their school was well equipped with computers and 80% expressed the opinion that their Internet connection was fast enough. About 60% of teachers wishes that better support and maintenance actions would be taken (see more in Annex I, Tables 15–17).

The main reasons, according to teachers, for not using computers in class was the lack of computers (44.8%, whereas the EU average –amounts to 49.0% and the EU25 – average to 48.8%), that subjects did not lend themselves to being taught via the computer (23.6% in comparison to 25% in the EU10 and 24.4% in the EU25), a lack of adequate content/material (15.6%, in comparison to 16.5% in the EU10 and 20.3% in the EU25), and a lack of content in the national language (4.3%, whereas in the EU10 this was 5.7% and in the EU25 – 8.6%; Annex I, Table 18).

In all European countries Computer Science is taught as a separate subject, although to a varying extent. Computer Science is taught as a separate subject in 96% of Polish schools (the third highest figure in Europe), with hardly any variation between different school types. The same situation appears in all the new member states (80% or 90% of schools in Hungary, Latvia, Slovenia, Lithuania and Estonia).

Information Technology also plays an important role in teaching foreign languages, both in schools and out of schools. Almost 75% of European schools say to use ICT for this purpose. Once again, the Nordic countries are the frontrunners, with figures well above 80% or even 90%. Whereas most of the new member states, including Poland, can be found at the tail end (Hungary 39%, Latvia 39% and Greece 48%; *Head Teacher Surveys…* 2006).

Acceptance and usage of eLearning services by learners

Considerable differences can be observed between the services provided to adults and to children or teenagers under the age of 18. There are much fewer services aimed at the latter group, they are mainly non-profit and their quality and character is adapted to their target users. The exact data of private spending on eLearning is hard to estimate, though the number of different types of eLearning initiatives and projects in Poland is growing. Almost each public and private education institution provides some eLearning activities.

The popularity of eLearning as a supportive tool in the learning process is shown in the statistical data on lifelong learners and non-learners among on-liners and off-liners. It is hard to give an exact estimation of this number, however, the number of people not using Internet and not participating in lifelong learning is still significantly higher in Poland compared to the other EU countries (Figure 23).

There are considerable differences in the structure of the adult population of the ten EU countries, included in the survey according to the simple typology suggested here. Nearly one out of two adults in Poland

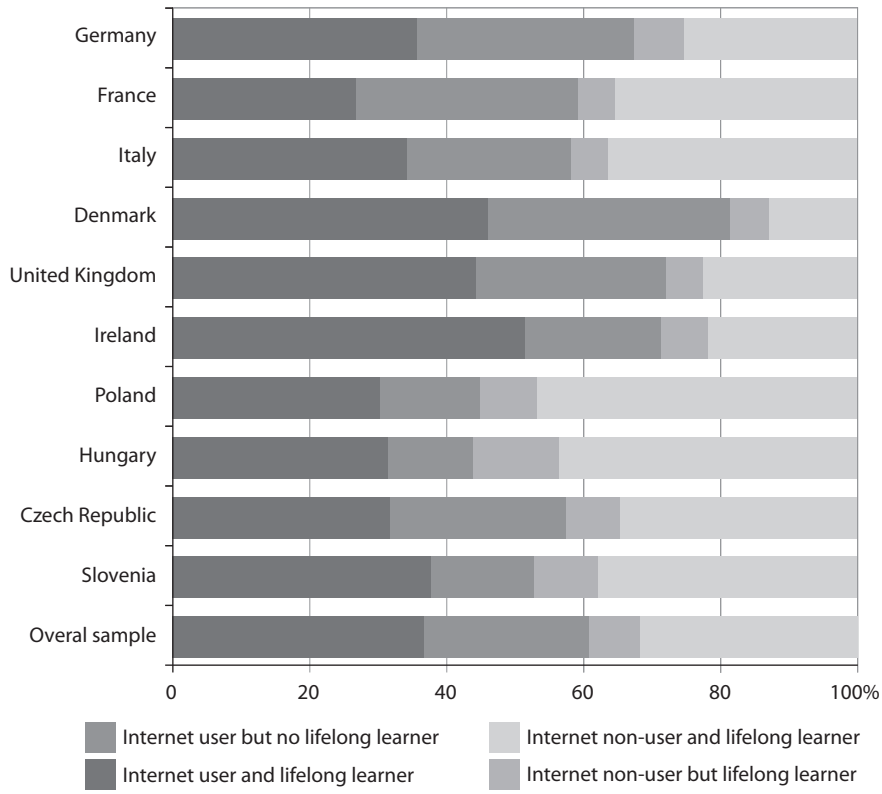

Figure 23. Lifelong learners and non-learners amongst on-liners and off-liners – country comparison (in percentages of the total 18+ population)

Source: eUser – Public Online Services and User Orientation, 8/2005, www.eu-ser-eu.org

and Hungary belong to the group of offline non-learners. Even in Slovenia, Italy, France and the Czech Republic, this group accounts for more than one third of the adult population.

The percentage of individuals having used the Internet for training and education purposes in Poland in the form of formalised education activities amounted to 4.6%, for other education courses related specifically to employment opportunities 0.4%, and for post education courses 0.6% (2005). These numbers place Poland far behind the EU15 countries, where these numbers amounted to 9.1%, 8% and 6.5% respectively.

However, the situation of Polish enterprises in terms of computer and Internet usage for training and education purposes looked relatively better than in the EU15. The percentage of enterprises using eLearning applications for training and education of employees in Poland amounted to 23%, whereas in the EU15 this was 20%. Surprisingly, some of the new member states scored extremely high in the uptake of eLearning in

enterprises. For example, almost half (47%) of the surveyed enterprises in Lithuania and one third (29%) of the enterprises in Latvia have used eLearning applications for training and education of their employees (Annex I, Tables 24–26).

6. SUMMARY

Summing up, it can be said that eLearning is developing, but is still at an early stage in Polish higher education. The increasing importance of eLearning is noticeable in some official documents of the Polish government. However, there has not been any official eLearning strategy worked out. The relative achievements of eLearning can therefore be measured solely by separate eLearning projects (see more in Chapter II). ICT has emerged as one of the most popular tools used in training activities. Practically every second person in Poland went through some type of computer training course. Schools and households in bigger Polish regions (provinces) such as the Mazowsze and Śląsk, are best equipped with computers and Internet access. Lower Secondary Schools in those regions were mostly equipped with computer laboratories. In terms of enterprise experience, large-sized enterprises were most active in using Internet for training purposes, as they were better equipped with ICT. The most important reason for not having access to the Internet was the lack of specific need for Internet use.

eLearning has not played an important role in Poland and it is still on a very early stage of development. There is also no 'official' eLearning definition, nor an official body coordinating eLearning activities. All this makes it hard to examine the development of eLearning on country level. The main reasons for the relatively low levels of eLearning and training services with the use of ICT included the lack of technical facilities (necessary ICT infrastructure), such as access to the Internet. Other significant barriers impeding the development of eLearning services include the cost of access to education literature as well as its quality. eLearning development is also impeded by the lack of legal and organisational frameworks. Similarly, in the case of trade exchange in eLearning products, Poland is mostly an importer. Institutions developing and implementing eLearning could be divided into those financed by the public sector and those financed by the private sector. The most common way of cooperation between public administrations, education institutions and the private sector in implementing eLearning projects, included specific courses, such as workshops, conferences and public locations for broadband access to the Internet. Nevertheless, eLearning projects at university level are still too small and have only a supportive role in the process of learning.

CHAPTER V

ASSESSMENT OF THE STATE AND DEVELOPMENT OF eLEARNING

1. MAIN CURRENT ACHIEVEMENTS AND SHORTCOMINGS

Given the general characteristics of eLearning in Poland, it is quite interesting to mention that eLearning has not been given the proper definition in the official documents yet. There are attempts to create one, for example by the "Wirtualna Edukacja" ("Virtual Education" – the first bimonthly distance education online journal in Poland since October 2000; Kubiak, http). The above mentioned definition of eLearning is very much linked to web-based learning at different levels of education and lifelong learning. However, this definition does not cover some of the important eLearning approaches, such as ICT supported classroom education and blended learning. Despite of this, over the last few years Poland has made a substantial progress in the development and implementation of eLearning policies; through improving the ICT infrastructure, and through increasing the role of ICT in learning and training. These achievements are a result of:

- **Improved ICT infrastructure**. The contemporary eLearning policy in Poland has been most successful in creating an infrastructure at the general school level (especially with respect the ratio of computers per students, teachers or principals, and the availability of a broadband connection in all schools). The improvement of the ICT infrastructure is also notable at both institutional (firms, public administration and schools) and regional (including remote areas) level, which enabled to increase the number of eLearning projects. One particular project, which has contributed to the ICT infrastructure development in Poland, is the Polish Optical Internet Network

(PIONIER project). The aim of the project was to provide Internet for Polish Science (dedicated high speed fibre optic) and to build a countrywide optical network that would connect all academic and metropolitan networks in the country and provide scientists with access to advanced network infrastructure (including supercomputers). The project has greatly contributed to the development of the IT infrastructure for science and for the promotion of the idea of an information society in Poland.

- **eLearning in the National Development Plan 2007–2013**. eLearning was mentioned for the first time as a pedagogic tool in the national development strategy document. Even though this document does not mention any specific priority given to eLearning, some relative information and action promoting eLearning were mentioned in two Operational Programs: "Science, modern technologies and information society" and "Education and competence". The programs emphasise the need for an improved education system, which corresponds better to the market needs, in particular in terms of training the specialist staff (*National Development Plan 2007–2013*).
- **Increasing the number of eLearning in university programs**. There has been a notable growth in the number of public and private players involved in the provision, control and financing of eLearning services. The most active universities in introducing and implementing eLearning projects include: AGH – The University of Science and Technology Distance Education Study Centre, The eLearning Institute, The Virtual University (PUW) and The Academy of Humanities and Economics in Łódź. Their activities include: delivering eLearning courses according to the needs of universities, preparing and compiling materials adjusted to the nature of lifelong learning and to open distance education, carrying out analyses of the education needs and possibilities (lifelong learning and open distance education – market research), and initiating, promoting and organising modern forms of education.
- **Increasing the role of ICT in training**. ICT became one of the most popular tools used in training activities, especially among large-sized enterprises. Also among households, every second person in Poland went through some type of computer training (2006). Over one third (36%) of the surveyed enterprises used the Internet for training and education (as for January 2004). This rate was the highest for large enterprises, where more than half (56%) used it for that purpose, while for medium and small enterprises the proportions were 46% and 32% respectively (Central Statistical Office, 2007).

Although there are significant achievements, there are also some shortcomings. These include:

- **The lack of coordination mechanisms**. Coordination is still missing, therefore the development and popularisation of eLearning

have relied only upon non-profit organisations, schools and universities, and local initiatives, rather than upon a central policy coordination and a formulation from the government. As a result, various foundations and consortiums implement their eLearning policies independently. There is no common coordination mechanism for all eLearning projects in the country. Each eLearning project is led by an individual university or a group of universities. For example, in the case of distance studies at the Polish Virtual University, there has not been any information on current projects and the lack of cooperation between particular units dealing with eLearning is evident.

- **The lack of political support**. The lack of a proper public campaign and political support for eLearning services has caused the process of eLearning development to be much slower than it could have been otherwise. The ePoland strategy, by the title and its content, is a plan aiming to promote an information and knowledge-based society, where the problem of eLearning (similar to other sectors of information society) is barely mentioned. As for the impact of the ePoland strategy on reforms in the education sector, they had rather an administrational character. Reforms do not take into account the need of implementing the ePoland strategy nor do they consider any mechanisms enabling the implementation of eLearning (e.g. general broadband access to the Internet or effective systems of electronic signature).

  In general, Poland has just started to discover the possibilities of eLearning. There is a lack of an institution that would take care of the adaptation of projects related to the promotion and development of eLearning services. This is a reason for the minimal usage of the existing practices in Poland.
- **The lack of eLearning projects for special groups**. The present state of the ICT infrastructure at schools for the disabled and those with special needs is considerably below the EU average. This problem also concerns special technical equipment for institutions of higher education. The current reforms do not consider a wider access to ICT technology in the education process of the youth and persons with disabilities. "The sectorial strategy on development of eLearning" mainly focuses on access to the Internet (access/availability and affordability) and there are plans for projects financed by structural funds (European Social Fund). Although the strategy does mention training for persons with disabilities, it does not mention projects that would focus on the improvement of content in this respect. Considerable differences can be observed in the services provided to adults, and children or teenagers under 18. However, there are much fewer services aimed at the latter group – they are mainly non-profit and their quality and character is adapted to their target users.

2. FACTORS BEHIND THE EXISTING DEVELOPMENTS

The above mentioned achievements and shortcomings in the field of Polish eLearning have been influenced by various factors, such as: the macro- and microeconomic environment; legal regulations; policies at national, regional and local level; and technological, socio-cultural and ethical factors.

The economic factor

The transition and re-integration with the economies of the EU in May 2004 gave an important boost to the Polish economy. However, the economic liberalisation and rapid development of ICT have also brought many new competitive pressures, both for employers and employees. Businesses have to constantly adapt to new requirements and customer needs, whereas employees have to adapt to new work relations and organisational forms. The new competitive pressures enforce enterprises to constantly develop their human resources.

One of the main underlying economic problems of Poland is the stubbornly low employment rate. If the problem is to be solved faster, capital accumulation (including human capital) is required. Lifelong learning and upgrading ICT skills are important prerequisites to compete successfully in the labour market.

The legal factor

Poland has not introduced a comprehensive legal framework for eServices, which would support the development of eLearning. Some of these acts, which are not directly linked to the domain, but are important for its use, are: The Law on Protection of Personal Data, The Act on Electronic Signatures and The Act on Higher Education. There are no legal acts that would regulate eLearning issues.

The Law on Protection of Personal Data (LPPD) is of great importance to the eLearning domain, especially for the data administrators of eLearning platforms and of virtual schools and universities. The law implemented rules that regulate the collection and exchange of personal data (Journal of Laws, No. 133, item 883; Journal of Laws, No. 101, item 926). According to article 40 of the LPPD, all administrators of personal data have to register such databases with the General Inspector of Personal Data. Consequently, individuals have the right to access their own personal data (to correct or delete them). With the implementation of the LPPD, Poland introduced the European Directive 95/46 on data protection to the internal law (Directive 95/46/EC of the European Parliament and of the Council, dating 24th October 1995).

In addition, The Act on Electronic Signatures from 18th September 2001 is another important act, which has had an impact on the development of eLearning applications (Journal of Laws, No. 130, item 1450). The implementation of the electronic signature allows a secure way of communicating with eLearning providers and also makes the entrance into an agreement easier. The act differentiates two types of signatures: the electronic signature and the secure electronic signature. The problem of the electronic signature implementation is compounded by various digital signature standards that are offered on the Polish market. The poor adoption of electronic signatures, particularly by ordinary citizens, is one of the major problems. One of the main reasons for the lack of the adoption of advanced electronic signatures is the high cost of qualified digital certificates.

The main important legal act for eLearning usage in Poland is The Act on Higher Education from 27th July 2005 (Journal of Laws, No. 164, item 1365). According to article 9 of this act, the Minister responsible for higher education shall specify by regulation the training in information technology, including its use in the specialisation areas for which students are trained. The Minister promulgated this regulation in 2004 (Journal of Laws, No. 207, item 2210). This regulation, in force since 1st October 2004, has introduced changes in the standards of teacher training, the subjects of teacher training, the number of practical training hours as well as in the syllabus and the required skills (advanced knowledge of a foreign language and ICT skills). Another important change is also the duty of preparing teachers to teach two subjects at higher vocational study courses. Moreover, all higher education institutions shall have a library and an information system based on the library. The organisational and operational arrangements of the library and information system at a higher education institution, including the rules on access thereto for persons other than staff, doctoral students or students of the institution, were included in the regulation.

The effect of the integration of Poland in the European Community is clearly visible in the results of the implementation of the following instruments: directive on electronic signatures, directive on the protection of personal data, directive on the re-use of public sector information, directive on the protection of privacy in electronic communication, and other directives from the telecommunication package and so on. Polish laws that implemented these directives contributed to the creation of a harmonised framework for eServices within the EU. Furthermore, the positive effects of European strategies in this field should also be mentioned, such as the eEurope action plans or the i2010 strategy, which created a useful starting point for the development of national instruments in this area.

The policy factor

Since the political changes in 1989, the general telecom policy focused on the liberalisation of the telecommunications market and the extension and integration of existing regulations. The governmental change in 1997 led to a further liberalisation of the telecommunications market, which resulted in the privatisation of Telekomunikacja Polska S.A. (TP S.A.) and the restructuring of the Polish Post. As a result, new ICT providers came into the market and increased customer-orientation and competitiveness of the ICT market. The increasing number of private ICT market actors is crucial, since Polish government spending on ICT is one of the lowest within the EU25. Moreover, different evaluation studies on policy impact show that little has been done in terms of improving the ICT infrastructure. Broadband penetration in Poland has remained on a low level over the last few years.

There has been little impact of the labour and education policy on promoting technical studies (e.g. scholarships, grants, increasing teachers qualifications), as well as on networking between the science and business sector in order to increase the innovativeness of the ICT sector, including the ICT applicability in learning processes. Currently, more than 40% of Polish students are pursuing degree courses in social sciences. Courses in information technology, engineering, or in the fields relevant to the service sector are less popular, although the demand for specialists in those fields is growing (Changes in the Labour Market Situation in Poland).

The low quality of instruction results in a certain difficulty when it comes to independent and abstract thinking of young Poles at both primary and university levels (according to the results of the Program for International Student Assessment, PISA). Moreover, the participation of low-skilled Poles aged 25 to 64 in continuous education or adult-learning courses remains low. The measures of the education policy to ensure a better preparation of students for entering into the job market and a greater adaptability among workers, remain insufficient. The improvement of ICT skills and the provision of lifelong learning services are expected to contribute to a steady reduction of unemployment, especially among adult people.

The technological factor

Poland also invests in the development and diffusion of ICT through its many technical universities. Poland has many competence and technology ICT centres. Their R&D activity is related to the development of systems and tools for knowledge processing and knowledge transfer as well as to the application of IT solutions in biotechnology and medicine (e.g. The Centre of Advanced ICT for Enterprises, The Centre for Advanced

Information Technologies, The AERONET Aviation Valley, The Western Pomeranian Centre for Advanced Technology; www.fistera.jrc.es/docs/Poland). The Centre for Advanced Information Technologies conducts the coordination and maintenance works of the Polish Optical Internet Network PIONIER, grid computing and middleware.

Some ICT teaching and research activities are carried out by certain private institutions, such as The Polish Information Processing (PTI), The Association for Image Processing, and The Centre for Decision Science and Forecasting. The main source of private research funds in Poland is the Foundation for Polish Science. The biggest among the private institutions is the PTI, whose objectives are to support the scientific and technological activities in all areas of ICT and to perfect its effective use in the national economy. The PTI membership includes approximately 1,200 IT specialists. It is active in adult IT education through organising courses, conferences, lectures, exhibitions, technology shows and competitions. Additionally, through their publications, the PTI has a record of influencing Polish ICT policies, such as the introduction of Computer Science as a primary and secondary school subject. The PTI also has influence on the reviewing of customs tariffs on IT products, the determination of the strategies for the further development of computer sciences and information technologies in Poland, as well as on the standardisation of the legislation. The PTI has been a member of the Council of European Professional Information Societies (CEPIS) since 1992 (www.fistera.jrc.es/docs/Poland).

The EU research networks regularly increase network capacity. Core network speeds of 2.5 Gbps are common and Poland already has 2.5 Gbps connections to the GEANT network and is therefore close to the EU on this front.

The number of companies offering Internet access services in Poland continues to grow. As a result of this increased competition, the prices for these services are decreasing. The companies operating on the market offer a wide range of Internet access solutions like modems, ISDN, cable television, radio and satellite lines, local networks, and mobile phones. There are also many software companies that are cooperating with universities and public institutions in the development of advanced IT solutions (e.g. PGS Software, AIS.PL, ASTEC, Computer Associates, ComputerLand SA, DRQ Sp z o.o., Logotec Engineering, Softbank, Prokom Software, Intelitech, Infoservice, Optimus, MKS, Young Digital Poland, Vulcan Media, SoftwareDevelopment.pl, SuperMemo World, Nahlik Soft, Creamsoft, Comarch, e-Pro, Future Processing, etc.).

According to the latest report from the Polish Market Review, Polish data transmission services and the Internet access market will grow at a rate of 11% per year between 2005–2008 (*The telecommunications market in Poland 2005–2008*, Polish Market Review Publication, December 2005). At the same time, the growth rate of broadband services

will be almost threefold higher. The value of the Polish telecommunication services market will rise from about EUR 787.40 million (PLN 3 billion) in 2004 to EUR 1.15 billion (PLN 4.4 billion) by the end of 2008. Between 2005–2008 this market will grow at a rate of 27% per year, achieving a value of about EUR 603.67 million (PLN 2.3 billion) at the end of this period. The rise in value of the Polish broadband services market will result in a rise in the number of Internet users with fast connections. The PMR expects the number of broadband subscribers in Poland to increase fourfold in 2005–2008, from 1.26 million at the end of 2004 to about 5 million at the end of 2008.

The penetration of mobile telephony in Poland at the end of 2006 rose to 83%, and of the Internet to about 34%. Mobile telecommunication is expected to remain the most competitive and fastest growing segment of the telecommunications service sector. Moreover, in the future it will be possible to install software for identification of people and license plates, and the further collecting and processing of such databases. In addition, operators have delivered an innovative system of bandwidth allocation where, after 4 pm, unused network resources are automatically rerouted to e.g. Internet clubs operating at schools. Due to separating the network from public resources, the risk of breaking into the system is minimised and the transmitted data is well protected against any unauthorised access. Alcatel and Netia announced that they have signed a cooperation agreement for the construction of a broadband wireless access network based on WiMAX technology in Lublin, one of the largest cities in Southeast Poland.

The socio-cultural factor

One of the factors impeding the development of eLearning in Poland is the lack of knowledge of digital skills, especially among elderly people. The reluctance to develop computer skills can be observed among the most elderly people, living in rural areas, with secondary and primary education, describing their economic situation as bad or average. eLearning is certainly one of the ways of digital integration of the regional, local and global society.

Moreover, eLearning can promote social integration and inclusion. It opens access to learning for people with special needs and those living in difficult circumstances (marginalized groups, migrants, single parents, etc.; eEurope 2005). Digital skills also foster the development of a new form of social and cultural skills. It should be mentioned that access to ICT is becoming increasingly more affordable for the general public in Poland.

Furthermore, there is a large regional division in ICT penetration in Poland. Eastern and central southern Poland substantially lags behind compared to the other parts of the country. The large division in ICT

penetration mostly reflects the urban-rural division: most urbanised regions report higher penetration rates than rural areas. The biggest opportunity to close this digital divide will be in the form of the EU structural funds, which will mostly be available to the poorest rural regions of Poland where they will probably make a big impact (Piątkowski 2004).

According to the survey of the Central Statistical Office, the ratio of people who have at some point participated in IT training increased by 10% since 2004 and amounted to 31% in 2006 (Central Statistical Office, 2006). It means that there were 3 million citizens who levelled up their IT skills. For educational purposes the Internet was used by one fifth of the surveyed companies. Unsurprisingly, the highest level of usage of ICT for upgrading skills was noted in the IT sector.

As Polish experience shows, the rapid growth of female digital skills (especially teachers) has contributed significantly to the increase of the Polish digital integration. A number of non-governmental organisations are active in both women's issues and information technology programs in Poland: The Stefan Batory Foundation, Kobiety Online, the Network of East-West Women's NEWW Online, The Women's Rights Centre, OŚKA, EFKA.

The motivation to acquire digital skills develops only when the learner recognises a personal use in their acquisition. Thus, measures to promote digital integration must communicate the advantages of digital literacy on both personal and professional level more clearly. The increasing level of ICT competence and the motivation to use ICT seem to have an important role in developing eLearning services in Poland. Only a very low percentage (1–3%) of teachers that are not currently using ICT was not convinced of the benefits of using computers (EMPIRICA 2006).

The demographical factor

The ageing population makes the productivity challenge more urgent. Europe is caught in a demographic squeeze of declining birth rates and rising life expectancies (Creating an Innovative Europe). This will increase the share of older people in the total number of working population and the competition on the present and future labour market among this age group. The decrease of labour activities will be particularly noticeable in the population group aged 15–64. Forecasts indicate that the average age in the population between 15 and 64 will increase between 2004 and 2013 by two years – from 37.7 to 39.7 (www.epp.eurostat.ec.europa.eu).

In this situation, there will have to be more professional training courses and postgraduate programs designed for this age group. This update of skills is a self-going process in the case of the young population. For the older group of the population, eLearning might become

particularly significant. Such a situation opens up the field for the development of eLearning, which is a unique way to upgrade the skills and to increase the work flexibility of elderly people. This is why it is important that eLearning projects are adjusted to changes in social structure and demographic composition. Although the role of eLearning as a pedagogical tool has been recognised in previous strategic documents, not much has been gained in this area in Poland.

Old age often implies a less active engagement in different societal areas, such as the field of ICT. Therefore, the digital divide holds an age-related division, with senior citizens being in the group of "non-adapters". The reasons for this are biological, psychological, social and economic. Therefore, for this social group eLearning can be both a means of learning new technologies and of retaining their personal flexibility and professional upgrading. (Adoption of ICT; www.ingentaconnect.com) Most of the unemployed people are elderly people, particularly in rural areas. This is why it is important that eLearning projects are adjusted to changes in social structure and demographic composition.

Internal mobility in Poland is low, whereas emigration movements abroad (especially to other EU countries) have been increasing significantly over the last years. Both the low internal mobility and the high external mobility have a positive impact on the development of information society and eLearning. External mobility creates the need to discover new ways to stay in touch with families and friends. Internal mobility can be an important tool for learning and professional development for those, who live in less advantaged regions.

The regional factor

The last twenty years showed significant migration movements from rural to urban areas, especially of young and adult working age people. This is because of the labour market and because of better access to education institutions. eLearning allows professional development without changing ones place of residence. The poor ICT infrastructure in terms of broadband and the relatively low level of eLearning program promotion in rural areas also created significant regional disparities in eLearning service provision. A number of computer laboratories financed from the central budget were established in particular regions (provinces), according to the number of schools in the particular region. As a result, the number of schools with computer laboratories grew proportionally.

However, due to the previously mentioned problems related to the lack of a proportionate division of students per computer, the average number of students working in one laboratory varies in different regions.

In 2006, the number of Internet connected computers per 100 pupils in Polish schools was still significantly below (around 6 computers) the EU25 average (9.9 computers; Central Statistical Office, 2007). According to data from 2004/2005, the number of pupils per computer in primary schools ranged from 23 in the Opolskie and Podkarpackie provinces to 30 in the Lubuskie and Zachodnie provinces. In the case of lower secondary schools, these indicators ranged from 21 pupils in the Podkarpackie province to 30 pupils in Warmińsko-Mazurskie province (Supreme Chamber of Control, Warsaw 2005).

The ethical factor

Ethical factors of eLearning have not been considered to be an important issue by neither the Polish government nor by most of the eLearning product providers. Ethical factors can be related to eLearning in at least two aspects: confidentiality of information and the transfer of values.

Followed by the Recommendation of the Council of Ministers from the Council of Europe No. R/2000/10, the Civil Service Code of Ethics was introduced in October 2002. Article 4 of the Code says: he/she shall respect the citizens' right to information, while preserving the confidentiality of information protected by law. It should be noted that the right to information (also in electronic version), also guaranteed in the Constitution of Poland, is at the basis of deployment in public services.

One of the factors that affect the impact of an online classroom is the transfer of values, particularly ethical and moral ones assisting in the process of learning. Both students and instructors come to the classroom with a certain number of values and ideas. With traditional methods of teaching, these values result from close observation and direct contact between students and instructors. Whereas with online studying, the shaping of students' attitudes is based rather on the outcome of their work. In both methods of studying, a breach of authority (both of teacher and student) could take place if, for example: the teachers publish students' work as their own, ideas of others are used as own, or by breaching the confidentiality of data supplied by students. According the opinion of Polish lecturers (see *List of interviewees* in *References*), virtual contact gives a greater incentive to such breaches of authority, as teachers do not have the chance to observe students better and get to know their abilities.

In most Polish private and public universities a number of software programs have been released to identify plagiarism (turning in another person's work as one's own, copying others' ideas or words without giving due credit, not putting quotations in quotation marks, giving incorrect information about the source of a quotation, paraphrasing closely).

These programs identify points of similarity in selected texts. In response to plagiarism, the interviewed Polish instructors (see *List of interviewees* in *References*) used different writing assignments discouraging potential plagiarism, e.g. an individual approach in topic selection, organising brainstorming or writing of a paper based on individual research.

3. INCENTIVES AND BARRIERS IN FUTURE eLEARNING IN POLAND

The major incentives for further eLearning development in Poland result from the relatively good macroeconomic performance of the Polish economy, such as favourable investments. Poland is considered one of the fastest growing economies among the European countries, and ICT is one of the most crucial sectors of the Polish economy. ICT services are also considered to be the most profitable sector, growing annually by 15%. According to macroeconomic forecasts, especially for 2007–2009, there will be a strong growth of the IT and tele-informatic market (data processing). This growth might be twice as big as the average GDP growth (which took place already in the last decade in the Polish IT market, EITO 2004 and Teleinfo 500/2003). This would mean a three times higher growth of the total values of ICT until 2013. Considering the above, even a slightly better dynamic in PC computer sales means an almost three times higher growth of volume in 2013 in comparison to 2003. This might be a drive force for the future growth of eLearning services and products, provided that eLearning becomes one of the government's priorities.

A very important fiscal incentive for ICT usage in Poland is a "new tax incentive" (Act of the Personal Income Tax from 18 November 2004 art. 6 a, Journal of Laws, No. 263, item 2619). The Act states that from each broadband subscription (even mobile phone broadband e.g. UMST/EDGE), a taxpayer may deduct EUR 200 (PLN 760) of his income starting from the year 2005. This incentive, along with the price reduction of broadband access, has affected the growth rate of new broadband subscribers in Poland. According to the newest report, *The Polish Market of broadband access in Poland in the years 2002–2006* (*Polski rynek stałego dostępu do sieci Internet w Polsce w latach 2002–2006*), of the Office of Electronic Communication, between October 2005 and 2006 there was an increase of 172% from 633,798 (total Internet lines 1,374,931) to 1,727,753 (total Internet lines 2,225,085). The report also informs that only 3.9% of all telephone lines available in the country can be used for broadband connection (*The Polish Market of the broadband access…* 2007).

Other important incentives include the positive ICT trends, such as raising the significance of ICT in trainings for public institutions and

companies, as well as the role of eLearning as a means of professional training in companies. The Polish government has demonstrated a commitment to expanding Internet access and IT training. As a part of the National Strategy of Education in the Information Society of the Ministry of National Education, a number of pilot programs have been initiated to bring Internet access to schools and technology training to teachers in partnership with the European Union, the private sector and NGOs (see Non-Government Gender and IT NGO Activities). These programs include: the Web for Schools in Europe Project, Internet Classroom in Each Commune Project, Internet Classroom in each High School Project, and INTERKL@SA.

However, as discussed above, Poland's Internet access is one of the most expensive in Central and Eastern Europe, which impedes the use of IT by individuals. This is a barrier to the use of Internet for education. Affordability of broadband Internet access is still an obstacle to eLearning. This is largely due to too high prices maintained by the national telephone operator, Telekomunikacja Polska. France Telecom purchased 35% of TP S.A. in July of 2000 and negotiations are underway for FT to purchase more. Such a situation leads to a digital divide between those who benefit from the access to computers and the Internet and those who do not (e.g. poor, elderly and less educated people).

According to The Polish Supreme Chamber of Control (NIK), there were several positive trends in the MNE activities on improving the ICT skills of teachers and the utilisation of those skills in learning process. Between 1998–2002, the Ministry organised some 19 postgraduate studies with IT specialisations for teachers, financed with public research grants.

There is also insufficient awareness with respect to the benefits of ICT and therefore there is insufficient motivation to use ICT in learning and training processes. The results of surveys conducted in schools by the NIK during the years 2004–2005 revealed a shortage of qualified teachers in almost every fifth school[1]. Some small rural schools often have teachers who teach multiple subjects and do not demonstrate subject matter expertise in some of them. In such schools eLearning would be a better method of teaching separate subjects. The teachers' didactic skills for designing learning with ICT tools appeared to be in most cases inadequate for conducting eLearning or blended learning courses, despite the fact that 46.2% of teachers participated in Computer Science traineeship courses. Some teachers lack the professional knowledge with respect to the difference between distance and conventional education methods (Supreme Chamber of Control, 2005).

[1] Similar conclusions can be found in eLearning related magazines, such as e-mentor, see: Zając 2007; Dąbrowski 2005.

The lack of qualified teachers also affects the teachers that conduct the computer courses, which is what appeared on average in 20.7% of schools superintended by the NIK. Moreover, in most of the inspected schools irregularities were observed in using computer programs. In 17 out of 33 schools (51.5%), the usage of computer software was proceeding without required licences. Besides that, in 24 schools (72.7%) anti-virus protection was not assured.

Another difficulty results from the insufficient penetration of school superintendent's offices and shortages in computer specialists and computer laboratory supervisors in schools. Moreover, in the schools inspected by the NIK computer laboratories were used mostly for the purpose of teaching Computer Science. In addition, the technological progress creates the extra challenge of quick adjustment to new IT solutions and computer models. Computers purchased by schools are mostly from the years 1998–2000. Additional restrictions on computer utilisation for didactical processes result from the lack of portable computers in schools. The full list of selected incentives and barriers related to eLearning in Poland is presented in Table 17.

The attitude towards using Internet for teaching purposes depends also on the age of the users. The older the user, the less use they make of computers and the Internet in schools. This results in a relatively low demand for eLearning services in Poland, because of the low penetration of the Internet in society (especially broadband Internet) and a lack of skills in using multimedia and Internet applications. The current demand is created mainly by young people.

The situation of the ICT infrastructure is still unsatisfactory in rural areas. ICT usage is more popular in urban centres with a greater income and level of education. The survey confirms that Internet penetration is 100% lower in rural areas. This creates a "natural barrier" in the development of eLearning in less developed regions. The latter may lead to a further polarisation and escalation of human resources in less advantageous regions (by study and job migrations to metropolitan areas).

However, one of the most important barriers to eLearning is the lack of an eLearning policy and regulative constraints imposed on institutions using distance education methods and techniques. This especially concerns the recent regulation of the Minister of Science and Higher Education, from 25 September 2007, on the requirements that have to be fulfilled in order to deliver courses using distance education methods and techniques. The regulation was criticised by the **Association of Academic eLearning** (*Opinia Stowarzyszenia E-learningu Akademickiego…*, http) **and the academic environment. Important barriers resulting from the regulation are: the of** number of teaching hours for full-time programs and part-time programs using distance education methods and techniques; the obligation to organise a series of preparatory training courses for students willing to enrol into

Table 17. List of selected incentives and barriers in eLearning

Major incentives to eLearning	Major barriers in eLearning
■ favourable investment and macroeconomic climate; ■ significance of ICT sector in GDP growth; ■ expanding broadband Internet access; ■ IT training for public institutions and companies; ■ development of the teachers' and instructors' digital skills; ■ promoting eLearning as a means of professional training in companies; ■ active participation of women in digital integration.	■ cost of technologies and Internet access; ■ lack of ICT infrastructure in rural areas; ■ lack of skills and motivation (awareness regarding the benefits of ICT); ■ lack of policy and regulatory constraint; ■ lack of quality standards for eLearning projects; ■ lack of financial incentives such as credits and tax reductions for eLearning; ■ lack of interest groups from the IT sector that would promote eServices; ■ lack of local capacities (such as village information centres) for the access and use of ICT; ■ lack of legal solutions enabling existing eLearning services.

Source: own elaboration.

courses using distance education methods and techniques; the requirement of taking final examinations and course works from a particular course in the seat of the higher education institution; and others (full text of regulation is available in Annex II)[2].

While Poland has significantly improved its legal framework for intellectual property protection, the level of IPR protection in Poland remains unsatisfactory. Insufficient copyright and trademark enforcement constitute the principal problems.

Another important barrier related to eLearning is the lack of quality measuring method and standards for eLearning initiatives and projects on national level. The assessment of eLearning projects in terms of the technical infrastructure, course registration and delivery process, preparation of course materials, academic staff training, etc., is usually conducted separately by each education institution providing an eLearning

[2] For other opinions see J.M. Mischke, *Edukacja elektroniczna warta zachodu*, http://www.nauka.gov.pl/mn; M. Zając, *Komu potrzebna jest e-edukacja?,* http://www.ap.krakow.pl/ptn/ref2007/Zajac.pdf; M. Dąbrowski, *Nowe Prawo – szanse i zagrożenia dla szkolnictwa wyższego*, „e-mentor" 2005, No. 4, www.e-mentor.edu.pl

mode of study. There is no such quality assessment on national or regional level.

Such a quality assessment exists, for example, in international eLearning initiatives, e.g. Socrates Minerva or Leonardo da Vinci. This includes the e-Quality Project or the Evaluation Instrument for Hypermedia Courseware, prepared by the International Forum of Education Technology & Society (see more Zając, *E-learning dla zaawansowanych*..., http).

4. SUMMARY

To sum up, the development of eLearning projects is relatively slow in Poland. A detailed analysis of the barriers impeding the implementation of eLearning in Poland enables to distinguish at least four groups of barriers. The first group of barriers is related to financial problems of eLearning, the second is related to the technical infrastructure of eLearning, the third group of barriers includes organisational and legal problems and finally, the fourth group of barriers concerns education and ICT skills. In terms of major incentives to eLearning, it is important to mention: the favourable macroeconomic climate, increasing broadband Internet access and improving digital skills, especially among the female population. The impact effect of eLearning would be notable on individual level, as eLearning creates more favourable conditions for the independent work of students. eLearning also contributes to self-discipline and is a big motivation for learning. The lack of direct contact with the teacher, who would examine the progress in eLearning, makes it harder to estimate the efficiency of this form of learning. One of the advantages of eLearning is the fact that the student may choose the appropriate time for lectures and the duration of the learning process. In times when professional work takes up a lot of time, this way of deepening knowledge seems to be ideal. The eLearning method has also contributed to narrowing the technological gap between Poland and the average level in the EU, as well as to enhancing the "catching up" process to the more advanced European countries.

CHAPTER VI

ANALYSIS OF POLICY OPTIONS AND MAJOR R&D CHALLENGES FOR eLEARNING

1. THE MOST IMPORTANT POLICY OPTIONS RELATIVE TO eLEARNING

Institutional legal and regulatory policy options

The ePoland Strategy – The Strategy on the Development of the Information Society in Poland has a conception character. It does not introduce a long-term vision of eServices in Poland nor does it have a financial plan for its projects. Moreover, the ePoland strategy does not have its operating unit.

Therefore, it is important to first introduce one eLearning strategy, a lifelong learning or general education curricula strategy, which would place a strong emphasis on ICT usage in the process of learning. Such an eLearning strategy would enhance other education institutions to apply a modern ICT teaching approach and promote lifelong learning. The Strategy should also have a significant political, financial and legal support, in order to become an important document and assure the continuity of eLearning processes.

Secondly, the establishment of an operating centre would effectively administer the e-development of the country. Such a centre should cooperate with partners from local governments, local R&D units and academia as well as organisations representing the sector of ICT firms. This kind of cooperation would shape the social dimension of e-development.

The centre would also contribute to the spread of information on existing projects and diffuse the "best practices".

Coordination, financing and managing of eLearning projects

Poland only just started to discover the possibilities of eLearning. There is a lack of institutions that would take care of adopting the realised projects aiming to promote and develop eLearning services. Even though opinions of eLearning users are divided amongst those who believe there should not be any rules supporting the development of eLearning and those who would like to introduce a central coordination of implemented projects, such a coordination could enable the application process for the financial aid of education projects from PHARE funds or other resources of the EU. The coordinator could also be responsible for information and training in eLearning on how to apply for these funds. These projects must be coordinated and have a clear method of financing them. A big potential for eLearning development and diffusion opens structural funds. The Operational Program Human Capital allows to establish a wide platform of professional eLearning trainings.

This coordination mechanism will share the responsibilities related to the absorption of financial aid from the European Union Structural Funds for the years 2007–2013. The implementation of Structural Funds is both an opportunity to solve the above problems and a major challenge for Poland, due to the still limited experience in managing large and complex Structural Fund programs. Nevertheless, there must be a strong cooperation between governmental institutions and education institutions.

The standards the of eLearning organisation process and methodology must be a result of the common works of the academic environment, governmental institutions and the best available practices. It is also important to adjust the eLearning projects to the framework of the Regional Operational Programs for the years 2007–2013 for particular provinces. This will assure the financial means for eLearning projects for the years 2007–2013.

ICT infrastructure and broadband access

As previously stressed, Poland has one of the lowest levels of broadband penetration. The number of pupils per computer and computers with Internet access is far below the EU average. Much more effort should be made to change these unfavourable statistics. In addition, the process of eLearning requires increasing investments in specific programs and IT equipment such as cameras, without which the courses provided by eLearning cannot be conducted. There should be a special program es-

tablished for providing public points of access to the Internet and digital libraries, particularly in certain regions of Poland.

The reason for a decreasing diffusion of eLearning services in Poland is also the lack of initiatives and projects for promoting ICT. It is important to promote the access and use of ICT in learning processes through local information centres and digital libraries. This will contribute to the development of eLearning services and increase the number of potential users. Opinions of interviewed experts show that a large group of citizens did not take advantage of the Internet because they felt that they did not have such a need. Promoting ICT in local communities, especially in rural areas, will contribute to increasing awareness of the benefits of ICT. Finally, the promotion and improvement of ICT skills and lifelong learning contribute to a steady reduction of unemployment in rural areas, especially among adult people.

Computerisation and ICT usage in schools

Computerisation and ICT usage in schools must become one of the policy priorities in the Polish education system. To date, there have been no priorities with respect to eLearning on Ministerial level. The computerisation of schools would require a further development of the essential ICT skills of both pupils and teachers, which would provide them with support in the learning process and enable teachers to have the competence to enhance pupils' learning with the use of ICT. Nevertheless, it is still hard to give evidence on how ICT skills are used by pupils (e.g. Internet might also be used for less educative purposes). Low-achieving students with limited exposure to high quality teachers and modern computing devices are clearly less likely to benefit from them. In terms of teacher participation in ICT education and training, there should be a "bottom up" and a "top down" motivation system approach, such as professional upgrading, financial incentives, compulsory training or acknowledgement of the importance of ICT. The experience of Polish universities shows that training teachers in eLearning projects based solely on a voluntary participation principle did not bring any significant results. Teachers, usually of the older generation, are not aware of the advantages of ICT and therefore are the most reluctant to changes towards a greater use of ICT in didactical and academic work. The training of teachers and pupils is strongly related to further reforms in school management and an overall future vision of work in school. Moreover, it is important to promote international mobility of students, which is possible thanks to the availability of international eLearning platforms.

Distance education may also contribute to developing open attitudes of society, increasing the level of knowledge and competence as well as steadily creating active professional eLearning communities

(communities of praxis). In order to ensure the right functioning of the processes of virtual communication and collaborative learning practices, other issues more related to cultural aspects should be taken into consideration. As such, European integration among learning systems, although encouraged and supported by ICT tools, cannot be realised without a great awareness of the value that can be created through knowledge sharing and through collaborative learning among different countries.

Competence and skills of university staff

New technologies and the Internet permit the discovery of new education possibilities; to make the learning process attractive and to individualise it. Distance education will require the acceptance of technological consciousness, interactivity, pragmatism and the quick adaptation to new circumstances, which were not included in the education program.

Therefore, it is important to train teachers of ICT not only in related skills and eLearning platforms, but also in the advantages of eLearning for the learning process of a student. It is also important to provide teachers with the latest developments in eLearning. eLearning techniques make teachers more flexible and may lead to a better communication between students and teachers. The teacher does not have to be at school; instead he will be online. Finally, teachers can choose among more methods of teaching: traditional face-to-face, eLearning or blended learning. Besides training teachers, concrete guidelines on how to incorporate eLearning materials in the subjects must also be given.

It is important to convince academic institutions to promote new methods of administration works. At present they are only observers of this information society phenomenon. It is necessary to create such a system of functioning for universities, so that they will be interested in creating and promoting modern solutions. It would be worth implementing such international solutions as: a tenure for professors, the admission of candidates for a PhD degree only with professional experience and on regular posts outside universities, public research grants supporting innovative projects on eLearning, using mass media and education institutions for promoting eLearning, and strengthening lobbying activities of IT companies inducing local administrations to invest in infrastructure and the implementation of IT tools.

National and international "best practices"

Poland, due to its delay, has a chance to learn from somebody else's experience. Some countries of the EU15, and the United States have a lot of experience in the implementation of eLearning programs. Their methods could be used as reference by Poland. Particularly the

Danish, German and French experience regarding the standardisation of eLearning processes. However, the diffusion of some of the innovative solutions of eLearning promotion and development is not always possible due of the different legal, organisational, technological and cultural environments in different countries.

At present, the applicable experience from other countries is possible only on the level of creating programming documents, but not in their implementation. This can be explained both by the lack of access to compactable databases of standard projects, as well as from irrational unwillingness to diffuse "best practices". It is important to promote the knowledge of existing EU "best practices", especially in the area of networking between the academic and business sectors in adopting best ICT solutions related to eLearning. Some interesting solutions already exist in Estonia. Estonia is experiencing an early development of children's technological consciousness and of basic ICT tools at primary school level.

The diagram below presents the suggested proactive attitudes of governments in order to achieve progress with in the Information Society service area and eLearning in particular. The most important areas of policy challenges are the following: technological, legal and administrative, political, economic, as well as innovative cultures and best practices.

2. SUGGESTED POLICY MEASURES

The policy measures that should be accomplished at all levels of the general government in order to meet the technical, social, economic, security and institutional challenges for the development of eLearning.

Distance education may also contribute to developing open attitudes of society, increasing the level of knowledge and competence as well as steadily creating active professional eLearning communities (communities of praxis). In order to ensure the right functioning of the processes of virtual communication and collaborative learning practices, other issues more related to cultural aspects should be taken into consideration. As such, the European integration among learning systems, although encouraged and supported by ICT tools, cannot be realised without a great awareness of the value that can be created through knowledge sharing and through collaborative learning among different countries. In order to explore the existing IT potential for the development of eLearning services, it is important to shape the social awareness regarding the importance of ICT skills and open source solutions.

In the education policy it is important to promote IT tools among children through school programs, which usually help their families and parents (Finland and the United States can serve as an example).

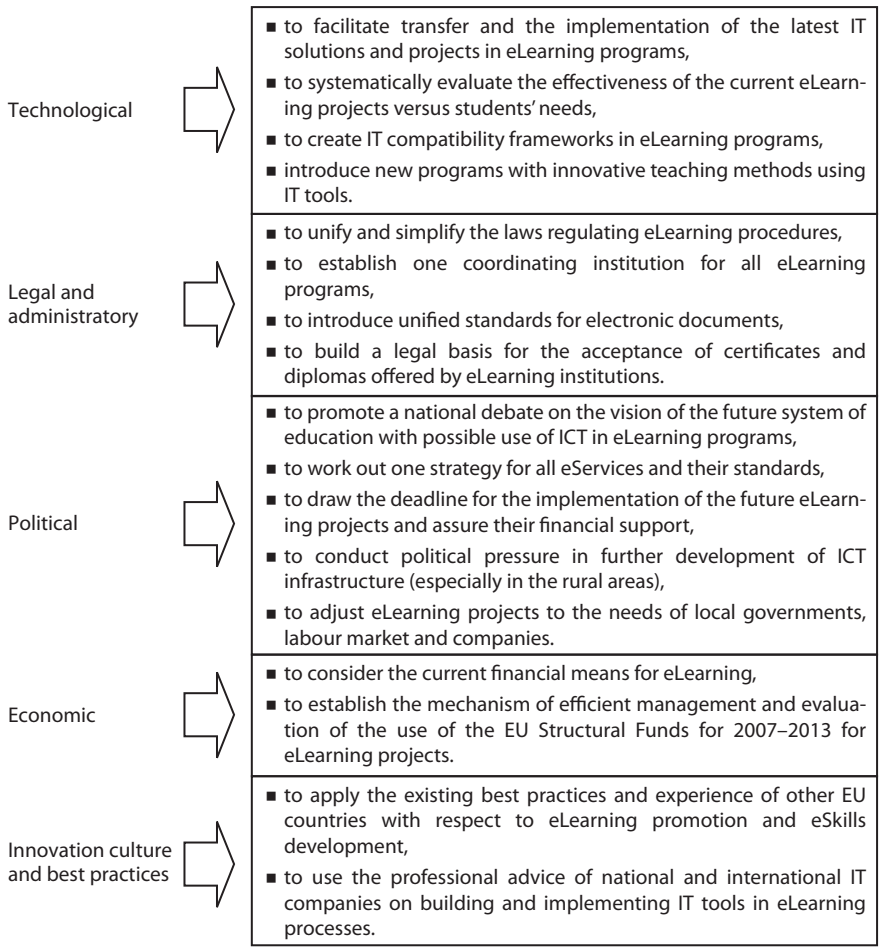

Figure 24. Suggested policy measures

Source: own elaboration.

3. MAJOR R&D CHALLENGES FOR eLEARNING

Major technical R&D challenges

eLearning is central to the updating of individual knowledge and skills, to the production and diffusion of knowledge, as well as to the promotion of lifelong learning practices. It is especially important to Poland, whose prosperity is increasingly dependent on technological advancement, the continuous renewal of human capital and the rapid exchange of information.

There are at least four groups of R&D challenges specific to eLearning, which must be mentioned here: 1. organisational and management

solutions, 2. efficiency and accessibility, 3. didactical readiness, 4. human competence and personal awareness.

Poland is at an early stage of development of eLearning services. It is important at this stage to conduct R&D aiming to reveal the most efficient organisation and management mechanisms for eLearning. Such a mechanism should include both macro (national system of education) and micro levels (university and company level).

Some important technical R&D challenges related to the organisation and management mechanisms of eLearning are presented below:

- to ensure the level of management of distance learning systems in accordance with the world level of education and technological development;
- to systematise the cooperation in the creation and diffusion of education contexts (including best practices exchange) at different organisational and administration levels;
- to adjust eLearning programs to the constantly changing needs of users, especially with respect to professional training courses;
- to create an information platform for professional training and Internet studies, professional opportunities, threats and gains;
- to build up proper information systems (a data basis, a knowledge basis and an Internet portal as well as applications supporting the "eExam", "eBooks");
- to aggregate and distribute education context electronically to all levels of education (except the three years of primary education);
- to introduce public access to "Open Universities".

The second type of R&D activities should focus on looking for technical solutions to increase the efficiency and accessibility of eLearning systems, as well as to convince the society of the advantages of eLearning. The problem here is to select the most effective and mostly suitable teaching technologies and teaching methodology. Possible R&D activities could concentrate on creating cheap and effective programming for eLearning users and service providers, e.g. education platforms.

In order to check the effectiveness of the existing eLearning programs, it is important to conduct a survey on their adaptability and accessibility among students and teachers at all education levels, including lifelong learning and workplace. The question to be answered during the survey is to what extent the eLearning programs and related new approaches to learning processes will benefit its users. The next stage of the above mentioned survey must consider equal accessibility of eLearning programs in those subjects in which students and teachers emphasise the supportive role of ICT in the process of learning or teaching. Finally, it is important to promote and raise social awareness with respect to the importance of ICT and eLearning activities in the process of innovation, knowledge creation and diffusion.

Moreover, a successful eLearning organisation and management mechanism must assure the interoperability of existing information systems and the integration of data and information at various service provider levels (communication, launch and course). Including the technical R&D challenges.

The third group of R&D activities should focus on establishing a methodology. The rapidly changing technologies require complex choices. It is important to establish a methodology related to eLearning, which would be a reference for new users and academic staff and their learning and teaching involving the use of ICT. In order to establish the best methodology for eLearning, it is important to integrate the best content and delivery from both the public and private sectors in order to increase access to state-of-the-art eLearning.

Finally, the fourth type of R&D activities should concentrate on the behavioural and sociological factors that determine the diffusion of eLearning services. This type of research activities should analyse personal awareness as well as human competence and potential in using IT tools. A motivated staff is the principal driving force in any educational organisation. Strategic solutions and policies will not succeed without a motivated, creative and supportive bottom-up. The "university leadership" significantly determines the successful implementation of eLearning programs and new education perspectives. However, the latter depends on the willingness and attitudes of university staff towards choosing between the "traditional or modern approach". One of the ways to increase a pro-modern approach to teaching processes among academic staff, is to train them in both ICT skills and broader eLearning types, methodologies and content.

There must also be an initial and sustained professional development of teachers, as well as a well-developed network for instructor and student eLearning experiences. It is recommended that a separate institution is created to monitor and evaluate the teachers' eLearning courses.

Finally, it is important to further work out the education programs; to develop the eLearning platform; and to increase the degree of absorption of ICT solutions. A development of training courses is needed, in order to ensure the realisation of a strategy of lifelong training as well as to promote eLearning services as high standard education. It is also important to educate people on how to improve and update their knowledge and competence.

Major financial R&D challenges

An important non-technical R&D challenge is the review of existing funding mechanisms and procedures in Poland in terms of their efficiency in supplying schools with ICT equipment.

The pace of change in technology is linked to the limited financial resources of universities and therefore the need to decide which upgrades or investments to make. The present university funding is based on the number of students or on the university historical levels of funding, which do not allow to invest in rapid technological changes and to upgrade teaching standards.

It is important to develop systems and technologies enabling the application of cheap solutions of personalisation of distance learning and studying. Financing the costly eLearning programs and solutions remains an important challenge for many schools, universities and small and medium enterprises. One of the possible solutions is to get the lower prices from the producers or distributors of eLearning services. Another solution would be to increase the State aid for eLearning programs and solutions. Companies would be interested in offering lower prices if there would be any benefits linked to it. Therefore, it is important to constantly look for ways to establish a common platform of cooperation between education institutions and businesses.

On the other hand it is important to establish a similar cooperation between the business sector and the State, based on a public-private partnership (PPP). This model of financing is particularly important when applying for EU funds. Individual projects must be financed from all possible resources, including structural funds. eLearning projects in Poland must be financed from public funds (at the early stage of implementation and promotion – in order to enhance institutions to implement the eLearning projects), as well as from private ones (at the development stage). This could be supported by tax reductions, co-financed from the State budget, administrator advice and financial support when competing for EU funds. However, the best financial model of eLearning projects can only be derived using precise investigation results.

In the view of the Lisbon Strategy objective it would be interesting to examine how eLearning and blended learning, with respect to traditional learning methods, contribute to innovativeness, productivity and the economic growth of Poland (the objective of the Lisbon strategy is to make the EU the most competitive and dynamic knowledge-based economy with improved employment and social cohesion. The Lisbon Strategy was the basis for the Polish strategy – *National Development Strategy 2007–2013*, www.npr.gov.pl).

Major security R&D challenges

ICT solutions related to eLearning should be reliable. This entails having instant access to the services, free from errors generated by the information system. Ensuring that eLearning products are according to the expectations of society is crucial to building trust. Together with the

benefits resulting from the Internet and other technologies, the challenge to secure privacy of citizens appears.

The security related problems must be solved by the implementing institution. It is especially important to invest in security systems of personal data transfer. In general, the level of security must be adequate to the importance of the data linked to eLearning services. In case of the need of a high level of security, it is important to invest in electronic systems of user identification. This entails further R&D activities in the domain of electronic systems for users. eServices, such as eLearning, might be particularly exposed to various types of fraud as they contain personal data.

Finally, it is also important to conduct R&D works on the interdependencies between pedagogical concepts and technological solutions in the context of distance learning systems. Such R&D activities should focus on network capacity and on the evaluation of the accessibility of the eLearning platform during the highest user activity hours.

4. SUMMARY

Summing up, the policy measures at local, regional and national level should consider the above mentioned incentives and barriers of eLearning development in Poland. Consequently, the suggested list of policy options include not only a further development of the ICT infrastructure and technological advancement, but also investments in upgrading the IT skills of teachers and pupils, promoting eLearning and lifelong learning among adults, as well as diffusing information on existing eLearning practices. Moreover, the success and popularisation of eLearning as a pedagogical tool will depend on the establishment of a policy priority, the coordination mechanism and the financial plan for eLearning.

The ICT sector is considered to be one of the most rapidly developing R&D areas in the world. However, this is related to constant technological, financial and security challenges to academic institutions and private firms offering eLearning courses. The most important barriers and incentives, as well as factors concerning eLearning in Poland suggest that the main R&D challenges are related to further improvements in the quality of IT facilities, the management and organisation of eLearning platforms, the coordination of eLearning courses and the establishment of policy priorities for eLearning.

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List of interviewees

Interview with Jerzy Cieślik, Professor at the Kozminski Business School, which established its own eLearning platform, 27th of August 2006.

Interview with Marcin Dąbrowski, Director of the eSGH ePlatform (Centre for Development of Distance and Permanent Education, Warsaw School of Economics), 27th of August 2006.

Interview with Anna Drzewińska, lecturer, researcher and PhD student on eLearning (at the Leon Kozminski Academy), 9th of October 2006.

Interview with Krzysztof Gerant, Quality Director of Alcatel Poland Plc., 28th of August 2006.

Interview with Krzysztof Glomb, President of the organisation "Cities in the Internet", 28th of August 2006.

Interview with Anna Grabowska, Professor Assistant Gdańsk Polytechnic, 5th of October 2006.

Interview with Magdalena Jasińska, distant learning methodologist at the University Centre for Distant Learning and Open Courses at the Maria Curie-Skłodowska University in Lublin, 3th of October 2006.

Interview with Jerzy Maria Mischke, Professor at the Academic Computer Centre CYFRONET of the University of Science and Technology (AGH), 2nd of October 2006.

Interview with Joanna Opoka, Director of Distance Education Department, Polish Virtual University, 15th of October 2006.

Interview with Wojciech Sadowicz, Redactor of the Polish Portal of Development, 14th of August 2006.

Interview with Jerzy Skrzypek, Director of the eLearning Centre at the Academy of Economics in Cracow, 30th of October 2006.

Interview with Marcin Steć, Senior Education Specialist at the IBM Polska Sp. z o.o., 28th of August 2006.

Interview with Magdalena Szpunar, Assisting Professor at the University of Information Technology and Management in Rzeszow, 27th of August 2006.

Interview with Mariusz Wielec, Director of the Ministry of Science and Higher Education – Department of Economics Research, 27th of August 2006.

Interview with Wojciech Zieliński, Deputy Chancellor of the Academy of Humanities and Economics in Lódź – Polish Virtual University, 5th of October 2006.

ANNEX I

STATISTICAL DATA

Table 1. General macroeconomic data on Poland (2006)

Capital	Warsaw
Language	Polish
Population	38 million
Currency	1 EUR= 3.7966 PLN (24.05.2007)
Area	312,685 km^2 (120,727 square miles)
Political system	Parliamentary democracy
According to the new Constitution of 2 April 1997	
Legislative authority	The Sejm (460 deputies) and the Senate (100 senators) of the Republic of Poland, both elected in a national election for a 4-year term
Executive authority	The President (elected in a general election for a 5-year term) and the Council of Ministers
Judicial authority	The courts and tribunals
Administrative units	■ Województwa/voivodships: 16 ■ Powiaty/counties: 308 counties and 65 cities with counties status ■ Gminy/communities: 2489

Source: www.poland.pl

Table 2. Forecasts for the years 2005–2020, basic indicators (%)

Year	Consumption	Investments	Export	Import	Net export GDP	GDP	Poland's GDP/EU GDP-15
2005	3.7	12.9	12.0	12.0	–1.7	5.0	45.5
2006	4.1	12.6	11.1	12.1	–1.8	4.8	46.5
2007	4.8	14.4	11.0	12.4	–2.3	5.6	47.9
2008	5.1	8.4	8.0	8.5	–3	5.2	49.2
2009	5.4	9.6	6.9	8.0	–3.3	5.6	50.7
2010	5.6	11.0	7.2	8.2	–3.8	6.1	52.4
2011	5.5	7.3	7.1	7.5	–4.3	5.6	54.0
2012	5.3	5.5	7.0	7.0	–4.5	5.2	55.5
2013	5.1	5.1	6.9	6.8	–4.6	5.0	56.8
2014	5.1	4.8	6.7	6.6	–4.5	4.9	58.2
2015	5.0	4.8	6.7	6.6	–4.6	5.0	59.5
2016	5.0	4.8	6.6	6.3	–4.6	5.0	61.0
2017	4.9	4.7	6.6	6.3	–4.6	5.0	62.5
2018	4.9	4.7	6.6	6.3	–4.7	5.0	64.1
2019	4.9	4.7	6.5	6.2	–4.6	5.0	65.6
2020	4.9	4.7	6.5	6.2	–4.5	5.0	67.1

Source: *Macroeconomic forecasts for 2005–2020*, Ministry of Economics and Labour Affairs.

Table 3. Global Competitiveness Index 2006 and 2005 comparisons to chosen countries

Country/Economy	GCI		
	2006 rank	2006 score	2005 rank
Switzerland	1	5.81	4
Finland	2	5.76	2
Sweden	3	5.74	7
Denmark	4	5.70	3
United States	6	5.61	1
Japan	7	5.60	10
Germany	8	5.58	6
Netherlands	9	5.56	11
Norway	12	5.42	17
France	18	5.31	12
Australia	19	5.29	18
Belgium	20	5.27	20
Ireland	21	5.21	21
Luxembourg	22	5.16	24
Estonia	25	5.12	26
Spain	28	4.77	28
Czech Republic	29	4.74	29
Slovenia	33	4.64	30
Portugal	34	4.60	31
Latvia	36	4.57	39
Slovak Republic	37	4.55	36
Malta	39	4.54	44
Lithuania	40	4.53	34
Hungary	41	4.52	35
Italy	42	4.46	38
Cyprus	46	4.36	41
Greece	47	4.33	47
Poland	48	4.30	43
Croatia	51	4.26	64
Romania	68	4.02	67
Bulgaria	72	3.96	61
Albania	98	3.46	100

Source: www.weforum.org

Table 4. Population changes in urban and rural areas

Specification	2000	2003	2004	2005
	(in thousands)			
Population	38 256	38 195	38 180	38 161
of which females	19 714	19 702	19 702	19 700
Urban areas	23 691	23 543	23 490	23 541
Rural areas	14 565	14 652	14 690	14 710

Source: Central Statistical Office, Warsaw 2006 (www.stat.gov.pl).

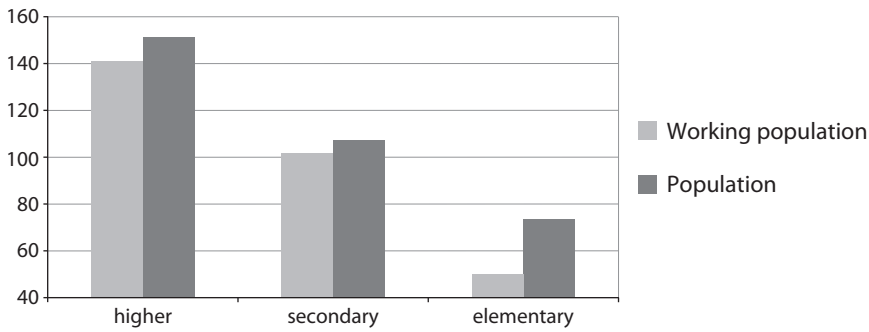

Figure 1. Population and number of people working according to their education in 2020 with respect to 2002

Source: National Statistical Office, Warsaw 2003.

Table 5. Pupils and students (excluding pre-primary education)[1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
EU25	–	–	–	–	88 862	90 391	90 521	90 747	92 053	91 838	92 742
EU15	73 001	73 360	73 380	73 296	73 027	74 388	74 340	74 400	75 674	75 518	76 463
Euro area	57 105	57 019	56 883	56 758	56 861	56 490	56 293	56 226	56 107	56 286	56 664
Belgium[2]	2 113	2 153	2 160	2 168	–	2 207	2 235	2 304	2 333	2 373	2 333
Czech Republic	–	–	–	–	1 914	1 875	1 906	1 932	1 935	1 928	1 934
Denmark[3]	942	943	942	955	973	988	1 003	1 029	1 046	1 069	1 127
Germany[4]	13 842	14 035	14 210	14 441	14 568	14 581	14 549	14 515	14 511	14 525	14 583
Estonia					290	296	303	306	304	298	293
Greece	1 889	1 850	1 840	1 833	1 904	1 859	1 884	1 906	1 975	1 961	1 983
Spain	8 778	8 637	8 509	8 239	8 087	7 898	7 769	7 597	7 461	7 382	7 509
France	12 145	12 148	12 137	12 131	12 092	12 022	11 934	11 849	11 791	11 884	11 903
Ireland[5]	898	893	885	887	1 000	994	990	987	992	1 001	1 033
Italy	9 572	9 433	9 300	9 306	9 202	9 151	9 049	9 144	9 199	9 266	9 380
Cyprus[6]	–	–	–	136	–	138	138	140	142	146	148
Latvia	–	–	–	–	471	485	499	510	510	506	502
Lithuania	–	–	–	–	713	739	767	787	797	807	811

Table 5. cont.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Luxembourg[7]	52	54	57	60	62	68	69	70	72	73	71
Hungary	–	–	–	–	1 855	1 879	1 906	1 924	1 946	1 968	1 988
Malta	–	–	–	–	–	78	78	78	77	79	81
Netherlands	3 241	3 201	3 179	3 116	3 136	3 123	3 171	3 217	3 208	3 239	3 264
Austria	1 387	1 402	1 412	1 416	1 426	1 443	1 459	1 464	1422	1 429	1 452
Poland	–	–	–	–	8 867	9 003	9 074	9 153	9 153	9 077	9 004
Portugal	2 145	2 166	2 134	2 085	2 076	2 020	2 032	2 002	1 964	1 962	1 945
Slovenia[4]	–	–	–	–	386	392	389	403	407	408	411
Slovakia	–	–	–	–	1 123	1 119	1 123	1 114	1 109	1 104	1 108
Finland	1 044	1 047	1 059	1 077	1 101	1 126	1 152	1 172	1 179	1 193	1 206
Sweden	1 656	1 698	1 753	1 814	1 962	2 075	2 090	2 107	2 115	2 119	2 123
United Kingdom	13 298	13 700	13 802	13 769	13 232	14 835	14 955	15 038	16 407	16 043	16 550
Bulgaria	–	–	–	–	1 404	1390	1 357	1 322	1 275	1 274	1 250
Croatia	–	–	–	–	–	–	–	–	–	725	730
Romania[8]	–	–	–	–	4 020	4 006	3 962	3 954	3 939	3 915	3 901
Turkey	–	–	–	–	–	13 571	13 169	14 893	15 389	15 565	16 379

Iceland	–	67	67	68	71	72	74	74	77	80	82
Liechtenstein[9]	–	–	5	5	–	–	5	–	–	6	6
Norway	895	858	865	884	958	981	989	993	1 005	1 036	1 052
Switzerland	–	–	–	–	–	–	–	–	1 294	1 315	1 330
Japan	22 842	22409	22 346	–	21 368	20 908	20 583	20 254	19 956	19 646	19 435
United States	58 573	59 225	59 781	60 622	61 816	62 795	62 323	63 653	64 440	65 738	66 075

Source: Eurostat 2005.

[1] This table includes the total number of persons who are enrolled in the regular education system in each country; it covers all levels of education from primary education to postgraduate studies; it corresponds to the target population for education policy.
[2] Excluding independent private institutions; excluding the German speaking community for 2004; according to new definitions for 2004, students in programmes of a duration of one semester or shorter (which were included in previous years) are excluded.
[3] Improved coverage – adult education programmes (ISCED levels 3 and 5) are included for the first time for 2004.
[4] Excluding ISCED level 6 for 1998–2004.
[5] Improved coverage of ISCED levels 2, 3 and 4 part-time programmes for 2004.
[6] Most tertiary students study abroad and are not included.
[7] Most tertiary students study abroad and are not included; many students at ISCED levels 1, 2 and 3 study abroad and are not included.
[8] Excluding ISCED level 6 for 1998–2002.
[9] Most students at ISCED levels 3 to 6 study abroad and are not included, while many students at ISCED level 3 and ISCED level 5 come from abroad.

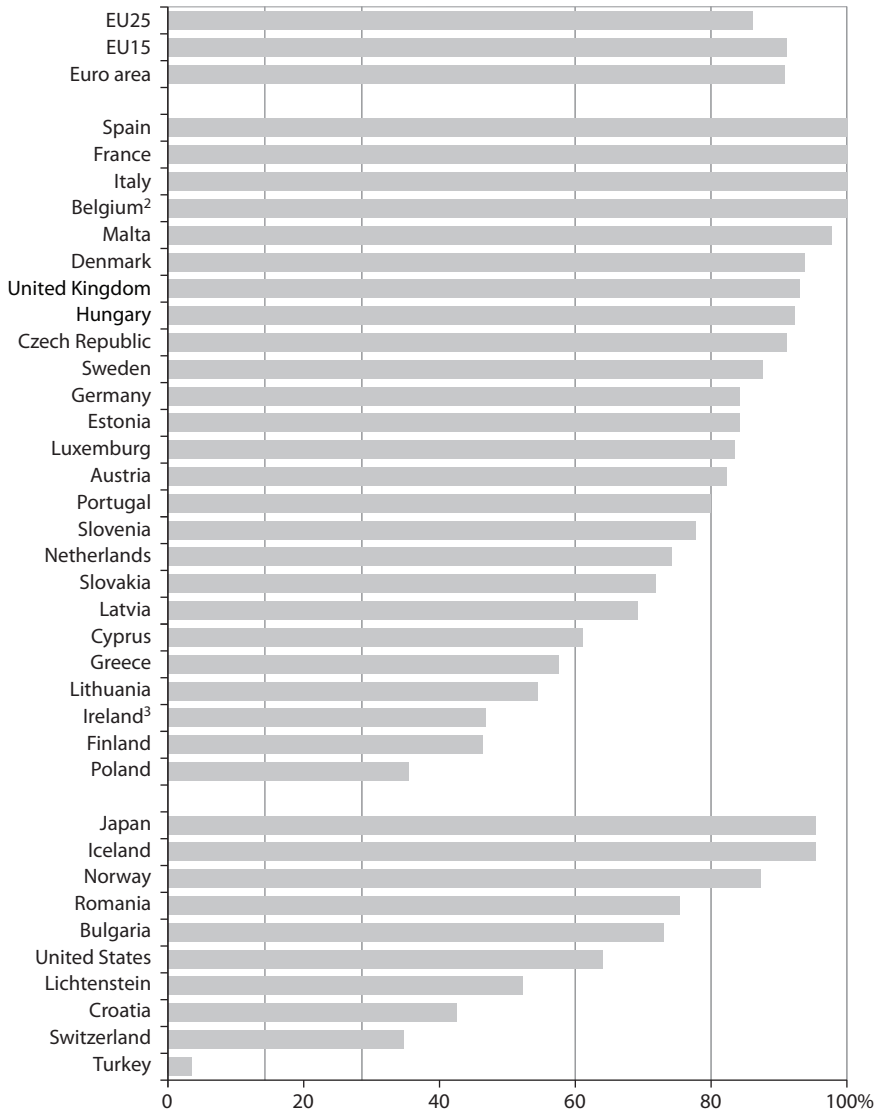

Figure 2. Four-year-olds in education[1], 2004 (% of all four-year-olds)

Source: Eurostat 2005.

[1] This indicator presents the percentage of the four-year-olds who are enrolled in education-oriented pre-primary institutions; these institutions provide education-oriented care for young children; they can either be schools or non-school settings, which generally come under authorities or ministries other than those responsible for education; they must recruit staff with specialised qualifications in education; day nurseries, playgroups and day care centres, where the staff are not required to hold a qualification in education, are not included.

[2] Excluding independent private institutions; excluding enrolments in the German speaking community.

[3] There is no official provision of ISCED level 0 education; many children attend some form of ISCED level 0 education but data are for the most part missing.

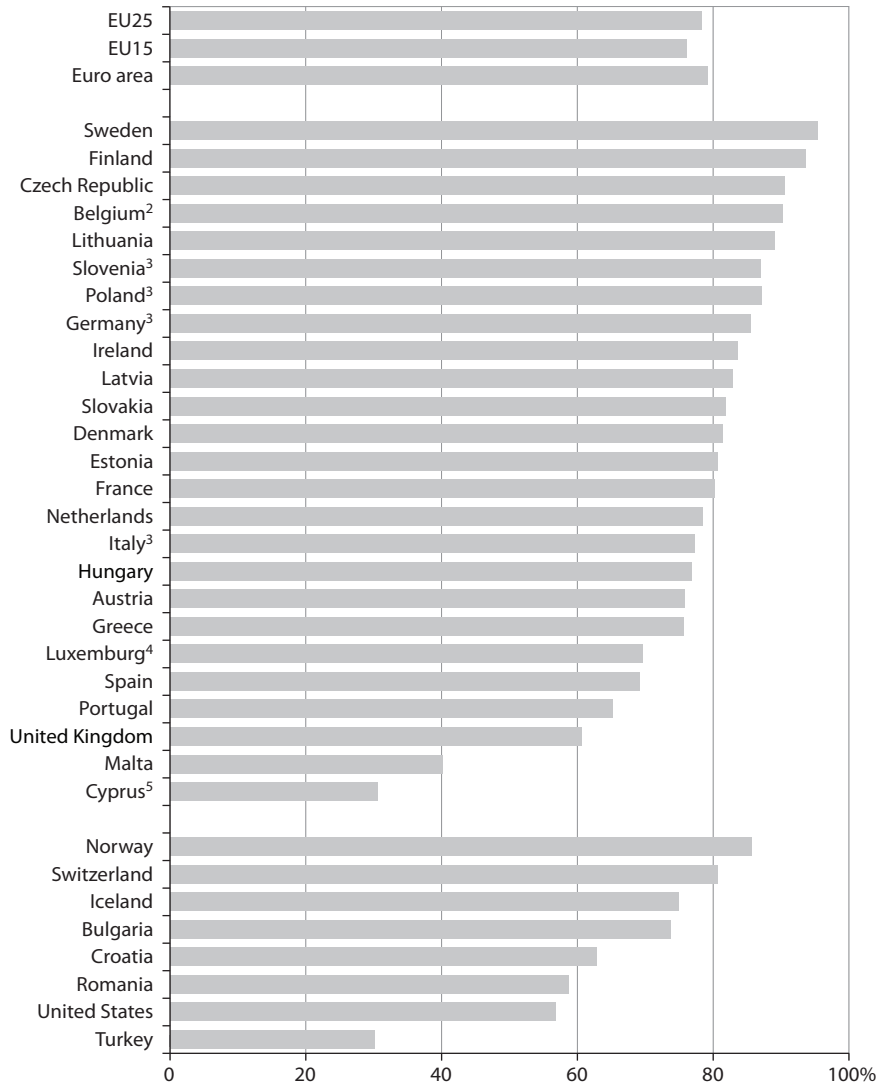

Figure 3. 18-year-olds in education[1], 2004 (% of all 18-year-olds)

Source: Eurostat 2007.

[1] This indicator gives the percentage of all 18-year-olds who are still in any kind of school (all ISCED levels); it gives an indication of the number of young people who have not abandoned their efforts to improve their skills through initial education and it includes both those who had a regular education career without any delays as well as those who are continuing even if they had to repeat some steps in the past.

[2] Excluding independent private institutions; excluding the German speaking community.

[3] Excluding ISCED level 6.

[4] Most tertiary students study abroad and are not included; many students at ISCED levels 1, 2 and 3 study abroad and are not included in the enrolment data but are included in population data; therefore, all participation rates by age are underestimated; excluding ISCED level 5.

[5] Most tertiary students study abroad and are not included.

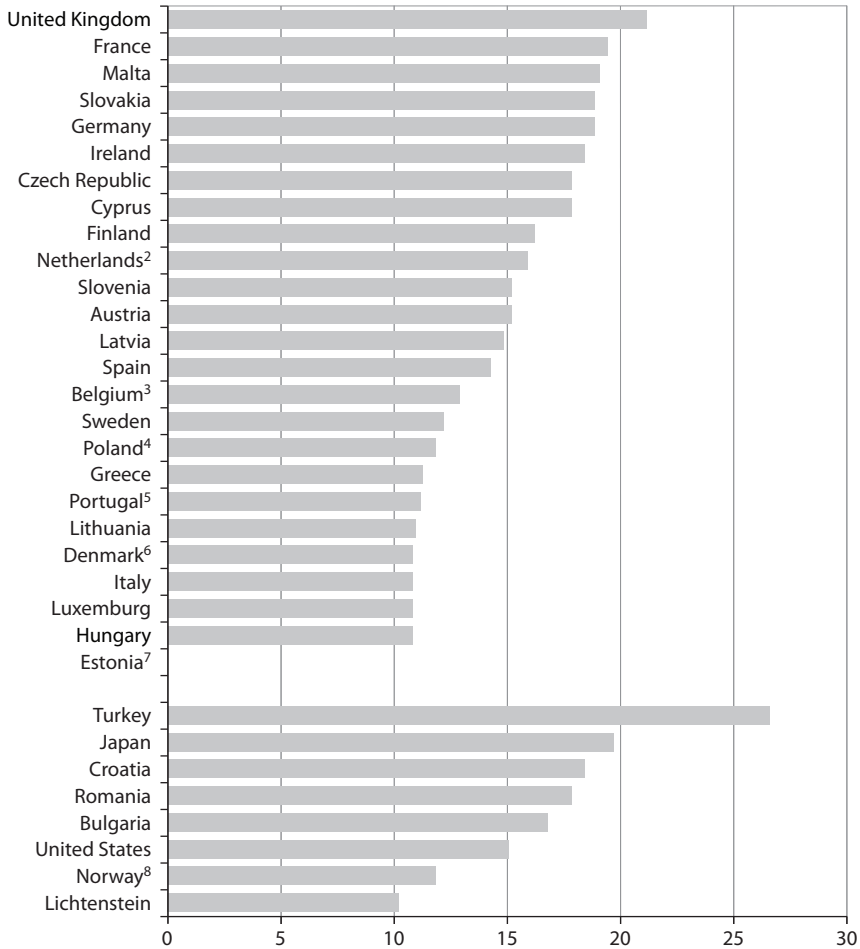

Figure 4. Pupil/teacher ratio in primary education (average number of pupils per teacher)

Source: Eurostat 2005.

[1] The pupil-teacher ratio is calculated bv dividing the number of full-time equivalent pupils by the number of full-time equivalent teachers leaching at ISCED level 1; only teachers in service (including special education teachers) are taken into account· the pupil-teacher ratio should not be confused with average class size as it does not take into account special cases, like the small size of groups of special needs pupils or specialised/minority subject areas, or the difference between the number of hours of teaching provided by teachers and the number of hours of instruction prescribed for pupils for example in the case where a teacher is working in a shift system.

[2] ISCED level 0 included in ISCED level 1.

[3] Excluding independent private Institutions; excluding the German speaking community.

[4] 2003.

[5] Data on full-time equivalents not available; all teachers (head-count) are included in the denominator.

[6] ISCED level 2 included in ISCED level 1; 2003.

[7] Not available.

[8] Public sector only.

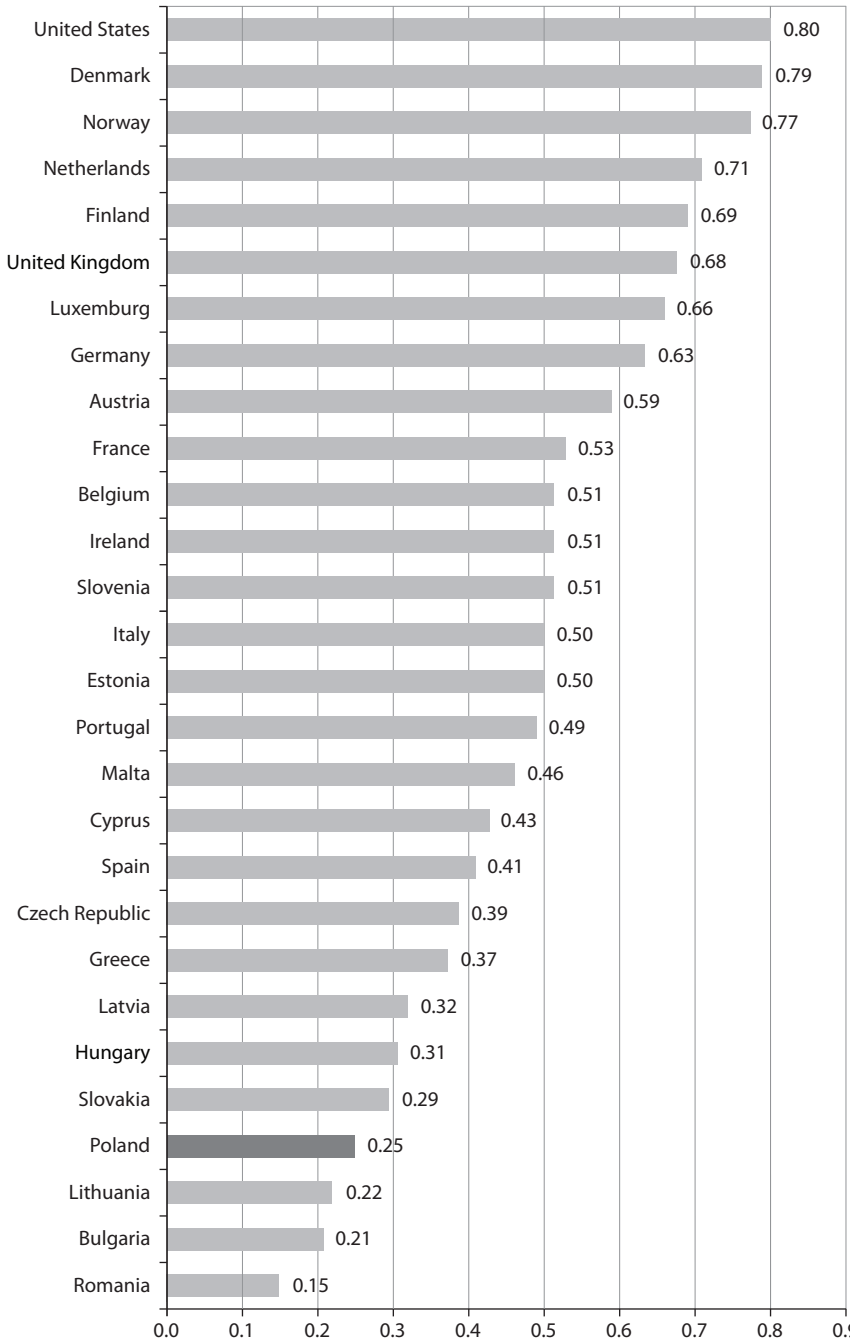

Figure 5. Poland's performance on the UN Telecom Index

Source: eUser – Public Online Services and User Orientation, 8/2005, www.euser-eu.org

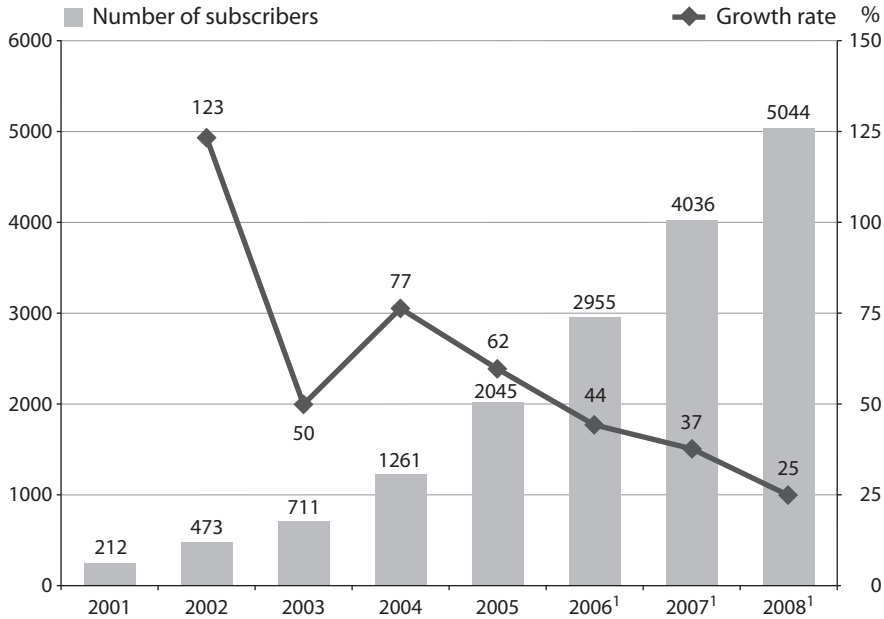

Figure 6. The number and the growth rate of broadband Internet users in Poland in 2001–2008, thousands and %

Source: *The telecommunications market in Poland 2005–2008*, "Polish Market Review Publication", December 2005.

[1] Forecast.

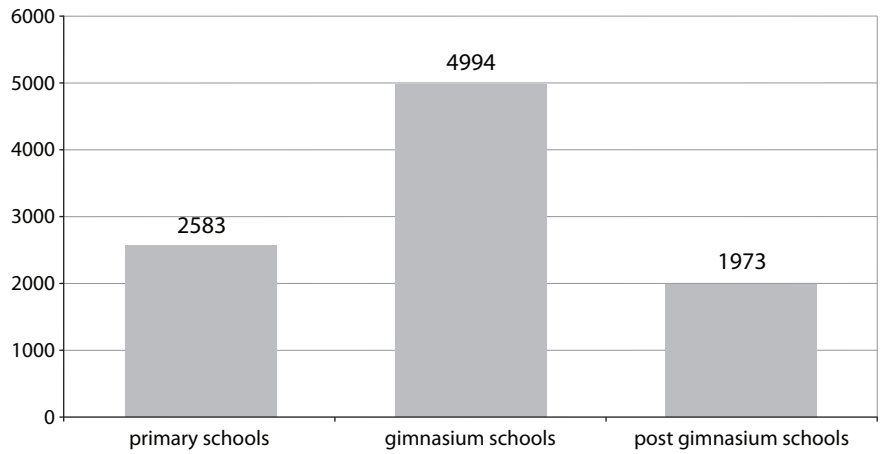

Figure 7. The number of computer laboratories dedicated to a particular type of schools within the central budget supplies in 2004

Source: Supreme Chamber of Control 2005 (www.nik.gov.pl).

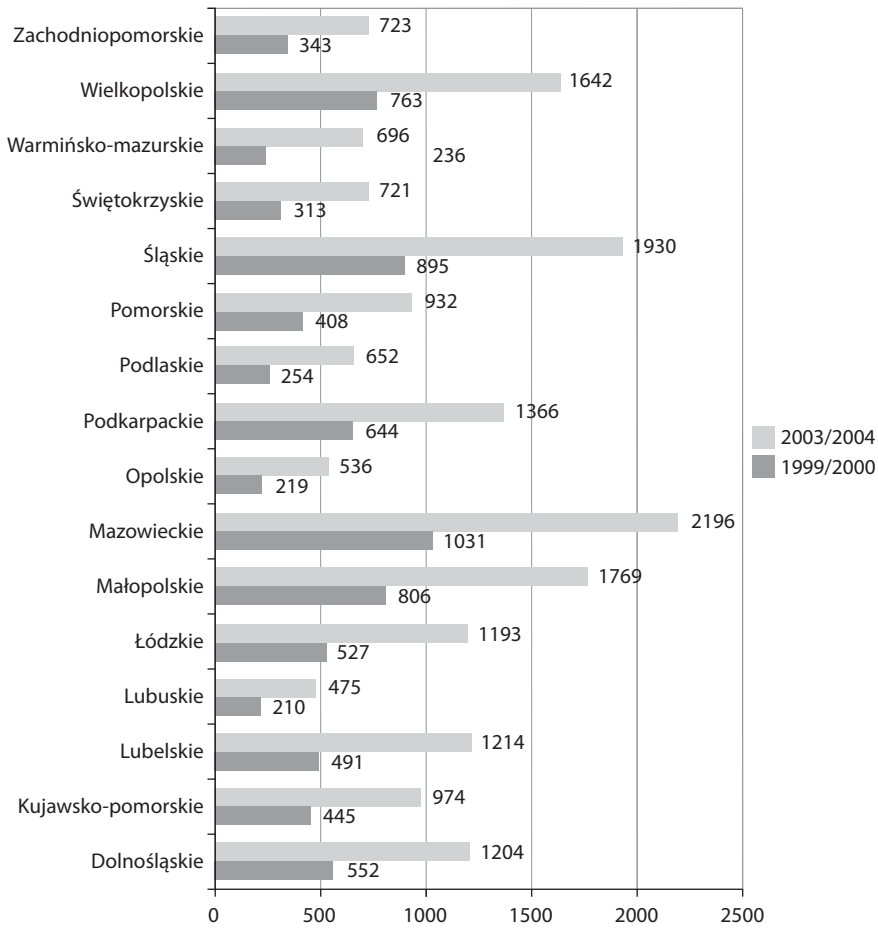

Figure 8. Growth of computer laboratories in schools 1999/2000 and 2003/2004

Source: Centrum Obliczeniowe MENiS 1999 and 2004.

Table 6. ICT penetration data (2005)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Computer access rates for												
households (%)	46	30	43	42	32	32	–	40	47	61	63	41[1]
enterprises (%)	94	96	92	88	86	93	–	93	97	98	96	93[1]
public sector (percentage of employees using any computer)	45	36	43	29	23	25	–	38	37	48	51	36[1]
Internet access rates for												
households (%)	32	19	39	22	31	16	–	30	23	48	53	29[1]
enterprises (%)	85	92	90	78	75	86	–	87	92	96	92	87[1]
public sector (percentage of employees using Internet)	94	97	96	93	89	95	–	96	97	99	96	95[1]
Broadband access rates for												
households (%)	4	5	30	11	14	12	–	16	7	19	25	13[1]
enterprises (%)	40	52	67	48	48	57	–	43	48	74	65	53[1]
public administration (percentage of employees connecting to the Internet via fixed broadband)	61	73	81	71	63	66	–	73	66	89	83	71[1]

Access to the Internet by place of access												
in Internet cafe	2	–	–	2	6	3	–	5	10	–	–	–
at place of education	5	7	8	7	7	11	–	10	11	7	8	8[1]
at home	22	20	40	21	21	16	–	20	20	35	39	24[1]
at place of work	14	14	20	17	18	15	–	11	27	23	23	18[1]
at other places	2	2	3	6	8	6	–	6	12	6	7	6[1]
Usage of Internet												
percentage of individuals who access the Internet on average at least once a week	26	26	54	34	36	30	–	29	43	40	46	35[1]
percentage of individuals having ordered/purchased once in the last three months	4	3	4	5	3	1	–	5	6	8	20	4[1]
percentage of enterprises having received electronic orders once in the last year	4	13	8	4	1	6	16	5	7	12	13	8
Mobile penetration rates												
mobile phone subscribers per 100 inhabitant	–	–	–	–	–	–	–	–	–	–	–	–

Source: Eurostat 2006.

[1] EU10 average based on calculation without Malta

Table 7. ICT penetration data (2006)

	2006 (Stand Nov. 2006)											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Computer access rates for												
households (%)	52	–	52	50	41	40	–	45	50	65	64	49[1]
enterprises (%)	95	97	–	89	92	92	–	93	97	97	97	94[2]
public sector (percentage of employees using any computer)	–	–	–	–	–	–	–	–	–	–	–	–
Internet access rates for												
households (%)	37	–	46	32	42	35	–	36	27	54	54	39[1]
enterprises (%)	86	95	-	80	80	88	–	89	93	96	94	88[1]
public sector (percentage of employees using Internet)	–	–	–	–	–	–	–	–	–	–	–	–
Broadband access rates for												
households (%)	12	–	37	22	23	29	–	22	11	34	34	24[1]
enterprises (%)	55	69	–	62	59	57	–	46	61	75	78	61[2]
public administration (percentage of employees connecting to the Internet via fixed broadband)	–	–	–	–	–	–	–	–	–	–	–	–

Access to the Internet by place of access												
in Internet cafe	2	–	2	3	6	3	–	4	6	–	–	3[3]
at place of education	5	–	11	12	9	11	–	10	11	10	8	10[1]
at home	24	–	46	29	31	29	–	26	24	41	45	31[1]
at place of work	17	–	28	19	22	17	–	13	26	28	24	21[1]
at other places	3	–	4	7	9	7	–	6	7	9	7	7[1]
Usage of Internet												
percentage of individuals who access the Internet on average at least once a week	29	–	56	42	46	38	–	34	43	47	49	42[1]
percentage of individuals having ordered/purchased once in the last three months	5	–	4	5	5	2	–	9	7	8	23	6[1]
percentage of enterprises having received electronic orders once in the last year	6	8	–	9	2	13	–	9	–	11	16	8[4]
Mobile penetration rates												
mobile phone subscribers per 100 inhabitant	–	–	–	–	–	–	–	–	–	–	–	–

Source: Eurostat 2006.

[1] EU10 average based on calculation without Malta and the Czech Republic.
[2] EU10 average based on calculation without Malta and Estonia.
[3] EU10 average based on calculation without Malta, the Czech Republic and Slovenia.
[4] EU10 average based on calculation without Malta. Estonia and Slovakia.

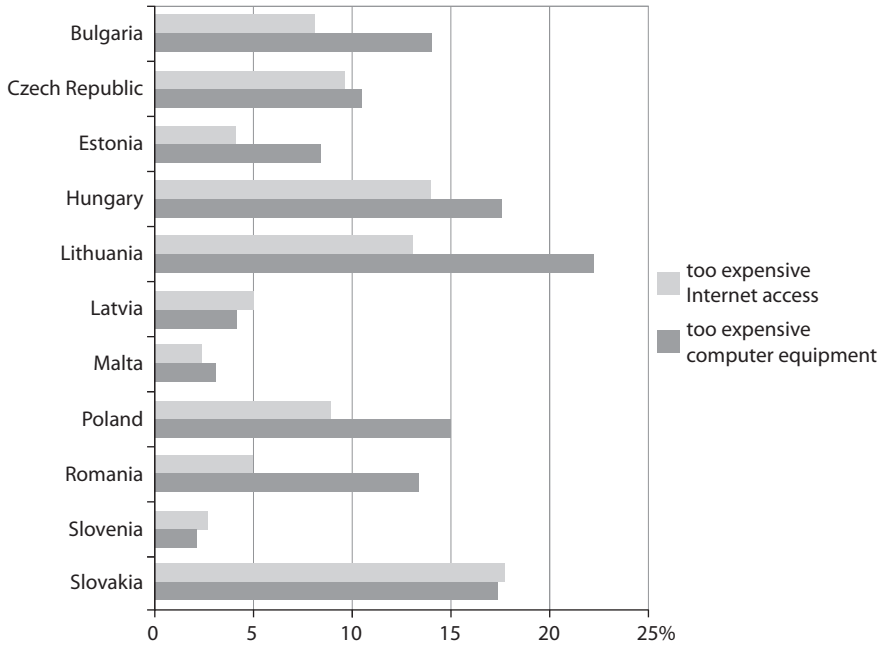

Figure 9. Internet access financial problems
Source: eEurope+ Household Survey, June 2003 and National Survey, MT.

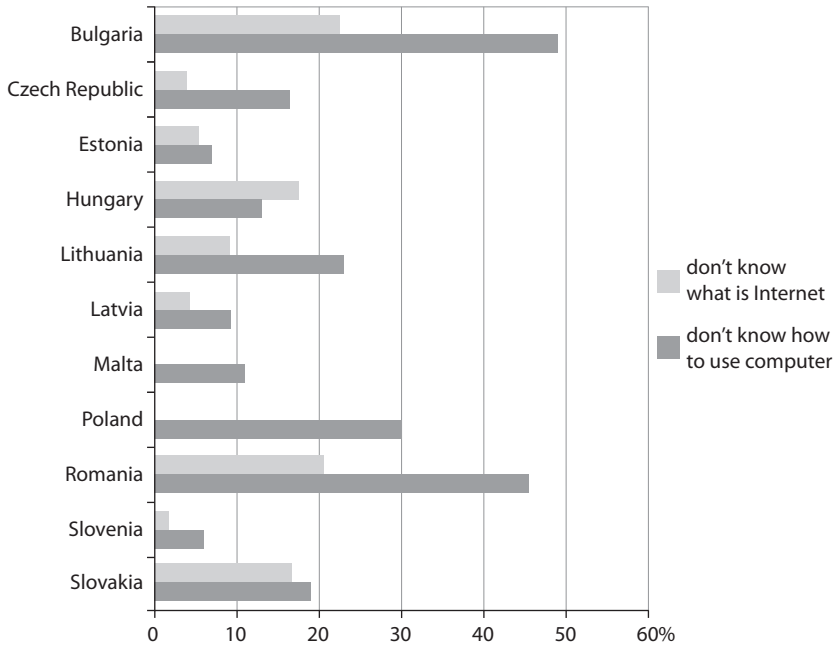

Figure 10. Barriers related to lack of computer/Internet skills in the NMS
Source: eEurope+ Household Survey, June 2003, and National Survey, MT.

Table 8. ICT penetration in schools (2006)

	2006											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Total number of computers per 100 pupils by school type	12.4	9.3	7.3	9.6	5.9	5.9	11.0	6.1	6.7	8.0	12.1	7.10
Percentage of schools with broadband Internet access	31.0	63.0	95.0	77.0	67.0	33.0	95.0	28.0	40.0	85.0	–	61.40
Percentage of teachers who have used computers in class in the last 12 months	75.0	78.3	59.7	42.8	34.9	59.3	74.5	61.4	70.3	67.6	77.2	62.38
ICT Readiness of teachers (% of teachers fully ready to use computers in class)	34.0	33.0	38.0	29.0	15.0	33.0	34.0	50.0	36.0	52.0	–	35.40

Source: *Benchmarking Access and Use of ICT in European Schools*, European Commission Brussels 2006.

Table 9. Adults in education and training[1] (2003, 2004, 2005).

	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
2003	7.9	5.1	6.7	4.5	7.8	3.8	4.2	4.4	3.7	13.3	–	6.14
2004	9.3	5.8	6.4	4.0	8.4	5.9	4.3	5.0	4.3	16.2	10.7	6.96
2005	5.9	5.6	5.9	3.9	7.9	6.0	5.3	4.9	4.6	15.3	11.2	6.53

Source: Eurostat 2005.

[1] Percentage of adults in education and training (population age 25–64).

Table 10. ICT equipment in Polish schools (2006)

	Total PL	Total EU25	Total NMS10	Educational Level (PL)				Type of locality (PL)			Internet Access (PL)	
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Intermediate	Thinly populated	Narrowband	Broadband
Computers per 100 pupils[1]	6.1	11.3	7.1	5.6	5.7	7.3	7.2	5.8	5.8	7.2	6.4	5.8
... of which Internet connected	5.6	9.9	6.4	4.7	5.2	7.0	6.8	5.5	5.3	6.1	5.7	5.6
Percentage of schools having...												
computers for teaching[2]	95.3	98.7	96.7	97.0	98.7	92.4	95.3	97.0	95.1	94.1	100.0	100.0
internet access[2]	92.7	96.2	94.7	92.4	98.7	92.4	95.3	97.0	92.2	89.6	100.0	100.0
broadband Internet access[2]	27.9	66.9	43.4	20.1	29.3	40.2	42.3	40.1	24.7	20.8	0.0	100.0
a website	68.0	63.0	66.7	54.7	82.2	85.6	89.1	89.7	71.2	48.7	69.6	82.2
an e-mail address for the majority of teachers[2]	33.3	65.2	48.1	30.6	37.9	38.0	33.7	35.5	32.8	32.0	37.8	31.7

an e-mail address for the majority of pupils[2]	18.9	23.5	24.4	16.1	24.5	21.8	17.5	24.5	17.0	15.9	21.0	18.9
a LAN[2]	55.9	55.2	60.4	49.6	63.3	66.5	72.3	70.4	53.0	46.8	52.6	78.2
an intranet[2]	25.5	40.8	26.9	24.3	26.3	26.9	36.2	33.6	23.1	20.9	23.5	36.8
an external support or maintenance contract[2]	35.6	47.1	44.3	31.9	41.0	40.5	34.8	39.6	34.0	33.7	39.4	36.2
Percentage of schools using computers for education in...												
computer labs[3]	97.1	80.5	94.6	96.0	99.4	98.8	100.0	98.9	96.9	95.7	98.6	97.9
classrooms[3]	22.7	61.4	29.5	18.7	23.9	30.4	28.8	26.6	19.4	22.1	21.8	23.0
school library[3]	39.2	33.4	36.8	30.6	48.2	53.1	52.9	54.9	36.3	28.7	36.3	49.6
Other locations accessible for pupils[3]	20.6	27.0	20.2	18.3	17.8	29.5	24.4	22.7	21.9	18.0	21.1	20.2

Sources: Learnlnd CTS 2006. Based on the Country Brief: Poland. Use of Computers and the Internet in Schools in Europe 2006, available on: www.ec.europa.eu/information_society

[1] Base: all pupils.
[2] Base: all schools.
[3] Base: schools using computers for educational purposes for pupils (cf. index b).

Table 11. The price of Internet – Total monthly price (2004)

	2004									
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia
20 hours of use ($)	–	21.0	14.0	10.0	58.0	34.0	–	16.0	21.0	25.0
% of monthly GNI per capita ($)	–	4.5	3.9	2.3	20.0	11.2	–	4.1	6.3	3.1

Source: World Bank 2005.

Table 12. Statistical data concerning the ECSCs, the ECDL certificates and the exams, 1 February 2006

Modul	The number of exams that referred to particular skills
1	28 043
2	31 821
3	30 039
4	26 323
5	23 802
6	23 702
7	26 634

Source: http://www.ecdl.com.pl/

Table 13. Statistical data concerning the ECSCs and the ECDL

Region	The number of ECSCs issued	The number of ECDLs issued	The number of exams held
Białystok	436	362	2 336
Bielsko-Biała	561	223	2 253
Gdańsk	3 090	1 384	15 042
Katowice	6 283	2 310	24 823
Kielce	269	133	1 411
Kraków	600	309	2 944
Lublin	4 504	1 994	19 436
Łódź	1 034	549	5 258
Mielec	1 144	614	5 433
Olsztyn	128	1	255
Poznań	3 102	1 549	13 723
Rzeszów	9 159	2 704	51 828
Szczecin	1 949	842	8 690
Toruń	90	0	541
Warszawa	4 354	1 970	19 082
Wrocław	1 776	953	8 445
Office	1 560	1 061	8 864
Total	40 039	16 958	190 364

Source: http://www.ecdl.com.pl/

Table 14. Registered teachers and schools in partnership within the eTwinning program in 2005

Country	Registered schools	Schools in partnership	Teachers
Austria	182	74	192
Belgium	309	70	323
Bulgaria	260	16	285
Cyprus	84	22	88
Czech Republic	747	162	809
Denmark	187	54	191
Estonia	91	21	92
Finland	335	134	351
France	1 382	267	1 402
Germany	980	202	1 018
Greece	661	224	690
Hungary	309	77	322
Iceland	40	12	45
Italy	148	40	148
Latvia	1 720	370	1 768
Lithuania	147	21	148
Luxemburg	488	110	501
Malta	20	10	20
Netherlands	118	68	179
Norway	246	62	244
Poland	215	51	254
Portugal	1 747	418	1 779
Slovakia	378	120	393
Slovenia	413	109	446
Spain	1 880	238	2 000
Sweden	416	87	442
United Kingdom	1 131	226	1 158
Total	14 727	3 310	15 386

Source: eTwinning Statistics Overview, www.etwinning.net/ww/pl/

Table 15. Frequency of computer use in class in Poland (2006)

Percentage of all teachers using computers in class who...	Total PL	Total EU25	Total NMS10	Educational level (PL)				Type of locality (PL)			Years of teaching experience (PL)			
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Intermediate	Thinly populated	<5 y	5–9 y	10–19 y	20+ y
...use computers in 5% and less of all lessons	11.5	18.5	15.0	14.3	12.0	6.9	7.4	7.8	12.4	13.8	9.8	12.4	11.0	12.1
in 6 to 10% of lessons	16.6	22.5	17.7	17.3	17.0	15.2	10.2	14.0	19.2	16.8	11.6	16.9	14.7	19.9
in 11 to 24% of lessons	23.3	22.2	22.1	27.9	23.4	18.0	10.3	18.4	23.0	27.3	22.2	18.4	24.1	24.4
in 25 to 50% of lessons	24.6	20.2	24.0	23.8	28.9	24.6	28.0	26.8	21.9	24.9	25.8	27.9	20.4	27.3
more than 50% of lessons	24.0	16.5	21.3	16.7	18.8	35.4	44.1	33.0	23.6	17.3	30.6	24.5	29.8	16.2

Source: Learnlnd CTS 2006; base: Teachers using computers in class, "don't know" answers excluded, Based on the Country Brief: Poland; Use of Computers and the Internet in Schools in Europe 2006, www. ec.europa.eu/information_society

Table 16. Teachers' access to ICT, competence and motivation to use ICT in class (2006)

Percentage of teachers agreeing or slrongly agreeing	Total PL	Total EU25	Total NMS10	Education level				Subject of teaching					
				Primary	Lower secondary	Upper secondary	Vocational	General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistic, crafts education	Vocational education
Access													
Our school is well equipped with ccmputers[1]	78.4	74.2	76.5	75.1	30.9	84.8	85.3	71.8	78.3	79.6	81.3	75.6	77.8
The Internet connection we have is sufficiently fast[1]	79.6	77.2	78.2	72.6	85.8	90.3	87.0	68.0	81.6	86.4	80.9	78.6	82.2[3]
Better technical maintenance and support is required in our school[1]	60.4	64.8	64.6	63.4	62.6	56.0	50.7	67.2	61.2	60.5	56.4	64.1	58.1[3]
Existing teaching materials on the Internet are poor quality[1]	28.7	29.9	29.3	28.2	26.9	34.2	37.2	28.0	27.5	29.4	27.8	35.9	41.4
It is hard to find adequate learning materials for teaching[1]	23.1	38.7	30.5	22.9	27.3	20.8	23.7	22.2	20.5	18.9	24.3	22.1	41.1

Motivation													
Pupils are more motivated and attentive when computers and the internet are used in class[1]	92.2	86.3	90.1	92.8	89.4	90.0	91.5	93.9	90.1	90.2	92.7	93.2	93.4
Using computers in class does not haye significant learning benefits for pupils[1]	3.6	20.7	9.5	4.0	4.3	4.2	3.9	3.4	3.8	3.2	3.4	5.2	3.6
Competence													
Teachers in our school do not have suffutient compuler skills[1]	24.7	42.0	30.6	24.5	24.7	27.3	25.8	24.7	27.0	18.0	25.7	28.1	25.3[3]
Competence/computer skills (percentage of teachers who feel very confident at...)													
using text processors[2]	62.1	65.0	63.2	55.6	62.8	75.3	77.3	42.2	53.0	51.6	74.9	54.6[3]	52.5[3]
creating electronic presentations[2]	41.4	34.0	41.0	34.1	41.7	55.4	55.2	23.7	25.7	25.8	53.6	39.7[3]	33.1[3]
using e-mail[2]	60.2	65.9	64.8	49.7	62.6	79.4	78.4	36.4	59.5	55.9	68.1	54.8[3]	61.1[3]
downloading and installing software[2]	36.0	35.8	34.6	28.5	35.2	52.2	55.1	23.2	23.1	22.5	49.3	35.1[3]	21.3[3]

Source: Learnlnd CTS 2006. Based on the Country Brief: Poland. Use of Computers and the Internet in Schools in Europe 2006, www.ec.europa.eu

[1] Base: all teachers.
[2] Teachers using computers in class.
[3] Based on at least 10 and less than 50 cases.

Table 17. Source of education material used in class in Poland (2006)

Percentage of all teachers using computers in class who...	Total PL	Total EU25	Total NMS10	Educational level				Type of locality		
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Intermediate	Thinly populated
...use material they have searched the internet for	80.1	82.7	81.8	75.1	83.1	85.5	79.3	81.6	82.5	77.0
...use existing online material from established educational sources	64.7	74.2	61.8	60.3	66.1	73.6	67.1	72.3	65.3	58.3
...use material that is available on the school's computer network or database	42.2	63.1	52.7	41.7	43.1	46.3	43.6	44.2	46.3	37.4
...use electronic offiine material (such as CD ROMS)	84.9	83.0	82.2	86.7	86.3	84.5	83.6	87.8	86.2	81.6
...use other learning material when using computers in class	13.1	8.8	10.8	12.7	15.8	18.7	14.4	19.4	11.7	9.2

Source: Learnlnd CTS 2006; base: Teachers using computers in class based on the Country Brief: Poland; Use of Computers and the Internet in Schools in Europe 2006, available on: www.ec.europa.eu/information_society

Table 18. Barriers to computer use in class in Poland (2006)

Percentage of all teachers not using computers in class	Total PL	Total EU25	Total NMS10	Educational level				Type of locality		
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Intermediate	Thinly populated
Lack of computers	44.8	48.8	49.0	43.4	36.5	53.1	45.8[1]	49.4	42.4	42.9
Lack of adequate cotent/ material	15.6	20.3	16.5	18.3	13.8	12.1	12.9[1]	16.3	16.5	14.5
Lack of content in national language	4.3	8.6	5.7	3.2	4.0	72.0	1.6[1]	3.2	4.2	5.3
Lack of adequate skills of teachers	6.2	22.5	9.8	5.0	8.2	2.8	9.0[1]	6.2	5.3	6.8
No or unclear benefits	3.2	16.2	6.8	3.9	3.1	3.1	8.3[1]	3.0	3.0	3.6
Lack of interest of teachers	2.2	8.9	3.3	1.8	5.4	0.7	0.0[1]	1.6	1.8	3.0
Subject does not lend itself to being taught via computers	23.6	24.4	25.0	20.8	30.9	30.5	34.7[1]	23.7	25.6	22.1
Other	22.8	21.3	20.3	22.8	23.7	21.2	18.8[1]	21.1	19.4	26.5

Source: Learnlnd CTS 2006. Based on the Country Brief: Poland. Use of Computers and the Internet in Schools in Europe 2006, available on: http://ec.europa.eu/information_society

[1] Based on at least 10 and less than 50 cases.

Table 19. Participation in any eLearning and lifelong learning in Poland, EU15 and EU10 (%)

	Poland	EU15	EU10
Participation in any learning activities by age and sex			
total	30.0	43.9	31.5
male	29.4	45.0	31.1
female	30.6	42.8	31.9
Participation in informal learning by age and sex			
total	26.6	–	27.2
male	25.6	–	26.5
female	27.6	–	27.9
Between 25 and 34 years	35.3	–	33.0
Between 35 and 44 years	29.2	–	29.9
Between 45 and 54 years	23.2	–	25.2
Between 55 and 64 years	15.7	–	18.4
Participation in informal learning by education attainment and working status			
total population	26.6	–	27.2
employment	34.5	–	33.0
unemployment	20.6	–	21.7
inactive population	12.1	–	14.6
Participants studying by making use of education broadcasting by education attainment and working status			
total population	14.5	–	14.9
employment	18.0	–	17.5
unemployment	12.0	–	–
inactive population	7.9	–	–
Participants studying in libraries or learning centres by age and sex			
total	10.5	–	8.8
male	8.2	–	6.8
female	12.8	–	10.9
Between 25 and 34 years	16.3	–	13.0
Between 35 and 44 years	11.4	–	–
Between 45 and 54 years	8.0	–	–
Between 55 and 64 years	4.9	–	–
Participants studying in libraries or learning centres by education attainment and working status			
total population	10.5	–	8.8
employment	14.0	–	11.8
unemployment	7.3	–	–
inactive population	4.3	–	–

Source: Eurostat 2006.

Table 20. Major lifelong learning indicators[1] (2005)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Participation in any learning activities by sex												
Total	37.8	28.7	31.4	11.7	46.2	27.8	53.2	30.0	59.5	82.0	43.9	31.5
Male	40.4	30.1	30.0	11.0	42.2	23.5	54.0	29.4	60.5	80.9	45.0	31.1
Female	35.4	27.2	32.6	12.4	49.8	31.6	52.5	30.6	58.6	83.2	42.8	31.9
Participation in any learning activities by age												
Between 25 and 34 years	51.8	33.5	41.1	19.5	56.3	34.2	81.8	40.8	62.4	86.2	51.6	40.0
Between 35 and 44 years	41.3	32.4	35.8	13.0	48.6	31.6	28.5	33.0	61.8	82.8	46.9	36.9
Between 45 and 54 years	32.6	27.9	29.6	8.3	42.2	25.3	73.5	25.8	60.8	80.1	42.8	28.4
Between 55 and 64 years	19.1	19.5	15.8	4.4	35.6	16.3	17.9	16.2	48.9	78.2	31.7	19.5
Participation in any learning activities by education attainment and working status												
Total population	37.8	28.7	31.4	11.7	46.2	27.8	53.2	30.0	59.5	82.0	44.7	31.5
Employment	43.4	33.7	37.9	14.8	52.0	33.0	59.3	39.1	67.1	84.7	50.1	38.6
Unemployment	32.7	17.2	22.6	8.3	37.5	16.3	61.3	23.0	42.3	78.7	43.3	24.4
Inactive population	17.6	14.4	11.5	6.0	31.1	11.3	44.4	12.9	44.4	74.8	29.5	16.1

Table 20. cont.

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Participation in any learning activities by degree of urbanisation												
Total	37.8	28.7	31.4	11.7	46.2	27.8	53.2	30.0	59.5	82.0	44.0	31.5
Densely populated areas (at least 500 inhabitants/km²)	44.1	32.3	–	13.9	–	35.0	–	–	–	–	43.6	–
Intermediate urbanised area (between 100 and 499 inhabitants/km²)	38.3	28.5	–	10.4	47.1	–	–	–	–	–	–	–
Sparsely populated area (less than 100 inhabitants/km²)	27.9	25.9	31.4	10.8	45.5	22.3	–	–	–	–	44.7	–
Participation in formal education by sex												
Total	2.1	1.4	3.7	2.9	4.8	3.0	1.4	4.1	1.0	7.6	4.7	3.3
Male	2.8	1.4	3.3	2.6	3.2	2.1	1.9	3.5	0.8	7.0	4.2	2.9
Female	1.4	1.4	4.0	3.3	6.2	3.8	1.0	4.7	1.1	8.2	5.1	–

Participation in formal education by age												
Between 25 and 34 years	6.1	4.0	11.0	8.0	11.6	8.2	3.6	11.6	2.6	22.1	10.8	9.3
Between 35 and 44 years	1.1	0.7	2.4	2.3	5.2	2.1	0.7	3.0	0.7	5.3	–	–
Between 45 and 54 years	0.3	0.2	0.3	0.6	1.4	0.6	1.0	0.6	0.1	1.4	–	–
Between 55 and 64 years	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.0	0.1	0.1	–	–
Participation in formal education by education attainment and working status												
Total population	2.1	1.4	3.7	2.9	4.8	3.0	1.4	4.1	1.0	7.6	4.7	3.3
Employment	2.2	1.1	3.8	3.2	6.1	3.3	1.5	5.0	0.9	8.3	–	3.8
Unemployment	–	0.9	–	1.7	–	–	–	4.2	–	8.3	–	–
Inactive population	1.5	2.4	3.6	2.6	2.2	2.7	–	2.1	5.4	1.6	6.2	–

Source: Eurostat 2005.

[1] Lifelong learning refers to individuals aged 25–64 of the total population.

Table 21. Major lifelong learning indicators[1] (2005)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Participation in formal education by degree of urbanisation												
Total	2.1	1.4	3.7	2.9	4.8	3.0	1.4	4.1	1.0	7.6	4.7	3.3
Densely-populated area (at least 500 inhabitants/km²)	2.6	2.1	–	4.3	–	4.3	–	–	–	–	5.5	–
Intermediate urbanised area (between 100 and 499 inhabitants/km²)	2.7	1.2	–	3.0	5.2	–	–	–	–	–	–	–
Sparsely populated area (less than 100 inhabitants/km²)	1.0	1.0	3.7	1.9	4.5	2.0	–	–	–	–	–	–
Participation in non-formal education by sex												
Total	20.6	12.9	14.8	4.8	13.4	7.8	9.4	9.8	20.5	23.5	17.4	10.9
Male	20.0	14.0	12.0	4.2	9.2	4.9	11.1	10.0	22.9	21.8	17.4	11.0
Female	21.2	11.8	17.3	5.4	17.2	10.3	7.8	9.6	18.1	25.2	17.4	10.9

Participation in non-formal education by age												
Between 25 and 34 years	27.9	14.9	17.9	7.2	16.1	7.5	13.9	13.3	23.4	31.3	20.5	14.0
Between 35 and 44 years	24.4	16.6	19.0	6.3	15.2	9.6	11.1	12.5	23.3	27.8	20.2	13.7
Between 45 and 54 years	18.1	13.1	13.7	3.7	13.6	9.1	8.2	8.5	22.5	22.7	17.7	10.1
Between 55 and 64 years	7.6	6.3	7.2	1.4	7.9	3.6	–	2.8	7.5	8.4	9.5	–
Participation in non-formal education by education attainment and working status												
Total population	20.6	12.9	14.8	4.8	13.4	7.8	9.4	9.8	20.5	23.5	17.5	10.9
Employment	25.4	16.6	18.5	6.3	17.2	9.9	13.9	14.9	28.5	30.5	22.0	16.2
Unemployment	13.0	6.0	12.9	4.7	8.2	3.6	–	4.4	6.5	12.6	14.0	–
Inactive population	3.9	2.1	–	1.7	3.6	–	3.5	1.0	2.2	5.2	5.4	–
Participation in non-formal education by degree of urbanisation												
Total	20.6	12.9	14.8	4.8	13.4	7.8	9.4	9.8	20.5	23.5	17.1	10.9
Densely populated area (at least 500 inhabitants/km²)	24.5	12.3	–	5.2	–	9.8	–	–	–	–	17.4	–
Intermediate urbanised area (between 100 and 499 inhabitants/km²)	21.7	12.5	–	4.8	16.9	–	–	–	–	–	–	–
Sparsely populated area (less than 100 inhabitants/km²)	14.2	14.2	14.8	4.5	10.8	6.2	–	–	–	–	18.6	–

Table 21. cont.

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Participation in informal learning by sex												
Total	30.2	21.4	25.1	6.0	42.6	25.1	52.0	26.6	57.1	78.1	–	27.2
Male	33.4	21.6	24.0	6.0	38.9	21.4	52.6	25.6	57.1	76.7	–	26.5
Female	27.1	21.2	26.0	6.1	45.9	28.5	51.4	27.6	57.1	79.4	–	27.9
Participation in informal learning by age												
Between 25 and 34 years	40.8	24.0	31.0	7.9	49.9	29.9	80.4	35.3	59.5	78.8	–	33.0
Between 35 and 44 years	31.8	23.7	28.0	6.7	45.0	28.9	26.7	29.2	58.8	78.9	–	29.9
Between 45 and 54 years	26.9	20.9	26.0	5.3	39.7	23.0	72.4	23.2	58.4	77.1	–	25.2
Between 55 and 64 years	16.5	16.0	12.9	3.8	34.2	15.4	17.6	15.7	48.1	77.2	–	18.4

Source: Eurostat 2005.

[1] Life-long learning refers to individuals aged 25–64 of the total population.

Table 22. Major lifelong learning indicators[1] (2005)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Participation in informal learning by education attainment and working status												
Total population	30.2	21.4	25.1	6.0	42.6	25.1	52.0	26.6	57.1	78.1	–	27.2
Employment	34.6	24.6	30.6	7.9	47.9	29.8	57.7	34.5	63.8	80.1	–	33.0
Unemployment	22.6	13.2	17.3	3.0	33.8	14.7	61.3	20.6	41.4	75.1	–	21.7
Inactive population	14.6	12.5	8.3	2.5	29.1	10.1	43.6	12.1	44.0	72.6	–	14.6
Participation in informal learning by degree of urbanisation												
Total	30.2	21.4	25.1	6.0	42.6	25.1	52.0	26.6	57.1	78.1	–	27.2
Densely populated area (at least 500 inhabitants/km²)	36.1	26.2	–	7.0	–	31.9	–	–	–	–	–	–
Intermediate urbanised area (between 100 and 499 inhabitants/km²)	29.6	21.7	–	4.6	42.7	–	–	-	–	–	–	–
Sparsely populated area (less than 100 inhabitants/ km²)	21.0	16.9	25.1	6.1	42.6	20.0	–	–	–	–	–	–

Table 22. cont.

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Participants studying by making use of education broadcasting by sex												
Total	12.6	12.0	5.7	3.4	21.8	7.0	9.4	14.5	29.6	68.4	–	14.9
Male	14.4	11.9	5.3	3.5	20.9	6.4	9.6	13.9	29.7	67.8	–	14.6
Female	10.9	12.2	6.1	3.3	22.6	7.6	9.2	15.0	29.5	69.0	–	15.1
Participants studying by making use of education broadcasting by age												
Between 25 and 34 years	19.8	13.4	8.5	4.8	21.5	9.7	18.4	19.2	31.6	67.4	–	17.9
Between 35 and 44 years	11.8	12.5	7.3	3.6	21.9	7.6	5.3	15.6	31.0	68.3	–	16.0
Between 45 and 54 years	11.1	12.1	4.7	2.8	22.0	6.5	10.0	12.2	28.7	68.1	–	13.5
Between 55 and 64 years	5.0	9.7	–	2.1	21.8	3.3	–	9.6	25.3	70.1	–	–
Participants studying by making use of education broadcasting by education attainment and working status												
Total population	12.6	12.0	5.7	3.4	21.8	7.0	9.4	14.5	29.6	68.4	–	14.9
Employment	14.9	13.6	7.4	4.5	23.2	8.6	11.1	18.0	32.1	69.1	–	17.5
Unemployment	10.3	7.4	–	1.8	19.4	2.9	–	12.0	24.8	68.7	–	–
Inactive population	4.3	7.6	–	1.5	18.2	2.3	7.1	7.9	24.1	66.4	–	–

Participants studying in libraries or learning centres by sex												
Total	5.7	8.1	8.4	0.1	8.6	13.0	14.1	10.5	15.4	14.6	–	8.8
Male	5.4	7.1	5.2	0.1	4.5	9.2	14.0	8.2	13.8	10.7	–	6.8
Female	5.9	9.2	11.2	0.1	12.3	16.5	14.2	12.8	17.0	18.5	–	10.9
Participants studying in libraries or learning centres by age												
Between 25 and 34 years	7.3	9.5	11.2	0.2	12.3	15.2	21.8	16.3	18.6	20.2	–	13.0
Between 35 and 44 years	5.9	9.1	8.3	–	10.2	14.7	8.8	11.4	16.4	15.1	–	–
Between 45 and 54 years	5.7	7.3	7.9	–	6.2	11.9	18.2	8.0	15.0	11.1	–	–
Between 55 and 64 years	3.0	6.2	5.4	–	5.1	8.8	4.7	4.9	9.0	11.3	–	–
Participants studying in libraries or learning centres by education attainment and working status												
Total population	5.7	8.1	8.4	0.1	8.6	13.0	14.1	10.5	15.4	14.6	–	8.8
Employment	6.7	9.2	9.6	0.2	10.7	15.4	17.1	14.0	19.2	15.9	–	11.8
Unemployment	–	5.8	9.7	–	3.8	7.6	–	7.3	7.8	15.7	–	–
Inactive population	2.4	5.2	3.5	–	3.8	5.5	9.8	4.3	7.3	10.5	–	–

Source: Eurostat 2005.

[1] Life-long learning refers to individuals aged 25–64 of the total population.

Table 23. eLearning usage[1] (2005)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
Computer based learning participants by sex												
Total	14.9	12.4	10.3	2.8	14.0	8.9	19.0	10.7	12.2	29.9	–	15.0
Male	18.7	14.2	10.7	3.0	12.2	7.8	20.9	11.0	13.0	31.2	–	15.9
Female	11.3	10.7	10.0	2.6	15.7	9.8	17.1	10.4	11.4	28.7	–	14.2
Computer based learning participants by age												
Between 25 and 34 years	24.5	15.9	15.0	4.2	22.2	13.6	39.5	18.5	16.9	44.4	–	23.9
Between 35 and 44 years	15.4	15.2	12.7	3.2	17.2	9.1	9.6	11.5	13.3	34.0	–	15.7
Between 45 and 54 years	11.7	11.4	8.8	2.1	10.3	7.5	19.7	7.3	11.1	25.9	–	12.9
Between 55 and 64 years	4.3	6.2	3.2	1.3	4.6	3.9	4.6	3.3	4.2	11.0	–	5.2
Computer based learning participants by education attainment and working status												
Total population	14.9	12.4	10.3	2.8	14.0	8.9	19.1	10.7	12.2	29.9	–	15.0
Employment	18.1	15.5	13.0	3.9	18.2	11.2	24.8	15.4	16.4	36.7	–	19.2
Unemployment	12.7	4.9	5.8	0.8	8.4	2.8	19.9	5.4	3.5	30.6	–	10.5
Inactive population	3.4.0	3.8	2.4	0.7	3.1	2.0	11.1	2.6	3.3	10.5	–	4.8

Source: Eurostat 2006.

[1] Learning usage refers to individuals aged 25 to 64 of the total population.

Table 24. General uptake of eLearning[1] (2003)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
General uptake of eLearning[2]												
Online	–	5.5	8.0	3.0	6.5	5.0	–	1.5	3.0	3.0	9.5	3.0
Offline	–	2.5	5.0	2.5	2.0	4.0	–	3.0	4.0	4.0	5.0	2.5
Percentage of individuals having used the Internet in relation to training and educational purposes												
for formalised educational activities	–	–	–	–	–	–	–	–	–	–	10.6	–
for other education courses related specifically to employment opportunities	–	0.4	–	–	–	–	–	–	–	–	10.1	–
for post education courses	–	0.4	–	–	–	–	–	–	–	–	10.2	–
Percentage of enterprises using e-learning applications for training and education of employees	–	–	–	–	–	–	23.0	–	–	–	14.0	–

Source: eUser–Public Online Services and User Orientation, 8/2005, www.euser-eu.org

[1] EU-10 average based on calculations without Cyprus and Malta.
[2] Share of labour force that uses eLearning for work-related training (online/only offline).

Table 25. General uptake of eLearning[1] (2004)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
General uptake of eLearning[2]												
Online	–	–	–	–	–	–	–	–	–	–	–	–
Offline	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of individuals having used the Internet in relation to training and educational purposes												
for formalised educational activities	9.6	1.4	20.6	10.0	8.7	19.6	–	3.5	8.1	9.9	11.5	10.2
for other education courses related specifically to employment opportunities	2.7	0.7	–	6.0	3.8	–	–	0.7	8.6	3.7	10.6	-
for post education courses	5.0	0.5	–	4.5	2.2	–	–	0.7	0.8	3.8	–	–
Percentage of enterprises using e-learning applications for training and education of employees	49.0	–	25.0	10.0	32.0	48.0	–	36.0	27.0	30.0	18.0	-

Source: eUser – Public Online Services and User Orientation, 8/2005, www.euser-eu.org

[1] EU10 average based on calculations without Malta.
[2] Share of labour force that uses eLearning for work-related training (online/only offline).

Table 26. General uptake of eLearning[1] (2005)

	2005											
	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovakia	Slovenia	EU15	EU10
General uptake of eLearning[2]												
Online	–	1.3	–	1.0	–	–	–	1.4	–	0.6	–	–
Offline	–	10.9	–	7.2	–	–	–	9.4	–	8.8	–	–
Percentage of individuals having used the Internet in relation to training and educational purposes												
for formalised educational activities	9.0	1.3	5.9	11.0	8.8	13.9	–	4.6	5.5	16.0	9.1	8.4
for other education courses related specifically to employment opportunities	1.8	0.7	3.1	6.9	4.8	12.5	–	0.4	3.4	4.8	8.0	4.3
for post education courses	4.1	0.6	2.3	6.3	3.1	13.2	–	0.6	0.6	5.2	6.5	4.0
Percentage of enterprises using e-learning applications for training and education of employees	42.0	–	24.0	14.0	29.0	47.0	–	23.0	39.0	40.0	20.0	32.3

Source: eUser – Public Online Services and User Orientation, 8/2005, www.euser-eu.org

[1] EU10 average based on calculations without Malta.
[2] Share of labour force that uses eLearning for work-related training (online/only offline).

Table 27. Economist Intelligence Unit eLearning readiness rankings (2003)

	2003	
	Score of 10	Rank of 60
Sweden	8.42	1
Canada	8.40	2
United States	8.37	3
Finland	8.25	4
United Kingdom	7.93	8
Chile	6.13	28
Czech Republic	6.11	29
Hungary	6.09	30
Mexico	5.96	31
Argentina	5.86	32
Poland	5.73	33
Slovakia	5.51	35

Source: Economist Intelligence Unit, 2004.

ANNEX II

LEGAL TEXTS AND OTHER DOCUMENTS

THE CONSTITUTION OF THE REPUBLIC OF POLAND OF THE 2ND OF APRIL, 1997 (*KONSTYTUCJA RZECZYPOSPOLITEJ POLSKIEJ Z DNIA 2 KWIETNIA 1997*), JOURNAL OF LAWS, NO. 78, ITEM 483

Article 33

1. Men and women shall have equal rights in family, political, social and economic life in the Republic of Poland.
2. Men and women shall have equal rights, in particular regarding education, employment and promotion, and shall have the right to equal compensation for work of similar value, to social security, to hold offices, and to receive public honours and decorations.

Article 35

1. The Republic of Poland shall ensure to Polish citizens belonging to national or ethnic minorities the freedom to maintain and develop their own language, to maintain customs and traditions, and to develop their own culture.
2. National and ethnic minorities shall have the right to establish education and cultural institutions, institutions designed to protect religious identity, as well as to participate in the resolution of matters connected with their cultural identity.

Article 70

1. Everyone shall have the right to education. Education to 18 years of age shall be compulsory. The manner of fulfilment of schooling obligations shall be specified by statute.
2. Education in public schools shall be without payment. Statutes may allow for payments for certain services provided by public institutions of higher education.
3. Parents shall have the right to choose schools other than public for their children. Citizens and institutions shall have the right to establish primary and secondary schools and institutions of higher education and education development institutions. The conditions for establishing and operating non-public schools, the participation of public authorities in their financing, as well as the principles of education supervision of such schools and education development institutions, shall be specified by statute.
4. Public authorities shall ensure universal and equal access to education for citizens. To this end, they shall establish and support systems for individual financial and organisational assistance to pupils and students. The conditions for providing such assistance shall be specified by statute.
5. The autonomy of the institutions of higher education shall be ensured in accordance with principles specified by statute.

Article 73

The freedom of artistic creation and scientific research as well as dissemination of the fruits thereof, the freedom to teach and to enjoy the products of culture, shall be ensured to everyone.

THE ACT OF 27 JULY 2005 LAW ON HIGHER EDUCATION (USTAWA Z DNIA 27 LIPCA 2005 R. PRAWO O SZKOLNICTWIE WYŻSZYM), JOURNAL OF LAWS, NO. 164, ITEM 1365

Article 9

The minister responsible for higher education shall specify by regulation:

1) the names of fields of study, including the names of fields of study for degree programs offered as first-cycle programs or first-cycle and second-cycle programs, or long-cycle programs, while taking into consideration the existing fields of study and demands of the labour market;
2) the degree program requirements for each field and level of study, including education profiles of graduates, framework curriculum

contents, duration of degree programs and practical placements, requirements for each form of study, as well as the procedure for the establishment of interdisciplinary programs and degree programs in macro-fields of study and the requirements to be fulfilled by a higher education institution in order to provide such programs, while taking into account the curricular contents for each field of study covered by a macro-field or by an interdisciplinary program, and taking into consideration the quality of education;

3) the requirements for programs preparing for the teaching profession, including:
   a) the education profile of a graduate;
   b) teacher training and education courses;
   c) training for the teaching of two subjects (types of courses);
   d) training in information technology, including its use in the specialisation areas for which students are trained;
   e) foreign language courses to be provided to an extent that enables the development of foreign language skills at an advanced level;
   f) the duration of programs, and the duration and organisation of practical placements;
   g) curricular contents and skills required – while taking the demand of the labour market into consideration;
4) the requirements to be fulfilled by organisational units in order to provide degree programs in specific fields and at specific levels of study, and in particular the number of academic staff employed on a full-time basis, holding an academic title or an academic degree, and included in the minimum staff resources required – while bearing in mind that one academic staff member may be counted towards the minimum staff resources for degree programs in up to two fields of study, but only in one field of a second-cycle program or in one field of a long-cycle program; and that, when a basic organisational unit of a higher education institution provides both first-cycle and second-cycle programs in a given field of study, the minimum staff resources for the first cycle program may also include academic staff who are counted towards the minimum staff resources of the second-cycle program – as well as the ratio of those staff members to students in a given field of study;
5) the detailed requirements for the establishment and operation of a branch campus of a higher education institution, its basic organisational unit in another location and teaching centre in another location, including the following requirements to be fulfilled for each field of study separately:
   a) a branch campus or a basic organisational unit in another location shall provide the staff resources necessary to establish and offer a degree program in a given field of study and at a specific level of study;

b) a teaching centre in another location shall provide the staff resources necessary to deliver two thirds of the courses as part of a first-cycle program.

Article 13

1. Subject to sections 2 and 3, the primary tasks of a higher education institution shall be:
   1) teaching students to prepare them for employment;
   2) educating students in the spirit of responsibility for the Polish State, consolidation of democratic principles and respect for human rights;
   3) conducting research and development work, and providing research services;
   4) training and advancement of academic staff;
   5) disseminating, and contributing to achievements of science, national culture and technology, among other things by collecting and making library and information resources available;
   6) providing training to enable the acquisition and development of knowledge;
   7) creating conditions for the physical development of students;
   8) conducting activities benefiting local and regional communities.
2. A non-university higher education institution providing only first-cycle programs shall not be obliged to perform the tasks referred to in section 1, subsections 3 and 4.
3. A medical higher education institution or a basic organisational unit of a higher education institution working in the area of medical or veterinary sciences may also be involved, as part of its tasks, in the provision of medical or veterinary care services, with the scope and forms of such services defined in the legislation on health care institutions and the legislation on veterinary care institutions for animals.

Article 14

A higher education institution may have student dormitories and student canteens.

Article 15

1. Pursuant to the rules laid down in this Act, public authorities shall provide public higher education institutions with funding necessary for the performance of their tasks, and shall provide support to non-public higher education institutions in so far as and in the forms specified in this Act.
2. Funding necessary for the General Council for Higher Education, the State Accreditation Committee and the disciplinary committee at the General Council for Higher Education to conduct their activities

shall be provided as part of the State budget, which is administered by the minister responsible for higher education.

3. The minister responsible for higher education shall specify by regulation:
   1) the arrangements for administrative and financial services to be provided to the General Council for Higher Education and the disciplinary committee at the General Council for Higher Education, while aiming to ensure efficient administrative support for the General Council for Higher Education and the disciplinary committee at the Council;
   2) the remuneration for the members of the General Council for Higher Education, the State Accreditation Committee, the disciplinary committee at the General Council for Higher Education and the reviewers appointed by them, while bearing in mind that the remuneration of the members of the General Council for Higher Education, the State Accreditation Committee and the disciplinary committee at the General Council for Higher Education will be determined in relation to the minimum rate of the basic remuneration of a *profesor zwyczajny*, as fixed on the basis of Article 151, section 1, and at the level corresponding to the tasks performed;
   3) the conditions for the reimbursement of travelling expenses to the members of the General Council for Higher Education, the State Accreditation Committee, the disciplinary committee at the General Council for Higher Education and reviewers, while bearing in mind that travelling expenses will be reimbursed on the basis of generally applicable regulations concerning the amount of, and conditions for determining, allowances payable to an employee of a State-budget unit administered by national or local authorities for international and in-country business travels.

Article 88

1. A higher education institution shall have a library and information system based on the library. Organisational and operational arrangements of the library and information system in a higher education institution, including the rules on access thereto for persons other than staff, doctoral students or students of the institution, shall be laid down in the statutes.
2. The director of the library shall be employed by the rector after consultation with the senate of the higher education institution concerned. The director of the library in a university-type higher education institution shall be a person entitled to hold the positions listed in Article 113 or holding an academic degree.
3. A higher education institution shall have a library board as a consultative body for the rector. The composition and powers of the library

board and the procedure for its appointment shall be defined in the statutes of the institution.

4. 4. In operating the library and information system, a higher education institution may process the type of personal data of its users specified in the statutes.
5. The set of personal data referred to in section 4 shall be exempt from the requirement for the registration of personal data sets referred to in Article 40 of the Act of 29 August 1997 on the Protection of Personal Data (*Dziennik Ustaw* 2002, No. 101, item 926, and No. 153, item 1271, and 2004, No. 25, item 219, and No. 33, item 285).
6. A higher education institution shall have archives. The archive services shall be regulated by the provisions of the Act of 14 July 1983 on National Archive Resources and Archives (*Dziennik Ustaw* 2002, No. 171, item 1396, as amended by subsequent legislation).

Article 117

The minister responsible for higher education shall specify by regulation:

1) the requirements to be fulfilled by candidates for the positions of qualified librarians and qualified scientific documentation and information staff, including in particular the requirements concerning their education attainment, period of service and research achievements, in order to be admitted to the qualifying process and the conditions for exemption there from;
2) the form of and procedural arrangements for, the qualifying process providing the basis for the award of qualifications of qualified librarians and qualified scientific documentation and information staff, including the procedure for the appointment and operational rules of an examination board;
3) the requirements for the promotion of qualified librarians and qualified scientific documentation and information staff, including the requirements qualifying for professional promotion, a list of professional specialisation areas and their thematic scope;
4) a specimen certificate attesting to the professional qualifications acquired, taking into account the need to include all details confirming the professional qualifications acquired; – while particularly taking into account the efficient operation of the library and information system of a higher education institution.

Article 164

1. Lectures in a higher education institution shall be open to the public unless the statutes provide otherwise.
2. Courses in a higher education institution and examinations assessing knowledge or skills, as well as final examinations, may be conducted in a foreign language in so far as provided for, and pursuant to the requirements laid down, in the study regulations. Knowledge

or skills examinations held for admission to degree programs may also be conducted, and final theses may also be prepared, in a foreign language. A higher education institution enrolling non-nationals shall organise Polish language courses for them.

3. Courses taught as part of degree programs may also be delivered using distance education methods and techniques.
4. The minister responsible for higher education shall lay down, by regulation, the requirements to be fulfilled in order to deliver courses referred to in section 3, while aiming to ensure that higher education institutions provide adequate access for students to courses delivered using distance education methods and techniques, and that such courses account for a suitable proportion of the total course load for, as appropriate, full-time programs and part-time programs.

REGULATION OF MINISTER OF SCIENCE AND HIGHER EDUCATION FROM 25 SEPTEMBER 2007 ON THE REQUIREMENTS TO BE FULFILLED IN ORDER TO DELIVER COURSES USING DISTANCE EDUCATION METHODS AND TECHNIQUES (JOURNAL OF LAWS 2007, NO. 188, ITEM 1347, AS AMENDED BY SUBSEQUENT LEGISLATION)

In accordance with art. 164, section 4 of the Act on Higher Education (*Ustawa z dnia 27 lipca 2005 r. Prawo o szkolnictwie wyższym*), Journal of Laws, No. 164, item 1365, as amended by subsequent legislation orders as follows:

§ 1. Courses may be delivered using distance education methods and techniques in all fields of studies, bearing in mind a given field and a given level of study, provided as full-time programs and part-time programs.

§ 2. A higher education institution delivering courses, referred to in section 1, must fulfil jointly all of the following conditions:

1) have academic staff prepared for delivering courses using distance education methods and techniques;
2) ensure access to information technology infrastructure and programming, which enable synchronic and a-synchronic interaction between students and academic staff;
3) ensure the course materials in electronic form;
4) ensure each student has the possibility of personal consultation with the teacher delivering the course in the seat of the higher education institution;
5) ensure ongoing control of progress in learning, verify the knowledge and skills of students by taking final examinations and course works

from a particular course in the seat of the higher education institution;
6) ensure the ongoing control of the activity of teachers that are delivering the courses.

§ 3. A higher education institution is obliged to organise a series of training courses for students preparing them for the participation in courses using distance education methods and techniques

§ 4. Verification of the knowledge and skills of students shall be conducted in a way that ensures the compliance with the program requirements for each field and degree of study.

§ 5. The number of teaching hours for full-time programs and part-time programs using distance education methods and techniques may not exceed:
1) 80% – in case of organisational units of higher education institutions authorised to confer the academic degree of *doktor habilitowany*,
2) 60% – in case of organisational units of higher education institutions authorised to confer the academic degree of *doctor*,
3) 40% – in case of other organisational units of higher education institutions

– of the total number of teaching hours defined in degree program requirements for a given field and level of study except for practical and laboratory courses.

§ 6. This Act shall enter into force 14 days after its announcement.

ANNEX III

EXTRACTS FROM ACTION PLANS AND POLICIES

OPERATIONAL PROGRAM "EDUCATION AND COMPETENCE", *NATIONAL DEVELOPMENT PLAN 2007–2013*, DRAFT VERSION OF 12TH SEPTEMBER 2005

2.1.2.4. Lifelong learning

Technological progress requires the ability to adapt to changes quickly. A slow reaction of professionally active people to technological changes and a too low level of their qualifications resulted in an increase in structural unemployment.

Lifelong learning has therefore become an indispensable means of updating qualifications; its expansion is also a way of counteracting social exclusion (improving the situation of the individual on the labour market, lower risk of losing a job, income growth, etc.). Poles' participation in lifelong learning is not satisfactory – after leaving school we rarely try to supplement knowledge. In 2003 in Poland the rate of participation in lifelong learning was 5% in the age group of 25–64-year-olds. The average of the EU15 was 8.5% – the British went into learning 5 times more often than us, whereas the population of Scandinavia or Holland – 4 times more often. In Poland people with lower qualifications participated in lifelong learning much less often (Rate definition: "Participation of adults of the age group 25–64 in education in the extra-curricular system"; *source: LFS, 2003).*

A relatively insignificant role in developing employee qualifications in Poland is played by companies. In 2002 training for employees was conducted by only 41.4% of corporations, whereas in the United Kingdom, Holland or the Scandinavian countries the percentage has exceeded 80% *(source: Labour Market, 2003, MGPiPS – Ministry of Economy, Labour and Social Policy).*

It seems that such small participation of Poles in lifelong learning is mainly caused by a lack of awareness of the necessity of supplementing one's qualifications, a lack of financial means, a lack of time and insufficient providing of students at school with the skills indispensable for moving in a fast-changing world. A relatively low degree of computerisation of the country can also be a barrier in the expansion of lifelong learning – including limited access to the Internet as well as a lack of universal information on the possibilities of learning *(source: Lifelong learning in Poland, 2003, PFSL – Polish Forum of the Lisbon Strategy).*

2.5.2.1. Education actions in the Sector Operational Program of Human Resources Development (SPO RZL) 2004–2006

The main objective of the Sector Operational Program of Human Resources Development is building an open, knowledge-based society by providing conditions for the human resources development through educating, training and work.

Education actions have been planned as part of Priority 2 entitled *Development of a knowledge-based society*, and they are as follows: Action 2.1 entitled: *Increasing access to education – promoting lifelong education* and Action 2.2 entitled *Improving the quality of education in relation to the needs of the labour market*. The institution in charge of implementing the above Actions is the Ministry of National Education.

2.5.2.1.1. Action 2.1. Increasing access to education – promoting lifelong education

The purpose of Action 2.1 is promoting education throughout one's whole life by increasing access to education at all levels of education – from pre-school education to lifelong learning of adults, taking especially into account the needs of people living in rural areas.

The following types of projects have been planned as part of Action 2.1:

- alternative forms of pre-school education (pilot implementation of the project in towns where access of children to pre-school education is limited. The aim of the project is preparing children for the start of their school careers) – school subsidies for development projects (within projects of such type schools gain skills of localising problems and programming actions aiming at improving the situation. Specific programs of schools concern developing basic skills of the students,

helping students that have difficulties with learning and ensuring education compliant with the needs of the local labour market),
- e-learning centres in the countryside (the purpose of such centres is to provide people living in rural areas with the possibility of lifelong learning *online*),
- examining the level of preparation of 6-year-olds for school education,
- purchase of modern specialist equipment making it easier to teach students with special education needs,
- Internet centres of multi-media information in schools and pedagogical libraries – providing IT hardware and software,
- education portals on the Internet – updating its resources, administration and increasing the contents of the portal by elements addressed to students and teachers of post-junior schools,
- developing programs, didactic materials and a methodology for e-learning (post-junior level),
- creating teaching programs for e-learning at chosen courses and majors of degree
- levels,
- conducting surveys on the effectiveness of eLearning.

278 million Euros in total has been planned for Action 2.1, out of which 208.5 million comes from ESF means and 69.5 – from the state budget means.

2.5.2.1.2. Action 2.2. Improving the quality of education in relation to the needs of the labour market

Action 2.2 aims at raising the quality of education in order to increase the ability of students for further employment through spreading the use of information and communication technologies in the process of educating, further training of teachers, accrediting education institutions, as well as developing the system of gaining and analysing education statistical data.

The following types of projects have been planned as part of Action 2.2:
- equipping primary schools, junior schools, post-junior and post-secondary schools (including special schools) as well as teacher training centres, Lifelong Learning Centres (CKUs) and Practical Training Centres (CKPs) with computer equipment,
- equipping psychological and pedagogical advisory centres with specialist computer equipment and programming,
- creating a data base of accredited institutions,
- equipping Lifelong Learning Centres, Practical Training Centres and selected vocational schools with specialist locations for conducting external vocational examinations,

- supporting the system of external examinations:
  - preparing teachers to conduct external examinations,
  - publishing information materials for students – information about external examinations,
  - surveys on external examination results,
- career advise for students:
  - creating and distributing methodical and didactic materials for professional career planning for students,
- modernisation of the equipment of the Central and District Examination Boards with computer devices and specialist programming for conducting external examinations,
- conducting surveys on the level of basic skills among the pupils of the 3rd grade of primary school,
- postgraduate courses for graduates beginning work as teachers in the area of:
  - information and communication technologies,
  - foreign languages and teaching two subjects (this module of studies is addressed to primary and junior school teachers),
- further training courses for teachers in the field of information and communication technologies, foreign languages, special pedagogy and methodology of general and vocational subjects,
- preparing staff to conduct e-learning,
- preparing teachers to fulfil the role of professional advisors as part of postgraduate courses,
- training the administrative staff of the education system in the area of accreditation procedure,
- developing new program foundations, innovative teaching programs (including module ones), as well as education packs for vocational training,
- creating a guide of accreditation procedures of facilities providing lifelong learning in extra-curricular forms,
- monitoring the work of accredited institutions,
- developing a system of collecting and analysing statistical data on education.

A total of 450.5 million Euros has been planned for Action 2.2, out of which 337.9 million comes from ESF means and 112.6 – from the state budget means.

3.2. Specific objectives

The main objective constitutes a cohesive whole embracing all specific objectives, each of which contributes significantly to executing the tasks set for the years 2007–2013. In order to meet the demands of the social and economic transformations, the education system should acquire the

capability of reacting fast to the needs of a knowledge-based society and strengthen actions favourable to greater social and professional integration. The contents of all the actions discussed will be the concept of lifelong learning, and its significance is underlined by one of key recommendations of the Report of the High Level Group on the Lisbon Strategy (Kok's Report).

The specific objectives of the Operational Program *Education and Competence* are as follows:

- Counteracting social exclusion through education
- Improvement of educating for a knowledge-based economy
- Ensuring high quality of the education system

3.2.2. Educating for a knowledge-based society

The European Employment Policy plays a major role in implementing the Lisbon Strategy in the area of employment. According to the decisions taken by the European Council in Brussels in March 2003, guidelines in the area of employment are prepared with a 3-year perspective and keeping priority objectives of the strategy, which are as follows: full employment, improvement of the quality and effectiveness of work, as well as social integration and cohesion.

Integrated guidelines for growth and employment (2005–2008) clearly indicate the need to invest in human capital. At the same time, the document refers to the European Pact for the Youth adopted by government leaders during the summit of the European Council in March 2005, aiming at improving the level of education, training and increasing social integration and mobility of young Europeans.

In order to ensure the employment capability of Polish graduates on the labour market, key skills of pupils and students should be developed. Therefore it is necessary to strengthen various forms of general and vocational education at all levels of education, as well as to adjust them to changes on the labour market. In compliance with the education sector development strategy, pupils and students should, in the course of their whole education cycle, gain key competences that are composed of knowledge and skills (for example foreign languages, ICT), including practical skills and basics allowing employees to move on the Polish and international labour market freely and consciously.

At the same time it is necessary to introduce solutions supporting the development of pupils and students who are exceptionally gifted. Such actions will contribute to using their intellectual potential, and hence to their active and creative participation in the social and economic life.

Because of the needs of a knowledge-based economy, it is especially important to create conditions in which the number of students interested in sciences will increase and, consequently, there will be more

students following this education path. On the other hand, we should create conditions for the development of university centres and higher education facilities that will become places of conducting research and preparing innovative solutions – later used in the economy. These universities should, with proper support, become attractive and competitive centres, not only for Polish students and teachers, but also for students and lecturers from abroad. The Lisbon Strategy clearly indicates the need to encourage employees to stay on the labour market longer. Therefore we should promote actions that will make it easier for them to adjust to changes on the labour market. In order to facilitate a change of qualifications or raising the level of education of adults, we should strive to strengthen the system of lifelong learning, i.e. enrich the offer of lifelong learning and develop its various forms, including e-learning. Special programs for people with lower qualifications and for the elderly will contribute to raising the level of their vocational and social competences.

Such solutions can make it easier for participants of these programs to keep functioning in social life. At the same time we should strive to enrich the offer for the highly qualified in order to provide them with the possibility of gaining new competence and updating the knowledge they already possess. An effective and well-operating lifelong learning system will contribute to increasing the feeling of security of individuals on the labour market, equipping them with the skills necessary to deal with difficult social and economic situations requiring a creative approach, and, in the case of young people, making the transformation from the education system onto the labour market easier.

Moreover, higher education and higher level of qualification of parents translates into education aspirations and achievements of children. Hence it is crucial to create the appropriate conditions and to convince the society about the significance of learning and constant increasing of one's qualifications and skills. In the light of the low participation of adults in lifelong learning it is one of the most important tasks for the years to come.

3.3. Strategy of achieving the objectives

The above objectives will be implemented within three inseparable areas, which are: increasing access to education, supporting the openness of the education system and improving the quality of the education system.

Increased access to education shall be achieved through:

- removing obstacles related to the organisation of school and facility networks – through organising efficient transport for pupils and using modern communication means (e-learning). It concerns both pupils from rural areas as well as the disabled;

- promoting the inclusion of the disabled into the generally accessible education stream, in a way conducive to their development – breaking social and psychological barriers and developing lifelong learning adapted to the needs of the disabled;
- putting aside architectural barriers that make it more difficult to have access to education for the disabled;
- spreading pre-school education, which is a good fundament for further education;
- actions to adjust education opportunities, among others through: early diagnosis, education programs, preventive didactic and enhancement classes, specialist classes;
- directed at children and youth threatened with premature end of education. Such actions must be an integral part of education at all levels of school education. They are especially important in the early stage of education, when they should compensate for the differences related to the social environment of pupils and in post-junior schools (common threat of quality fall, or defeat and resignation from further education);
- providing children and youth with access to universal and free-of-charge education and career advisory service, – financial aid: providing equal opportunities in commencing studies in higher education facilities irrespective of the material status (wealth), place of residence or disability (physical or sensory);
- properly developed network and system of financial support facilitating lifelong learning of adults;
- National Scholarship Program.

Increasing the openness of the education system shall be implemented through:

- schools undertaking tasks going beyond the basic teaching canon – care and education activity, organising extra-curricular classes;
- incorporating parents into the school life as people supporting the implementation of the education tasks as participants of lifelong learning;
- involving schools in implementing education, social and employment policy, development of communes, counties and voyvodeships (adjustment of the program offer and education of adults);
- cooperation with employers on defining standards of vocational qualifications, creating teaching programs, organising training for pupils and students of higher education facilities, as well as people participating in the education of adults;
- making international exchange easier and preparing future employees for career mobility.

STRATEGY FOR THE DEVELOPMENT OF CONTINUED EDUCATION UNTIL THE YEAR 2010

An additional indicator showing our education delays is the low level of utilisation of ICT in the school system. In Poland for each computer there are 44 students of primary schools and 22.6 of secondary schools. For the EU countries there are 13.2 and 8.6 respectively. In Poland for every computer with Internet access there are 79 students of primary schools and 26.1 of secondary schools. For the EU countries there are 32 and 14.9 students respectively (data for Poland for 2002, for the EU for 2001).

PRIORITY 2 – Raising the quality of continuous education

An important element of the ongoing transformation in Poland is to ensure the quality of manufactured goods and performed services, which is a condition for coping with the competition in the European and global dimension.

Education is also subject to these rules, where the main client is the student, listener who expects to receive high quality services. The provider of education services should satisfy his expectations and needs.

In this context the following are significant:

- improving the competence of teaching staff, also for implementing the concept of lifelong learning;
- regular updating of the content matter of education and adjustment to the socio-economic needs and individual expectations;
- dissemination of information technology and technological culture, foreign language instruction, modelling of basic abilities, entrepreneurial attitudes and principles of coexistence in society, also among adults;
- introduction of innovative teaching and learning methods, and in this with the use of modern tele-information technology;
- dissemination of didactic means that raise the effectiveness of teaching and stimulate the development of interests of students;
- development of systems of examination, confirmation and recognition of qualifications acquired in school and non-school forms and in an non-formal way, with the inclusion of self-study and experience gained in the process of work;
- establishment of professional qualification standards as one of the elements of ensuring quality in continuous education;
- introduction of education standards (curriculum, the material base, staff) resulting from professional qualification standards;
- creation of a system of accreditation of institutions conducting continuous education in non-school forms, where agreeing to undergo accreditation proceedings is on a voluntary basis;

- strengthening the effectiveness of pedagogical supervision of education institutions organising continuous education;
- scientific research to improve the quality of continuous education.

PRIORITY 3 – Cooperation and partnership

It will not be possible to resolve problems of continuous education without cooperation and partnership, and by the same coordination of activities towards implementing the concept of lifelong learning. Continuous education is a national PRIORITY, thus appearing problems are common problems and benefits gained constitute a common value. For this reason, all entities, i.e. central and local government administration, scientific and education institutions and social partners, should be involved in the creation of solutions and the implementation of instruments, irrespective of the range of their influence (country, region, local community, institution). This is at the same time an opportunity to maintain social ties through education, thereby strengthening democracy. It is particularly important to involve employers in continuous education, who more and more often see that the efficiency and competitiveness of their firms are conditioned on the knowledge and skills of their employees.

In this context the following are significant:

- increasing the involvement of the State, local government organs, organisations of employers and other social partners in pursuing a common policy in programming, organising and financing continuous education;
- increasing the participation of local authorities in creating transformations in the labour market and adjustment of education undertakings to the local needs;
- involvement of scientific and education circles in the process of continuous education, with particular emphasis on distance learning and cooperation with relevant circles and institutions in other countries (international agreements) and in European Union countries.

PRIORITY 5 – The creation of information resources on continuous education and the development of advisory services

The key role in choosing a profession, facilitating access to education as well as motivating potential candidates to become involved in continuous education is played by: information, counselling and guidance.

Planning the education path and professional career – in accordance with the stages of development of an individual – should be supported by schools and education institutions and centres of vocational information and guidance, all providing services consisting of: identifying

the individual predisposition, pointing out the possible education paths, information on professions and qualification requirements, in this the possibilities of retraining, information on the situation and forecasts of changes in the labour market and counselling for enterprises and institutions seeking an appropriate education offer.

Cooperation between institutions dealing with counselling and guidance (schools, psychological-pedagogical guidance centres, employment offices, labour agencies, labour clubs and exchanges, career and labour agency offices and others) should facilitate the access to reliable information on the possibilities of planning a career with the use of various forms of continuous education.

In this context the following are significant:

- guaranteeing universal and constantly available services consisting of educational-vocational guidance addressed to a wide range of people at every stage of life and professional career, directed at the needs and requirements of the clients, while increasing their motivation, supplying them with the appropriate information, including also forecasts concerning the labour market and the demand for work, and by the same making it easier to make decisions;
- creation of generally accessible banks of information on continuous education (network of institutions, the scope of activity conducted by them, information on employment opportunities) with the use of research of public statistics;
- strengthening associations between systems of vocational guidance and counselling conducted within the school system and within employment services;
- development of vocational guidance and counselling in schools, continuous education institutions and in employment services;
- creation of conditions for cooperation of private and public institutions in the field of vocational counselling and exchange of information and materials within created national and European partnership networks;
- development and dissemination of forecasts concerning the labour market and demand for work.

PRIORITY 6 – Recognising the role and significance of continuous education

Modelling attitudes encouraging lifelong learning requires regular activities, beginning with early-school education. The school should make students aware of the fact that knowledge and skills acquired during formal education (within the school system) are only the basis for permanent learning. Already now school is not the only place for acquiring knowledge and is increasingly becoming an institution of *teaching how*

to learn. This trend will continue to develop, hence it becomes a strategic goal to make people aware of the role and significance of continuous education – both in the individual and social dimension. The development of a culture of education, based on ethics and general culture, will raise the value and motivation for study, encourage overall character development and the formation of active civic attitudes and social cohesion.

In this context the following are significant:

- promotion of the value of learning at all education stages and forms;
- taking up information-promotion measures to present the personal and collective benefits of continuous education, in this related to greater opportunities in the local, regional, national and European labour market;
- promotion and dissemination of "good practice" examples established in Poland and in Europe;
- involvement of the media in popularising the concept of lifelong learning;
- promotion of the role of counselling in the selection of the right education path and vocational development;
- involvement of local authorities, schools, higher-education institutions, employers, employment services, NGOs and other social partners in the promotion of continuous education programs;
- monitoring implementation of the strategy for the development of continuous education.

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