



The Development of eServices in an Enlarged EU: eLearning in Malta

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PREFACE

Policy context

At the European Council held in Lisbon in March 2000, EU-15 Heads of Government set a goal for Europe to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion. The renewed Lisbon goals of 2005 emphasize working for growth and jobs, and include plans to facilitate innovation through the uptake of ICT and higher investment in human capital.¹

Information and Communication Technologies, and related policies, play a key role in achieving the goals of the Lisbon strategy. In 2005, the new strategic framework for Information Society policy - i2010² - identified three policy priorities: the completion of a single European information space; strengthening innovation and investment in ICT research; and achieving an inclusive European Information Society.

Education and training systems play an important role in reaching these goals. As ICT is a driver of inclusion, better public services and quality of life, all citizens need to be equipped with the skills to benefit from and participate in the Information Society. Enabling lifelong learning³ for citizens with the facilities that ICT can offer is an important way of fostering their competitiveness and employability, social inclusion, active citizenship and personal development. Policy actions such as the Education and Training 2010 Work Programme⁴ and the Lifelong Learning Programme⁵ have set objectives for education and support the development of learning in the knowledge society. One of the focus areas of the Lifelong Learning Programme is developing innovative ICT-based content, services, pedagogies and practice in order to promote better education and training throughout a citizen's life.

Research context

IPTS⁶ has been researching IS developments in acceding countries⁷ since 2002.⁸ The outcomes of this prospective research, which aimed to identify the factors influencing Information Society developments in these countries and the impacts these developments have on society and the economy, point to the need for better understanding the specific contexts in each member state for the take-up of e-applications, in particular eGovernment, eHealth, and eLearning. These key application areas have an impact not only on the relevant economic and public service areas but also on the development of the knowledge society as a whole.

Taking the above into account, IPTS launched a project to support eGovernment, eHealth and eLearning policy developments managed by DG INFSO and DG EAC. The research, which was carried out by a consortium led by ICEG EC in 2005, focused on the three application areas in the ten New Member States⁹ that joined the European Union in 2004, in order to build up a picture of their current status and developments in the field, the most important opportunities and challenges they face, the lessons other member states may learn from them, and the related policy options. National experts from each country gathered the relevant qualitative and quantitative data for analysis, in order

¹ http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm

² "i2010 – A European Information Society for growth and employment" COM(2005) 229

³ Lifelong learning means all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective.

⁴ http://ec.europa.eu/education/policies/2010/et_2010_en.html

⁵ http://ec.europa.eu/education/programmes/lfp/index_en.html

⁶ Institute for Prospective Technological Studies, one of the seven research institutes that make up the Joint Research Centre of the European Commission

⁷ Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, and Turkey

⁸ For a list of complete projects and related reports see <http://fiste.jrc.es/enlargement.htm>

⁹ Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia

to develop a meaningful assessment of each country's current state, and trajectory, and to find out the main factors. This allowed them to derive the relevant conclusions in terms of policy and research.

The IPTS team designed the framework structure for the research, the research questions and methodology. This team and the consortium coordinator jointly guided the national experts in their work through workshops, extended reviews and editing of the various interim reports. Data sources such as international and national survey data, literature, policy documents, and expert interviews were used to capture the most recent situation of the country.

In addition to national monographs describing eGovernment, eHealth and eLearning developments in each country, the project has delivered a synthesis report, based on the country reports, which offers an integrated view of the developments of each application domain in the New Member States. Finally, a prospective report looking across and beyond the development of three chosen domains was developed to summarize policy challenges and options for the development of the Information Society towards the goals of Lisbon and i2010.

eLearning in Malta

This report was produced by Projects in Motion, Ltd., the consortium member from Malta, and it presents the results of the research on eLearning in Malta.

First, the report describes Malta's educational system and the role played by eLearning in it. Then, the major technical, economic, political, ethical and socio-cultural factors of eLearning developments, and the major drivers and barriers for them in Estonia, are assessed. These provide the basis for the identification and discussion of policy options to address the major challenges and to suggest R&D issues for facing the needs of the country. The report reflects the views of the authors and does not necessarily reflect the opinion of the European Commission. Its content has been peer reviewed by national experts, ICEG EC, and IPTS.

In this study, eLearning is defined as encompassing both learning through the use of ICT and learning the necessary competences to make use of ICT in the knowledge society. Hence, the study considers the use of ICT in formal education¹⁰ (schools and higher education), the use of ICT in training and learning at the workplace (professional education), the use of ICT in non-formal¹¹ education (including re-skilling and training for jobseekers) and the use of ICT in everyday life (digital literacy/digital competences and informal learning¹²).

All reports and the related Annexes can be found on the IPTS website at: <http://ipts.jrc.ec.europa.eu/>

¹⁰ **Formal Education** is typically provided by an education or training institution. Formal learning is structured (in terms of learning objectives, learning time or learning support) and leads to certification. Formal learning is intentional from the learner's perspective.

¹¹ **Non-Formal Education** is provided by any organised, structured and sustained educational activities outside formal education. Non-formal education may take place both within and outside educational institutions and cater to persons of all ages. Non-formal learning is intentional from the learner's perspective, but typically does not lead to certification.

¹² **Informal Learning** is learning that results from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional, but in most cases it is non-intentional (or "incidental"/random).

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LIST OF ABBREVIATIONS

ADSL	Asymmetric Digital Subscriber Line
AVC	Avicenna Virtual Campus
B2A	Business to Administration
B2B	Business to Business
B2C	Business to Consumer
CAGR	Compound Annual Growth Rate
CEDEFOP	Centre Européen pour le Développement de la Formation Professionnelle; European Centre for the Development of Vocational Training
CERME	Congress of the European Society for Research in Mathematics Education
CFL	Centre for Flexible Learning
CIP	Competitiveness and Innovation Framework Programme
CKC	Community Knowledge Centres
CMS	Content Management System
COL	Commonwealth of Learning
CCs	Candidate Countries
DFSAE	Department for Further Studies and Adult Education
Dtie	Department of Technology in Education
DTMP	Differentiated teaching module – primary: preparing trainee teachers to respond to pupil diversity
EDEN	European Distance Learning and Elearning Network
EEA	European Economic Area
e-ID	Electronic Identification Card
ERDF	European Regional Development Fund
ESF	European Social Fund
ETC	Employment Training Corporation
eTEN	Trans-European Telecommunications Networks
EU	European Union
EU-10	The new member states joining the European Union on 1, May, 2004, except for Cyprus and Malta
EU-15	The member states of the European Union before 1 May, 2004
EU-25	The member states of the European Union before 1 January, 2007
EU-8	The new member states joining the European Union on 1, May, 2004, except for Cyprus and Malta
EU-RA	European Research Associates
EUROCALL	European Association for Computer-Assisted Language Learning
EUMEDIS	Euro-Mediterranean Information Society
FES	Foundation for Educational Services
FTZ	Fondazzjoni Temi Zammit
FDI	Foreign Direct Investment
FP	Framework Programme (for Research and Development)
GDP	Gross Domestic Product
GVA	Gross Value Added
IDA	Interchange of Data between Administrations
IP	Intellectual Property
IPR	Intellectual Property Rights
IS	Information Society
ISCED	International System of Classification of Education
ISDN	Integrated Services Digital Network
ISP	Internet service provider

IT	Information Technology
ITC	Information Technology and Communication
LEONIE	Learning in Europe: Observatory on National and International Evolution
LieDM	Development of Distance Education Network in Lithuania
LMS	Learning Management System
MCAST	Malta Council of Arts, Science and Technology
MCESD	Malta Council for Economic and Social Development
MQC	Malta Qualifications Council
MCA	Malta Communications Authority
MCAST	Malta College of Arts, Science and Technology
MIS	Management Information System
MIT	Massachusetts Institute of Technology
MITI	Ministry for Investment, Industry and Information Technology
MST	Maths, science and technology
NACE	Nomenclature of economic activities
NGO	Non Governmental Organization
NMS	New Member States, see EU-10.
NRI	Networked Readiness Index
NSO	National Statistics Office
NSRF	National Strategic Reference Framework
NUPEX	NUclear Physics EXperience
NCPE	National Commission for the Promotion of Equality
NCSD	National Commission for Sustainable Development
NGOs	Non Governmental Organisations
Non-VET	Non Vocational Education and Training
NRDP	National Rural Development Plan
NRP	National Reform Programme
NSP	National Strategic Plan
NSRF	National Strategic Reference Framework
NSSD	National Strategy for Sustainable Development
ODL	Open and Distance Learning
OECD	Organisation for Economic Cooperation and Development
OER	Open Educational Resources
OTS	Off-the-shelf
OP I	Operational Programme I
OP II	Operational Programme II
OPM	Office of the Prime Minister
PPCD	Planning and Priorities Co-ordination Division
PPS	Purchasing Power Standard
PC	Personal Computer
PC	Personal Computer
PGCE	Postgraduate Certificate in Education
PIAP	Public Internet Access Points
PISA	Programme for International Student Assessment
PPP	Public Private Partnership
PPS	Purchasing Power Standard
PBS	Public Broadcasting Services
R&D	Research and Development
ROI	Return on Investment
RPI	Retail Price Index
RTD	Research and Technological Development
RTDi	Research and Technological Development and Innovation

SCI-O	Science Online
SEEQUEL	Sustainable environment for the evaluation of quality in elearning
SME	Small and Medium Sized Enterprises
SD	Sustainable Development
SMEs	Small and Medium Sized Enterprises
SPD	Single Programming Document
SWOT	Strengths, Weakness, Opportunities and Threats
TAS	Technician Apprenticeship Scheme
UoM	University of Malta
UK	United Kingdom
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UOE	Joint statistics of UNESCO Institute for Statistics, OECD, Eurostat
VET	Vocational and Education Training
VOIP	Voice over Internet Protocol
VUSSC	Virtual University for Small States of the Commonwealth

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EXECUTIVE SUMMARY

The Maltese government acknowledges the potential of ICT to increase Malta's economic development and competitiveness. In this regard, Malta has taken huge strides in bringing about an inclusive information society. In order to promote access to eServices, the government launched a large number of electronic services and invested substantially in ICT in public schools in 1994 - 2004. This has allowed the Maltese education sector to be ranked as one of the most technologically-connected in the world. All state schools are connected to the Internet. ICT in education is frequently used, not merely for the teaching of its use for its own sake, but also as a pedagogical tool.

Malta has been actively developing eLearning since 2000, through the Ministry for Investments, Industry and IT which is responsible for all matters relating to the Information Society. Although 'fostering eLearning' forms part of the National IT Strategy, there is no specific strategy for eLearning itself. The government has committed itself to having in place an eLearning strategy by the end of 2007. It will invest in an eLearning platform that will be used on a national scale and will target a wide variety of learning communities ranging from child to adult education. Diverse stakeholders including schools and teachers, enterprises, and non-governmental organisations, will be invited to plug into the platform and enrich it with relevant content. The main local stakeholders include the Ministry for Investment, Industry and Information Technology; the Ministry of Education; the University of Malta; the Malta College of Arts, Science and Technology; the Institute of Tourism Studies, the Employment and Training Corporation, and the Fondazzjoni Temi Zammit.

The government's plans are to integrate the promotion and use of eLearning in the local educational landscape, building on existing good practices which have had an important impact on education. The promotion of eLearning will consolidate the governments' efforts implemented to date in the education sector including the investment in technology infrastructure in schools, the inclusion of ICT in the national curricula, and the delivery of teacher training on the use of ICT across the curriculum. In the meantime, private initiatives are playing an important role as facilitators of eLearning supply and take-up; and a number of interesting initiatives have been delivered.

It is important to note that Malta has made significant progress in the integration of ICT in education. Efforts made by the Department of Technology in Education (DTIE) within the Ministry of Education, Youth and Employment are commendable and they are effectively managing the introduction of ICT as an educational tool in primary education and as a core subject in secondary education. The impressive steps taken by Malta's Ministry of Investment, Industry and IT within the National ICT Strategy 2004-2006 have also been crucial.

Government has an important role to play in widening usage for eLearning in Malta. The majority of Maltese people are not particularly inclined to take up the latest technologies and tend to be rather conservative and extremely cost conscious. Encouraging the take up of technologies for educational purposes should remain at the forefront of policy objectives. The resistant attitude of some public service officials, particularly of some of the more senior ones in the educational sphere, towards adoption of new technologies, electronic delivery of public services and change in general is one of the major limiting factors for the promotion of eLearning. The supply of open and distance courses and services at tertiary level is of concern. This is generally limited to ad hoc projects or those offered by foreign universities and educational institutions. The disparate efforts in eLearning seem to be mostly based on ad hoc installations of various IT platforms and there is hardly any collaboration or common positions/sharing of best practice between the various eLearning initiatives that are taking place in Malta, whether originating within the public or private sector. Consequently it is not that easy to identify clearly the major problems with the existing eLearning services and service providers.

ICT mediated learning can provide teaching organisations with an opportunity to meet the changing local demand for education and grasp opportunities to sell local education overseas. This increase in

demand is widely attributed to the changing culture of employment, where a job for life is no longer the norm and to the advent of the ‘knowledge-driven society’. However, it is appropriate to assume that not all students want to adopt a distance learning environment, or any ICT approaches. Institutions implementing eLearning must be aware that students and teachers will react differently to the changing paradigm of learning and rather than implement changes across the board, should aim to offer courses tailored specifically towards different learning styles. Foundation and IT proficiency courses must continue to be provided locally and delivered for those who need them. Concrete policy measures aimed at providing lifelong learning that is easily customisable and available with and without ICT at the convenience of the learner are crucial.

Low awareness of the potential of eLearning poses the risk of resistance to using ICT for learning in schools. Regular teacher training organised by the Education Division is having the desired effect of increasing teachers’ ICT confidence. ICT education and training is also a crucial element of e-accessibility and the resulting benefits for the quality of life of an insular population – young and old alike. In the case of the educational institutions, the government could also extend the provision of the technology equipment to the provision of learning content with ICT, such as providing digitized library services to students, researchers, teachers and lecturers. In this regard, steps should be taken to deploy a national eLearning platform.

Widening the opportunities for youths/adults that have already left school to further their education and training requires the adoption and implementation of “extended policies” such as open, distance and eLearning strategies. Collaboration between all relevant stakeholders is essential in this respect. Education and training pathways need to become more attractive, accessible and flexible to provide maximum possible fulfilment of the potential of all people throughout their working lives. ICT could provide new solutions for implementing these new learning opportunities.

For teaching organisations, a move towards ICT enabled learning requires changes in the structures and practises of the institution. This represents an obstacle which must be negotiated with caution. As schools and universities try to move from the didactic classroom or lecture-based delivery model into more technology-supported and participative learning, there is a need for academics, managers and policy makers to appreciate the need for the changing landscape of education. Hence it is important for academia to understand the problems associated with the transition from traditional to virtual and participative learning, and to take account of such difficulties when making fundamental changes to the structure of an institution. Educational policy needs to reflect this changing scenario and offer incentives/support for academics to start developing their already existing courses to embrace new innovative approaches with ICT.

Implementation of ICT-supported learning policies should ensure the same quality of learning as traditional tuition, capitalise on the potential of eLearning to overcome international boundaries and recruit students from around the world and, at the same time, cater for Maltese students’ demand for learning when and where they want it. The government should be fully committed to implementing this sector strategy, with the wider endorsement of all education shareholders. This will require a combination of effective leadership, top notch professionalism, strong partnerships, and above all, deep interaction with educational stakeholders. The ideal scenario would have an ICT didactics coordinator in all schools, whose role would be to offer immediate assistance to teachers who want to use ICT but are afraid to do so. They would help overcome the teachers’ resistance to change and be proactive and participate in forming the school’s policy for ICT for learning. They would also address needs such as training and assist the school administration in evaluating the success of the ICT policy implementation and in taking corrective measures if necessary.

Over the next few years, Malta should build on its strengths and the contribution it has already made to the Lisbon Objectives. Further progress in eLearning clearly will require strong, productive partnerships. The job is too large for any one institution or agency alone, and too important for a single perspective to hold sway. Government (especially the Ministry of Investment, Industry and IT and the

Ministry of Education), NGOs and local stakeholders, with the support of local schools, must work closely together in a prolonged effort to ensure Malta's future eLearning policy.

INTRODUCTION: COUNTRY FEATURES

General data

Malta is an archipelago of islands strategically located at the centre of the Mediterranean Sea, 93 km south of Sicily and 290 km away from North Africa. The Maltese archipelago, which covers a total area of just 316 km² and has 140 km of coastline, consists of three inhabited islands, namely Malta, Gozo and Comino, and two uninhabited islands, Cominotto and Filfla. The Maltese islands have a total population of circa 400 000 people. The main island, Malta, which spans an area of 246 km² and extends 27 km lengthwise and 14 km in width, has 360 000 inhabitants. Gozo, the island on which the remaining 10% of the population lives, covers an area of 67 km² and can be reached from the main island by ferry and seaplane. Malta is one of the most densely populated countries in the world with a population density of 1 266 inhabitants per square kilometre.

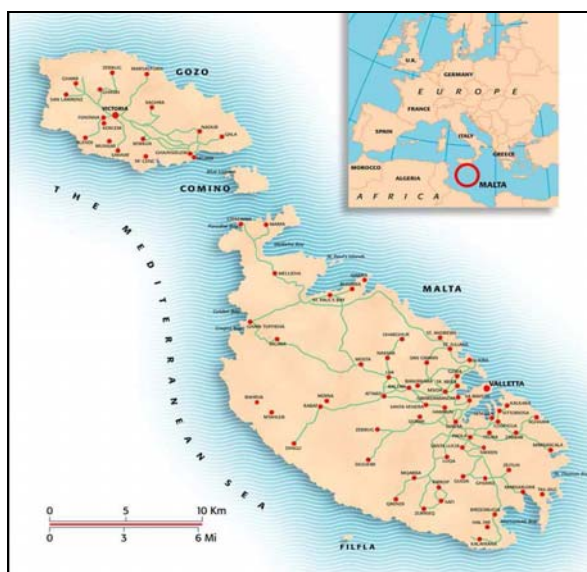


Figure 1: Base Map of the Maltese Islands

Below are some of the main indicators for Malta based on figures for 2005.

	Year	Malta
Total population	2005	402,700
Annual population growth rate (%)	2005	0.5
Population 0-14 years (%)	2005	18
Rural population (%)	2005	8
Life expectancy at birth (years)	2005	79
Old-age dependency ratio ¹³	2005	19.2
Pupils and students (excluding pre-primary education) (1 000)	2005	81
Unemployment rate	2005	7.3%

Table 1: Basic Indicators for Malta (2005)

¹³ The ratio between the total number of elderly people of an age when they are generally economically inactive (aged 65 and over) and the number of people of working age (from 15 to 64).
http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-CD-06-001/EN/KS-CD-06-001-EN.PDF

Economic situation¹⁴

In broad terms Malta's economic performance has shown a positive performance in 2005 despite performing below its potential in recent years. In terms of GDP at market prices in Purchasing Power Standards (PPS), the Maltese economy showed a decrease for most of the years from 2000 onwards compared to the EU average. In fact, on a per capita basis, Malta's GDP per head in PPS stood at 69.5 % in 2005.¹⁵

Economic activity in Malta is fairly diversified, with one-fourth of output being generated by the manufacturing sector and around one-third by the services sector in which tourism is the major contributor. The contribution of financial services and information technology (IT) services is expanding rapidly but still accounts for a relatively small share of GDP. Primary activities, consisting of agriculture and fishing, and construction and quarrying, contribute less than 10% of GDP.¹⁶

The global economic environment prevailing since 2001 has affected considerably local domestic economic conditions. International circumstances like rising energy prices have also affected the Maltese economy negatively in recent years. Furthermore, the international economic environment is becoming increasingly competitive due to stronger market penetration by emerging low-cost countries. Consequently, the Maltese economy was characterized by relatively subdued growth in private and general Government final consumption expenditure whilst gross fixed capital formation exhibited significant fluctuations. The relatively low growth rates in consumption reflect the fiscal consolidation under way. Meanwhile, gross fixed capital formation was influenced by one-off exceptional transactions, particularly in 2003, whilst strong investment activity was registered in 2005.

The external sector has contributed negatively to real GDP growth between the years 2003 and 2005, and to a lesser extent also in 2004. In particular, exports of goods and services contracted in 2003, increased marginally in 2004 but declined again in 2005. Exports of goods and services are significantly influenced by the performance of the major company in the semi-conductor sector.

The gradual decline in manufacturing activity has been mirrored by a steady increase in tertiary activities, with the contribution of the services sector, in which tourism is the major contributor, fast approaching 75% of Gross Value Added. The contribution of financial services and information technology (IT) services is expanding rapidly, but still accounts for a relatively small share of GDP.

In 2001 real GDP fell by 0.4%, while it increased by 2.2%, in 2002. In 2003, a negative growth rate of 2.4% was registered, while in 2004, the growth rate was negligible. Nonetheless, positive signs have been registered in 2005, when real GDP increased by 2.2%. The growth rate in 2005 was underpinned by increased domestic demand particularly a recovery in private consumption as well as growth in investment. On the other hand, the decline in exports of goods and services contributed to the contradictory effect of the external sector.

¹⁴ As primary data sources, mainly EUROSTAT and National Statistics Office data have been used.

¹⁵ National Strategic Reference Framework
<http://mfin.gov.mt/image.aspx?site=MFIN&ref=NSRF>

¹⁶ Factors and impacts in the information society: A prospective analysis in the candidate countries report on Malta. Marisa Xuereb, July 2004. <http://fiste.jrc.es/download/EUR21280%20MALTA%20FINALwithannex.pdf>

Some main economic indicators are presented below:

	2000	2001	2002	2003	2004	2005
GDP market prices (Lm millions)	1715	1751.7	1831.3	1858.8	1861.3	1941.1
GDP at constant (2000) prices (Lm millions)	1715	1707.4	1745	1703.5	1703.5	1741
GDP growth at constant (2000) prices %		-0.4%	2.2%	-2.4%	0.0%	2.2%
Expenditure Components of GDP at constant 2000 prices (% change)						
Private final consumption expenditure		0.5	-2.2	3.3	1.1	2.8
general government final consumption expenditure		0.6	3.8	3	1.4	0.6
gross fixed capital formation		-14.2	-18.7	29	0.8	7.5
exports of goods and services		-2.9	6.1	-2.4	4.1	-6.2
imports of goods and services		-9.0	-1.6	6.2	4.3	-1.8
Inflation rate		2.9	2.2	1.3	2.8	3
Employment growth (%)		0.7	-0.1	-0.5	0.6	0.3
Labor productivity (% change)		-0.7	0.1	0.5	-0.6	-0.3

Table 2: Economic Indicators for Malta (2005)¹⁷

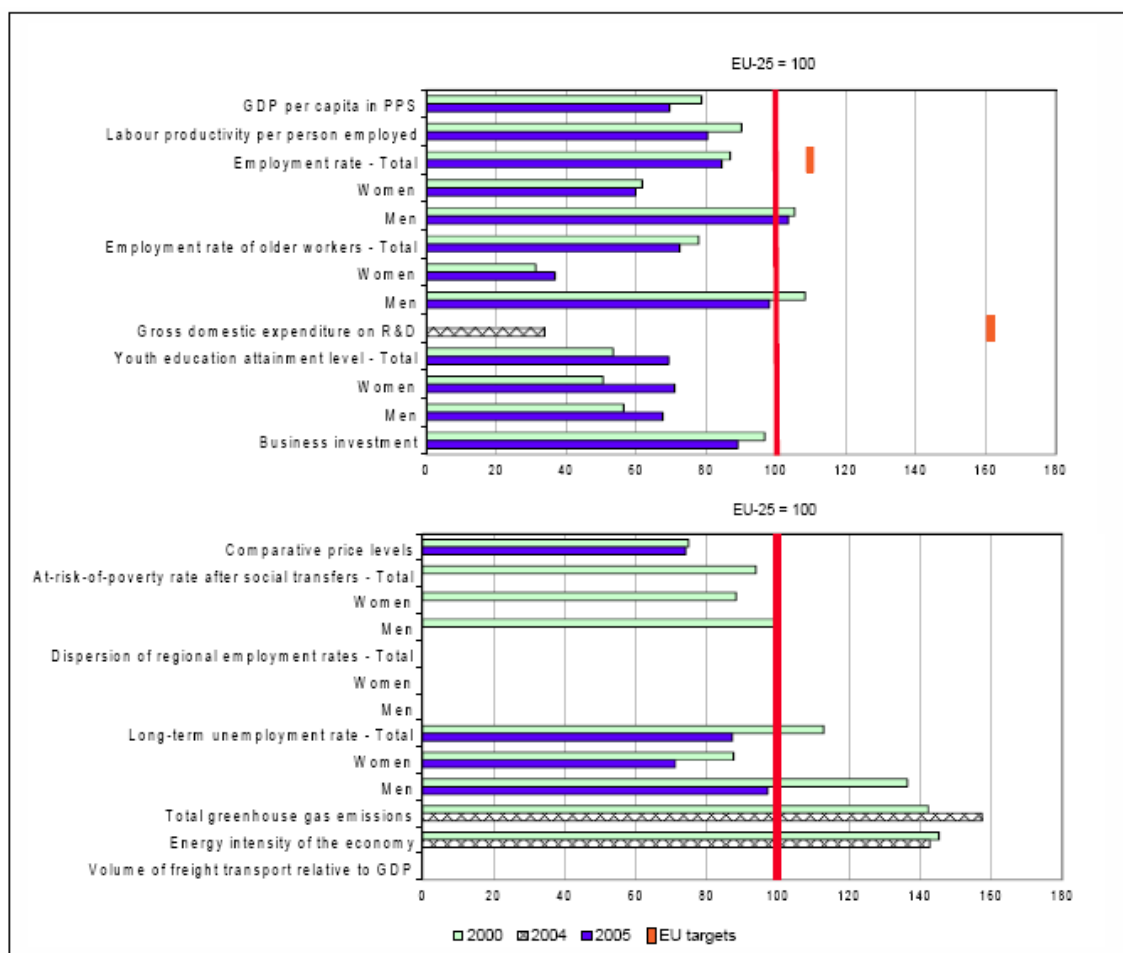


Figure 2: Malta's economic performance compared to EU 25¹⁸

¹⁷ Operational Programme I, Investing in Competitiveness for a Better Quality of Life CCI number 2007MT161PO001 <http://mfin.gov.mt/image.aspx?site=MFIN&ref=OP1>

¹⁸ http://ec.europa.eu/growthandjobs/pdf/1206_annual_report_malta_en.pdf

With a labour force of around 145 000, Malta's GDP amounted to €4.3 billion in 2004. On purchasing power parity basis, Malta's GDP per capita is currently estimated to be around 69% of the EU-25 average. This is the fourth highest among the EU's new Member States, behind Cyprus, Slovenia and the Czech Republic, though still below that of the EU-15 countries with the lowest GDP per capita, namely Portugal, Greece and Spain. The average real GDP growth rate of 1.2% for the five-year period 2000 – 2004 makes Malta the weakest economic growth performer among the new Member States. Various studies conducted in the run-up to EU accession anticipated that Malta would be in a position to enjoy substantial growth rates upon becoming a full member of the EU. While actual growth rates have so far remained modest, medium to long-term prospects are positive, with a real GDP growth rate of 1.7% for the first three quarters of 2005 hinting at a slow take-off, even though government estimates for 2006 stand at a prudent 1.1% in real terms.¹⁹

The principal growth areas of the Maltese economy are high-tech manufacturing, IT-related services and financial services. Growth in high-tech manufacturing has only partially mitigated the persistent decline in manufacturing activity resulting mainly from Malta's loss of cost-competitiveness to cheaper foreign investment bidders in Eastern Europe, North Africa and Asia. The services sector has been developing rather steadily, with relative declines in tourism, which remains the major contributor, being compensated for by growth in IT-related services and financial services. Meanwhile, the construction industry, which boomed in the late 1990s, registered slower growth in recent years.²⁰

The European Innovation Scoreboard (EIS) developed by the European Commission provides the following comparison of Malta's innovation performance, indicators and trend analysis against the EU25 and EU 15.

¹⁹ Structural, Indicators, 3rd quarter 2005. National Statistics Office. http://www.nso.gov.mt/docs/2005_Q3.pdf

²⁰ Structural, Indicators, 3rd quarter 2005. National Statistics Office. http://www.nso.gov.mt/docs/2005_Q3.pdf

	EU25	EU15	MT
1.1 New S&E graduates	12.7	13.6	3.6
1.2 Population with tertiary education	22.8	24.0	11.4
1.3 Broadband penetration rate	10.6	12.0	10.4
1.4 Participation in life-long learning	11.0	12.1	5.8
1.5 Youth education attainment level	76.9	74.1	48.1
2.1 Public R&D expenditures	0.65	0.66	0.19
2.2 Business R&D expenditures	1.20	1.24	0.45
2.3 Share of medium-high/high-tech R&D	--	89.2	86.7
2.4 Enterprises receiving public funding for innovation	n/a	n/a	3.5
3.1 SMEs innovating in-house	n/a	n/a	2.9
3.2 Innovative SMEs co-operating with others	n/a	n/a	5.3
3.3 Innovation expenditures	n/a	n/a	1.08
3.4 Early-stage venture capital	--	0.023	--
3.5 ICT expenditures	6.4	6.4	8.5
3.6 SMEs using organizational innovation	n/a	n/a	32.5
4.1 Employment in high-tech services	3.35	3.49	2.69
4.2 Exports of high technology products	18.4	17.7	55.9
4.3 Sales of new -to-market products	n/a	n/a	13.6
4.4 Sales of new -to-firm products	n/a	n/a	8.7
4.5 Employment in medium-high/high-tech manufacturing	6.66	6.71	6.63
5.1 EPO patents per million population	136.7	161.4	8.8
5.2 USPTO patents per million population	50.9	60.2	4.6
5.3 Triad patents per million population	32.7	38.9	2.6
5.4 Community trademarks per million population	100.7	115.7	118.9
5.5 Community industrial designs per million population	110.9	127.6	12.1

Table 3: European Innovation Scoreboard 2006 for Malta²¹

Employment

Malta's socio-economic development is inextricably linked to human resources and they remain Malta's main 'natural' resource. In 2005, the total overall employment rate stood at 54.3% (EU25: 63.8 %). Whilst the employment rate for males stood at 74.4% males (EU25: 71.3%), the rate for females was of 33.9% (EU25: 56.3%). The same trend followed for the activity rate, where the rate for males stood at 79.3% as opposed to 36.9% for females. Females also experienced a higher unemployment rate, 8.9% when compared to 6.6% for males in 2005. An analysis of employment rates by age groups illustrates that the highest rates for males are found in the 25 to 54 age bracket (89.2%) whereas female employment rates tend to be higher in the 15 to 24 age bracket (43.9%).

The unemployment rate as at 2005 stood at 7.3%, which represents an increase of 0.1 percentage point over that for 2004. Between 2001 and 2005, the unemployment rate in Malta has been constantly lower than the EU average. Approximately 47.7% of the unemployed in 2005 were aged between 15-24.

An overview of those registering for employment with the Employment Training Corporation (ETC) shows that in 2005 there were a total of 7,379 persons registering for employment, amounting to an unemployment rate of 5.1%.

The labour force increased by 2.6% between 2000 and 2005, with a marginal increase of 0.4 % registered between 2004 and 2005. Meanwhile, the number of persons with a part-time job as their main occupation stood at 12,608 during 2005, representing an increase of 10.9 % over the previous year. Between 2000-2005, the growth rate of part-time employment as a main occupation was higher

²¹ European Innovation Scoreboard 2006, comparative analysis of innovation performance.
http://www.proinno-europe.eu/doc/EIS2006_final.pdf

for males than for females, however, in 2005 the number of females holding a part-time job outnumbered their male counterparts.

The domestic labour market has been characterised by certain conditions in recent years, particularly as regards developments in full-time employment and in unemployment levels. The process of economic adjustment triggered by industrial restructuring in both public and private enterprises, fiscal consolidation, as well as sluggish growth in the economies of Malta's main trading partners and the steep rise in international oil prices posed an increased uncertainty that affected adversely employment developments. Nonetheless, the performance of the labour market during 2005 indicates the degree of resilience through the expansion in part-time employment, increases in the gainfully occupied population, as well as the decline in the number of registered unemployed.

The institutional structure of general government

Malta is a parliamentary representative democratic republic with a multi-party system. Executive authority is vested in the President of Malta. The president is elected by the House of Representatives for a five-year term. He appoints as Prime Minister the leader of the party with the majority of seats in the unicameral House of Representatives. The Prime Minister of Malta is the Head of Government. The President also nominally appoints, upon recommendation of the Prime Minister, the individual ministers. Ministers are selected from among the members of the House of Representatives, which usually consists of 65 members, elected by popular vote on the basis of proportional representation to serve five-year terms. Bonus seats are given to a party which gains an absolute majority of votes but not a Parliamentary majority following a constitutional amendment passed prior to the general election of 1987 to ensure that the party that obtained more than 50% of the popular vote would have a majority of seats in Parliament and would thereby form Government.

Malta has a highly centralised system of government administrated directly from the capital, Valletta. Executive power is exercised by Government. Legislative power is vested in both Government and Parliament. The present

Government is made up of the following Ministries:

- Office of the Prime Minister
- Ministry of Finance
- Ministry for Justice and Home Affairs
- Ministry of Education, Youth and Employment
- Ministry for Tourism and Culture
- Ministry for Competitiveness and Communications
- Ministry for Resources and Infrastructure
- Ministry for Gozo
- Ministry of Health, the Elderly and Community Care
- Ministry for Investment, Industry and Information Technology
- Ministry for Rural Affairs and the Environment
- Ministry for Urban Development and Roads
- Ministry for the Family and Social Solidarity
- Ministry of Foreign Affairs

Since 1993, Malta has been subdivided into 68 local councils or localities of varying sizes, 54 local councils in Malta and 14 in Gozo. These councils form the most basic form of local government and there are no intermediate levels between it and the national level. The inhabitants of the locality who are registered as voters in the Local Councils' Electoral Register elect the Council every 3 years. Elections are held by means of the system of proportional representation using the single transferable vote. The mayor is the head of the Local Council and the representative of the Council for all effects

under the Local Councils Act, 1993 (Act XV of 1993). The Executive Secretary, who is appointed by the Council, is the executive, administrative, and financial head of the Council. All decisions are taken collectively with the other members of the Council. Local councils are responsible for the general upkeep and embellishment of the locality, local wardens, and refuse collection, and carry out general administrative duties for the central government such as collection of government rents and funds, and answering government-related public inquiries.

General government indicators

Government and public enterprises generate a significant portion of GDP, which is, however, declining over time partly as a direct result of the economic restructuring exercise that is currently under way. This restructuring programme is reducing the role of Government in the economy, as well as the share of public sector employment, particularly through a programme of privatisation of public enterprises.

On the other hand, the share of public administration in GDP has increased over the past years, partly as a result of considerable increases in wages and salaries in the public sector and partly because Malta's bid to join the EU has increased demands on public administration during the negotiation process. It is a known fact that small countries tend to have a proportionately larger Government than their larger counterparts precisely because they are too small to benefit from scale economies at the governmental level. Government expenditure has averaged a hefty 20% of GDP over the past decade, the bulk of which consisted of wages and salaries to public sector employees and social benefits.

Unarguably, Government has traditionally played a dominant role in the Maltese economy, as is attested both by the share of its expenditure in GDP and by a history of pervasive direct controls which have only recently been dismantled. These factors have bred a culture of state-dependence and stifled competitiveness and private initiative, to the detriment of economic development in the country. They have also burdened the country with a structural budget deficit which has persisted since the mid-1990s. It is only recently that adequate measures to address this fiscal imbalance have been implemented with appropriate rigour and have started to bear fruits, as fiscal consolidation became a more pressing priority in view of the Maastricht convergence criteria.

Population Developments

The total population of Malta at end 2006 was estimated at 402,668 persons. This figure includes both Maltese and foreign residents. 199,580 residents or 49.6% were males whilst 203,088, or 50.4%, were females. This figure emphasizes the high density of population per square kilometre that is of 1,274 persons, which is still the highest in Europe. This is expected to peak in 2015 when it reaches 394,600 persons. Subsequent to that, the Maltese population is expected to decrease to approximately the current level in 2025 and then rapidly fall to 369,900 and 333,800 in 2035 and 2050 respectively.²² Population change is the net result of two demographic aspects: the difference between births and deaths and the migration balance. The migration figures for this year are estimations over the last three years' figures, since the figures for 2006 were not available for processing updates. The estimated net inflow during 2004 stood at 1,913 persons. There was a natural net increase of 888 persons in the local and foreign population in Malta. This figure stood at 783 for the Maltese-resident population.

The changes in the demographic structure that the Maltese population will experience are compounded by the fact that the population will increasingly age as it decreases. People over the age of 60 as of 2003 stand at 18% of the population. The ratio of the 60 years and over cohort in proportion to the population will increase steadily over the projected period reaching 21.6% in 2010 (20% increase on

²² Factors and impacts in the information society: A prospective analysis in the candidate countries report on Malta. Marisa Xuereb, July 2004.
<http://fiste.jrc.es/download/EUR21280%20MALTA%20FINALwithannex.pdf>

the 2003 figure), 25.7% in 2020 (42.7% and 17.6% increases on 2003 and 2010 figures respectively) to 31.2% in 2050 (73%, 44.4% and 21.4% increases on 2003, 2010, and 2020 figures respectively).²³

Major education indicators

In 2004 the number of people aged 29 or under was 156,368 (40.03% of the total population). The number of children of compulsory education age (5 to 16 years) was 61,390 (15.7%) of the population. Of these about 65% attend full-time education in state schools, while the remaining 35% attend the non-state sector.²⁴

Notwithstanding the investment and progress achieved, the education sector faces a number of key challenges namely:

- Malta has a high rate of people without a higher level of secondary education (50.9% of the 20 to 24 year olds as at December 2004. The overall proportion of persons in the 20-24 age group with at least an upper secondary level of education went up to 49.1% in 2004, from 40.6% in 2001. The target set in the framework of the European Employment Strategy is that at least 85% of 22 year olds in the EU should have completed upper secondary education by 2010.
- According to Eurostat methods of measurement, Malta has the highest percentage of early school leavers, at 42.6%. For females the rate is 39.3% and for males it is 45.2%.²⁵ Whilst that of EU25 for 2005 was 14.9%.²⁶ The target set in the framework of the European Employment Strategy is that there should be an average rate of no more than 10% early school leavers.

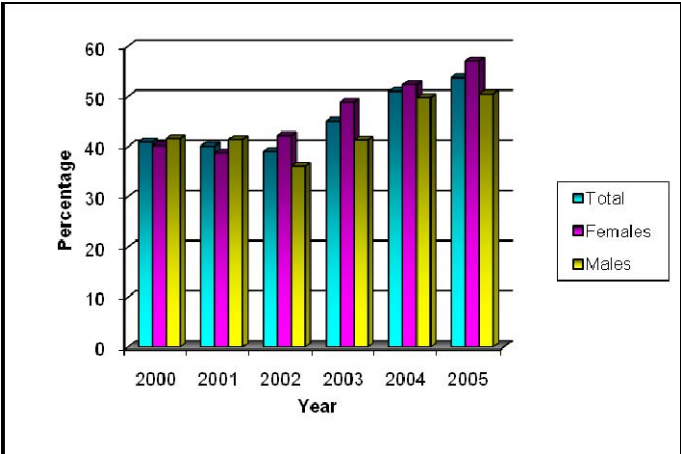


Figure 3: Percentage of Maltese Population aged 20 – 24 having completed at least upper secondary education²⁷

²³ Pensions adequate and sustainable. The Pensions Working Group. http://www.mfss.gov.mt/pensions/documents/whitepaper/wp_layout.pdf

²⁴ National summary sheets on education systems in Europe and ongoing reforms, Eurydice, MALTA DECEMBER 2006

²⁵ Method of measurement difference - Malta school leaving age is 16, whilst Eurostat 18 yrs.

²⁶ Detailed Analysis of Progress Towards the Lisbon Objectives in Education and Training 2006 Report: Analysis is based on indicators and benchmarks: <http://ec.europa.eu/education/policies/2010/doc/progressreport06annexes.pdf>

²⁷ Annex: Table 14

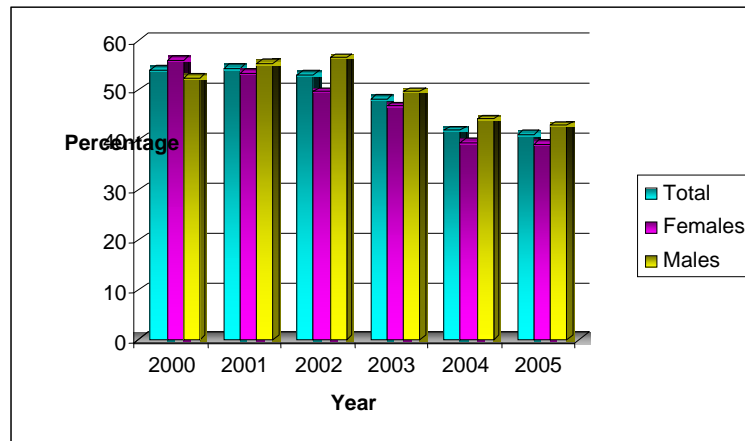


Figure 4: Percentage of early school leavers in Malta²⁸

- One of the key weaknesses in Malta’s **vocational** education and training (VET) field is the strong segmentation and fragmentation between formal, informal and non-formal training. There is no legal framework for Vocational Education that outlines the setting up of National Standards on VET provisions. Strategies have to be developed to ensure flexible pathways between VET and non-VET streams.
- The number of persons aged 15 and over attending education or training reached 9.3% in 2004. This confirms that Malta has a low number of workers participating in further education and training.²⁹
- Malta, at 3.1 per cent has the lowest percentage of tertiary science and technology graduates aged between 20-29 years and would have to increase its graduates fourfold in order to reach the EU25 average. In 2003, the Maltese graduates Mathematics, Science and Technology amounted to 180.³⁰ Of 31 PhD graduates in 2000-2005, only three graduated in science and engineering.³¹

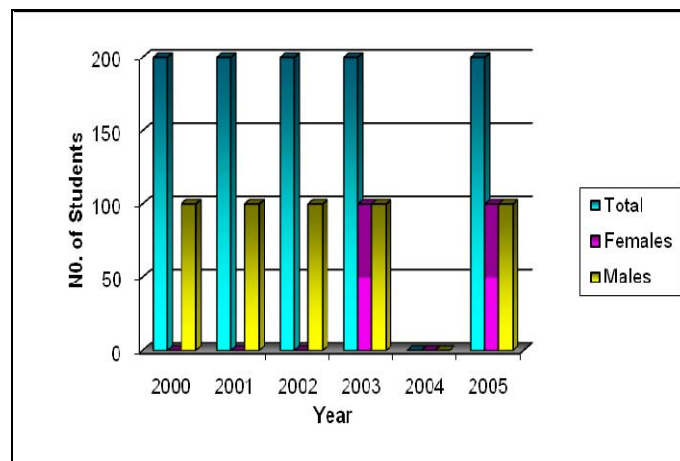


Figure 5: Maltese Graduates (ISCED 5-6) in Mathematics, Science and Technology³²

²⁸ Annex: Table 15

²⁹ [http://www.mcemp.gov.mt/pdfs/National Reform Programme Malta.pdf](http://www.mcemp.gov.mt/pdfs/National_Reform_Programme_Malta.pdf)

³⁰ Detailed Analysis of Progress Towards the Lisbon Objectives in Education and Training 2006 Report: Analysis is based on indicators and benchmarks <http://ec.europa.eu/education/policies/2010/doc/progressreport06annexes.pdf>

³¹ <http://www.mcst.org.mt/page.aspx?id=59>

³² Annex: Table 16 - Note that there are some discrepancies in the data

- Participation of adults in lifelong learning has increased from 4.5% (2000) up to 5.8% (2005) which is low when compared to that of EU25, being 7.9% and 10.8% respectively, considering that by 2010, a 12.5% should be reached.

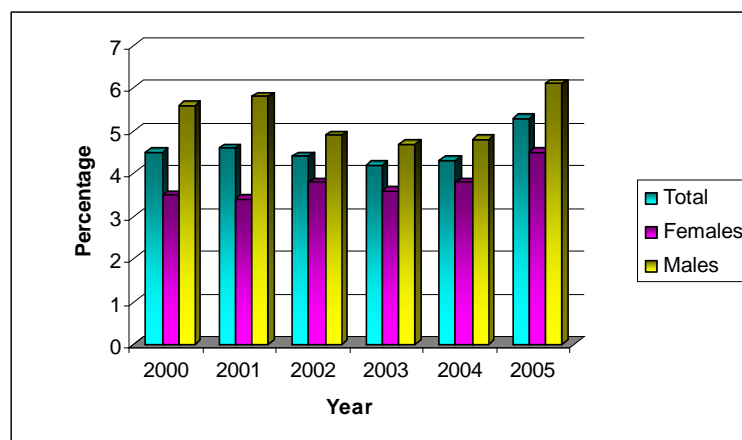


Figure 6: Percentage of Maltese population participating in lifelong learning³³

- The most recent data regarding Maltese literacy states that the regional average for adults (15+) is that of 99.0% and the regional average for youth (15-24) is of 99.5% for 2005,³⁴ showing that there was an increase from 1995, where illiterate percentage was 11.24%.³⁵

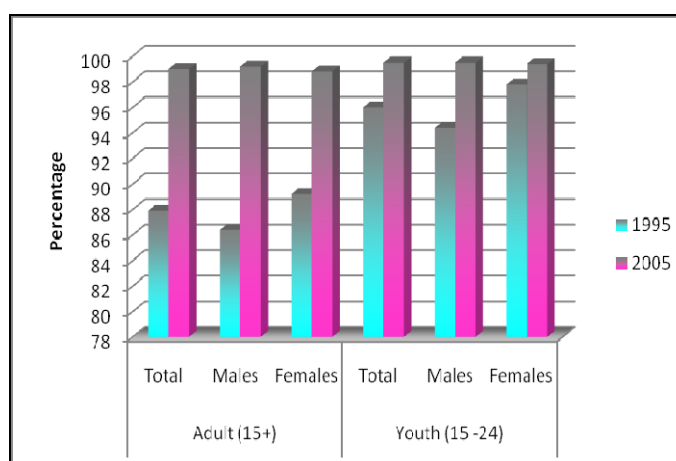


Figure 7: Percentage of Maltese population who are literate³⁶

Malta recognizes that an important sector within the education and training sector is lifelong learning. In Malta, participation in education and/or training in persons aged 15 years and over, is still low. Figures show that by the end of 2005, the participation rate in lifelong learning amounted to 14.9%. Table 4 below shows that the figures are increasing over the years. In fact, there has been a 4.5% increase between 2003 and 2005.

³³ Annex: Table 13

³⁴ http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=121&IF_Language=eng&BR_Country=4700

³⁵ See website:

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,45323734&_dad=portal&_schema=PORTAL&_screen=welcomeref&_open=/edtr/educ/educ_them_ind&language=en&product=EU_MASTER_education_training&root=EU_MASTER_education_training&scrollto=2

³⁶ UNESCO:

http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=121&IF_Language=eng&BR_Country=4700

15 years+ Receiving education and/or training	2003			2004			2005		
	Males	Females	Avg.Total	Males	Females	Avg.Total	Males	Females	Avg. Total
	%	%	%	%	%	%	%	%	%
	11.3	9.5	10.4	13.7	13.6	13.6	15.7	14.0	14.9

Table 4: Participation in education and/or training for persons aged 15 and over

	2003	2004	2005
Pupils and students (excluding pre-primary education) 1000	79	81	
Pupil/teacher ratio in primary education, (<i>average number of pupils per teacher</i>)		19	
Youth education and early school leavers			41.2%
18-year-olds in education, (% of all 18-year-olds)		28%	
Median age in tertiary education,		21	
Youth education attainment level, (% of the population aged 20 to 24 having completed at least <i>upper secondary education</i>)			48%
Early school leavers, (% of the population aged 18 to 24 with at most <i>lower secondary education and not in further education or training</i>)			
Proportion of women among tertiary students, (% of total number of tertiary students)		54%	
Students in tertiary education (1 000)	9	8	
Annual expenditure on public and private educational institutions per pupil/student (<i>PPS for full-time equivalents</i>)	4280		
Number of Graduates in S&E			3.6%
Adult participation in Life long learning.			
Reading Literacy ³⁷ Adult (15+) Youth (15-24)		87.9% 96%	

Table 5: Main Education indicators for Malta³⁸

General ICT usage indicators

It has been argued that the much talked about “Information Society for All” can only be made possible if people have increased access to information and communications technologies. Consumption expenditure by households on telecommunications services increased in real terms from €120 million in 1999 to €173 million in 2003, mainly reflecting the significant growth in mobile and Internet penetration in Malta. This expenditure did not only grow in absolute terms, but more significantly, it grew in relation to other goods and services consumed by Maltese households. In fact, the share of expenditure on telecommunications services in households’ total expenditure increased from 4.7% in 1999 to 5.9% in 2003.³⁹

It is interesting to look at Malta’s Networked Readiness Index (NRI) as computed by the World Economic Forum in its Global Information Technology Report.⁴⁰ The NRI measures how prepared economies are to participate in and benefit from ICT developments. It acknowledges that there are three important stakeholders to consider in the development and use of ICT, namely individuals,

³⁷ UNESCO Institute for Statistics
http://www.uis.unesco.org/profiles/EN/EDU/countryProfile_en.aspx?code=4700

³⁸ Europe in Figures; Eurostat yearbook 2006-07.
http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-CD-06-001/EN/KS-CD-06-001-EN.PDF

³⁹ Survey on ICT Usage in Households 2002. Valletta : National Statistics Office, 2003

⁴⁰ World Economic Forum (2003b, 2004b, 2005b)

businesses, and governments; that there is a general macroeconomic and regulatory environment for ICT in which the stakeholders play out their respective roles; and that the degree of usage of ICT by (and hence the impact of ICT on) the three stakeholders is linked to their degrees of readiness (or capability) to use and benefit from ICT. Table 8 reproduces Malta's NRI ranking for the last three years.

Ranking	2004	2003
NETWORKED READINESS INDEX	28	27
Environment Component Index	28	29
Market Environment	58	41
Political and Regulatory Environment	29	20
Infrastructure Environment	21	29
Readiness Component Index	35	31
Individual Readiness	31	35
Business Readiness	59	40
Government Readiness	36	23
Usage Component Index	26	24
Individual Usage	21	20
Business Usage	50	29
Government Usage	11	17

Table 6: Networked Readiness Index for Malta

From the component indices, it appears that Maltese businesses lag behind Government and individuals both in their ICT readiness as well as in ICT usage. The main factors underlying the low ranking of Maltese business in the respective NRI component indices are related to low investment in training, R&D and innovation. The market environment suffers from related factors, namely lack of cluster development and limited collaboration between industry and research institutions, as well as a relatively high degree of bureaucracy. All this has a direct impact on eLearning.

General broadband data

Broadband in Malta is accessible through DSL and Cable modems. In 2005, 5% of broadband connections were DSL connections. The remaining 41% were cable modem connections. Malta's broadband penetration is of 12.7% of the population. The penetration of DSL users is 7.5% of the population. Cable modem penetration is 5.2%.⁴¹

Malta's telecommunications network is totally digital with data transported over fibre optic across all the country's territory. As a result almost all households and business have a digital landline for internet access. DSL is available in 99% of the national telecommunications network. Broadband access via cable modem is available in 95% of the country through a bidirectional hybrid fibre coaxial cable network.⁴²

DSL Coverage and penetration

While DSL coverage is broad (99% of the landmass), take up had an average penetration at December 2005 reaching 7.5% of population. Broadband subscriptions grew rapidly in 2005 due to increased competitive services. Competition between the DSL and the cable operator has led to an increase in connection speeds. The DSL supplier DataStream introduced pre-paid services that encouraged low-

⁴¹ A Broadband Blueprint - Supply Side Initiatives, May 2004, Malta Communications Authority.
<http://www.mca.org.mt/filesystem/pushfile.asp?id=441&source=3&pin=>

⁴² A Broadband Blueprint - Supply Side Initiatives, May 2004, Malta Communications Authority.
<http://www.mca.org.mt/filesystem/pushfile.asp?id=441&source=3&pin=>

end users to switch to broadband. Changes in the fixed telephony retail tariffs encouraged switching from dial-up Internet access to broadband.

The table below indicates the broadband and DSL penetration:

Broadband	2003	2004	2005	2006	EU 25
Total DSL coverage (as % of total population)	95.0	95.0	99.0		
Broadband penetration (as % of population)				13.2	15.7
DSL penetration (as % of population)				8.1	12.8
Predominant download speed			1/2Mbps		
Households having broadband (as % of those having access to the internet at home)				76.7	62.1
% of enterprises with broadband access	62.3		77.7		74.5

Table 7: Broadband indicators for Malta⁴³

General Usage of ICT in Enterprises and Households

A Survey on Information Communication Technologies – Usage of Enterprises 2003 aimed to measure the level to which Maltese businesses have integrated ICT practices into their normal work routines.

A good number of those surveyed own their own website. Tele-working does not seem to be popular, since it is only used by 11%. Enterprises use of internet mostly to search for information, monitor market prices, banking and financial transactions, obtain after sales service, acquisition of digital products and also for training purposes.

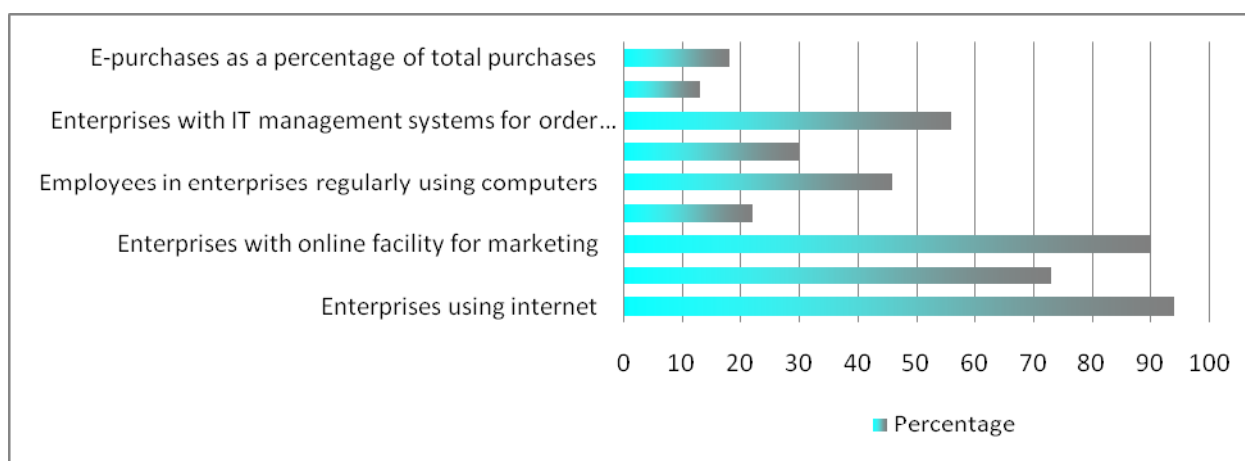


Figure 2: ICT usage in Enterprises (of those surveyed)⁴⁴

⁴³ Key ICT indicators for the Member States, Norway and Iceland.
http://ec.europa.eu/information_society/europe/i2010/docs/annual_report/2007/country_factsheets/2007_factsheet_mt.pdf

⁴⁴ http://www.nso.gov.mt/statdoc/document_file.aspx?id=990

Similarly a survey, Survey on ICT Usage in Households 2002⁴⁵ and ICT usage by households and individuals: 2005⁴⁶/2006,⁴⁷ were also conducted with the primary objective to obtain relevant indicators from the people themselves. It was found that computer availability has increased from 38% (2002) to 50.6% (2006) for desktop computers, from 3.9% (2002) to 13.6% (2006) for portable computers and for handheld computers the increase was from 1% (2002) to 1.7% (2006). Also an increase in internet accessibility has been registered. DSL is the most used with 55.9%, followed by Modem/ISDN with 23.8%, other broadband connection with 23.6% and mobile phone over narrowband with 2.3% as at 2006.

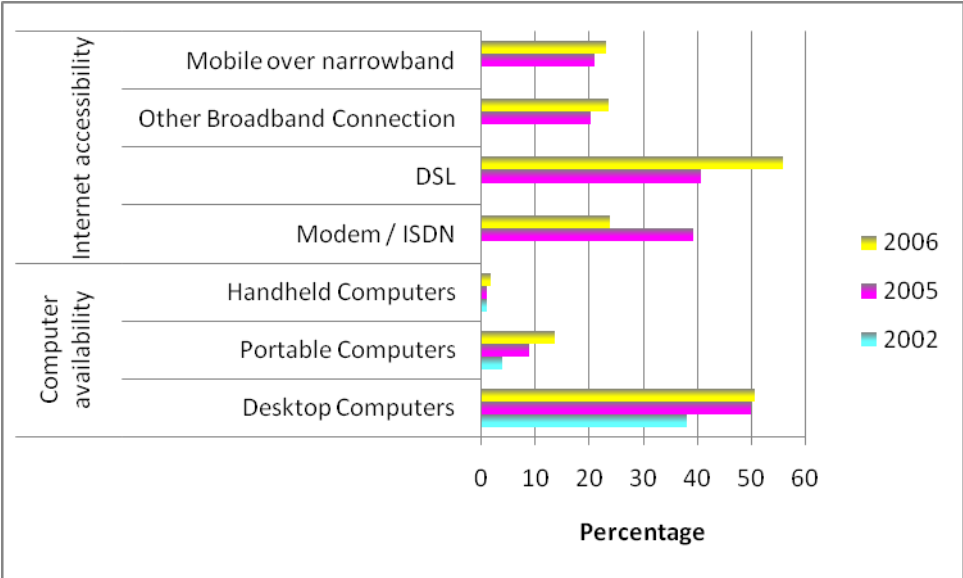


Figure 9: Computer and Internet Accessibility in households⁴⁸

The main reasons for individuals (53.1% have internet accessibility) to use internet are to send/receive e-mails, search for information about goods and services, seek health-related information, use services related to travel and accommodation and internet banking. On the other hand, the reasons regarding those who do not have access to internet (46.5%) are because, they have access elsewhere, no desire/need for this medium, high equipment cost, high access cost, lack of skills, physical disability, privacy or security concerns and other reasons.

⁴⁵ Survey on ICT Usage in Households 2002. http://www.nso.gov.mt/statdoc/document_file.aspx?id=117
⁴⁶ ICT usage by households and individuals: 2005. http://www.nso.gov.mt/statdoc/document_file.aspx?id=1743
⁴⁷ ICT usage by households and individuals: 2006. http://www.nso.gov.mt/statdoc/document_file.aspx?id=1869
⁴⁸ Annex: Table 17

I: CURRENT EDUCATIONAL SYSTEM AS THE PLACE OF E-LEARNING

The following section describes in detail the current education and training system in Malta and its relationship to eLearning.

I.1. Description of the education and training system in Malta

State education is free of charge from pre-primary up to tertiary level. Within the compulsory school age (5 to 16 years) children attending state education are provided with free textbooks and school transport. The non-state education sector is sub-divided into Church schools and independent private schools. The Church schools are predominantly Roman Catholic schools and are heavily subsidised by the government and, as a result, Church schools do not charge any tuition fees. Independent schools are set up by individuals or non-profit parents' foundations. The government gives tax rebates to parents whose children attend these schools. The Ministry of Education, Youth and Employment (MEYE) is responsible for the administration, organisation and the financial resources in state schools. Legislation empowers the Minister of Education, Youth and Employment, or his/her representative to monitor the functioning of schools both within the state and the non-state sector. The central government department that has been responsible for implementing the policy of the MEYE is the Education Division (ED). It is responsible for education from kindergarten up to the end of compulsory education. Within the ED there are Education Officers who monitor and evaluate the teaching and learning as well as the administration of schools. They provide support and advice to teachers and school management. Local government as yet has not been vested with significant responsibilities for education. The University of Malta, a state funded institution, provides tertiary education and is fully autonomous. The Malta College of Arts, Science and Technology and the Institute for Tourism Studies provide further and higher vocational education and training. Full time students attending upper secondary/post-secondary institutions and university receive a maintenance grant. The Department of Further Studies and Adult Education (DFSAE) within the Education Division has overall responsibility for promoting lifelong learning and for facilitating opportunities and creating possibilities for continuing education. It is also taking on the role of regulator of lifelong learning provision.

The education agenda of the present government works towards the ultimate aim of having flexible workers who are able to adapt and change career if necessary. This is attained through commitment for improvement of educational standards and the provision of an education system, which ensures personal development.

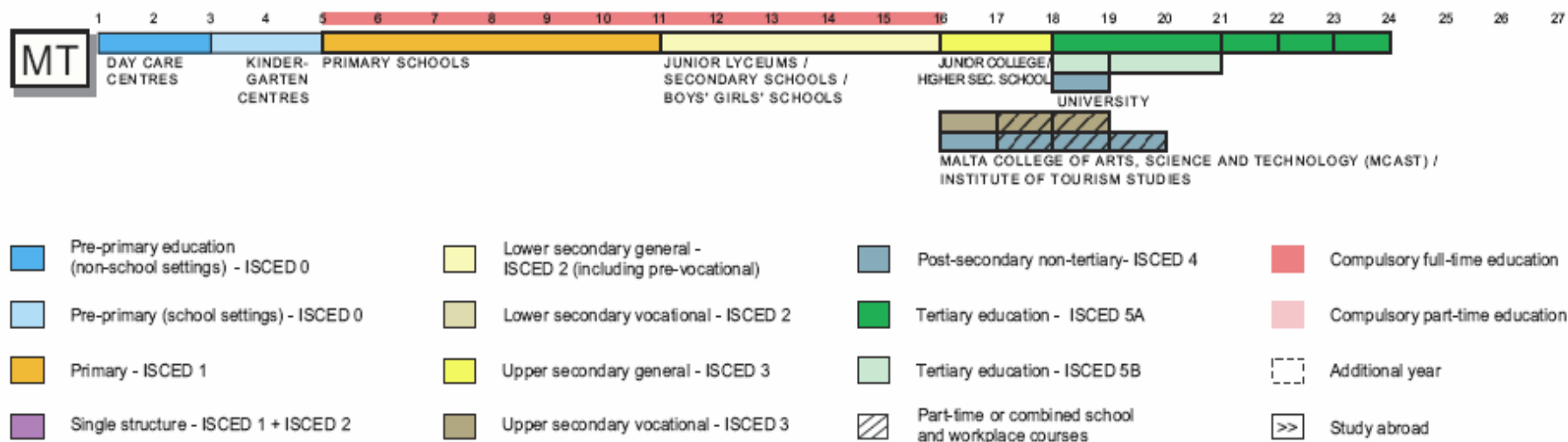


Figure 10: Organisation of the education system in Malta, 2003/04⁴⁹

⁴⁹ Structures of education, vocational training and adult education systems in Europe; 2003 Edition
http://www.eurydice.org/ressources/eurydice/pdf/041DN/041_MT_EN.pdf

All children between the ages of five and sixteen are entitled to free education in all state schools regardless of age, sex, belief and economic means. The national minimum curriculum and the national minimum regulations for all schools are established by the state according to the rights given by the Education Act (1988). According to the Education Act (1988) a person or institution wishing to establish a private school is given the right to apply for a license from the Minister of Education. Private schools in Malta fall in two categories: church schools and independent schools. Both provide education from pre-primary to upper secondary levels.

Malta has two main tertiary-level education institutions, the oldest of which being the University of Malta (UoM), with a student population of around 9,800 in 2005. Entities like the Malta Centre for Restoration, the Junior College or the Foundation for International Studies, are linked in different ways to the University.

The second higher education institution is the Malta College of Arts, Science and Technology (MCAST), founded in the year 2000. By 2001/2, this vocational college had 1,635 students (source: National Statistics Office: Educational Statistics 2002). In the same year, 782 students (of whom 48 were over 25 years of age) attended the Institute for Tourism Studies, on a full or part-time basis, while other vocational education institutions attracted a few more hundreds.

To complete the picture, the Employment and Training Corporation (ETC) provides adult education courses and traineeships combining employment, off-the-job and on-the-job training, to meet the specified needs of employers.

The Foundation for Educational Services (FES) primarily exists to empower parents in the education of their children and to provide additional educational support to low achievers. It runs family literacy programmes to combat illiteracy and is currently setting up community-based Lifelong Learning Centres.

I.1.1. Pre-primary education (3-5 years)⁵⁰

Attendance at the pre-primary level is voluntary and about 95% of children between three and five years old attend. Pre-primary education is co-educational and is provided free in state schools. At this level no formal teaching takes place. The National Minimum Curriculum states that the main educational objectives should include activities aimed towards the development of the children's social attitudes, language and communication skills in preparation for primary education. These activities should include communication by word or gesture, singing, play, painting and figure forming, exercises and rhythmic movements.

Most pre-primary centres, which are also called kindergarten centres, form part of primary schools. Teachers who teach at kindergarten are called Kindergarten Assistants, and are qualified to handle children.

I.1.2. Compulsory education (5-16 years)

Education is compulsory for all children between the ages of five and sixteen. Compulsory education is sub-divided into a six-year primary cycle (five to ten years) and five years of secondary education (eleven to sixteen years).

Primary education builds on early childhood education and facilitates the development of skills, attitudes and knowledge in preparation for the secondary level. Primary education is free of charge and includes school transport and textbooks. Primary schools are co-educational. At this stage the student to teacher ratio has decreased to 12.1 (2005) from that of 1999 being 19.6.⁵¹ At secondary level there

⁵⁰ Portal on Learning Opportunities throughout the European Space, EC.
http://europa.eu.int/ploteus/portal/renderers/generalinfo_renderer.jsp?DocId=53869&SecMode=1?DocId=53869&SecMode=1

⁵¹ Eurostat – Data – Education: Thematic Indicators Progress Towards the Lisbon objectives in education and training

are three different kinds of state schools. Namely the Junior Lyceums, Area Secondary Schools and schools for very low achievers. There are also church and independent secondary schools. The pupils to teacher ratio stands at 8.4 for 2005, decreasing only by 0.3 from 1999.⁵²

I.1.3. Upper secondary education

At Upper Secondary level the students usually spend a two year period which specifically caters for the students' preparation for Tertiary Education. The institutions providing Upper Secondary Education offer a two-year course specifically designed for future University students who are prepared for the MATSEC Certificate (Matriculation and Secondary Education Certificate) in accordance with the University's General Entry Requirements. Students may choose from a wide range of subjects and must take two subjects at Advanced Level, three at Intermediate Level, as well as Systems of Knowledge. Subjects chosen should also include any Special Course Requirements needed for their prospective University course. At the end of the two year course the students must sit for Advanced, Intermediate level and Systems of Knowledge MATSEC Exams in the subjects they followed throughout the two years.

I.1.3.1. Vocational upper secondary education

The system of Vocational Upper Secondary Education provision in Malta is based on a structure of nine institutes which provide courses in nine main areas. These institutes make part of the Malta College for Arts, Science and Technology (MCAST). The courses at these institutes are of a 1 year to 2 year duration.

I.1.3.2. Apprenticeship training, initial vocational training

Students following technical/vocational upper secondary education are eligible to enrol in apprenticeship schemes. These schemes are the Technician Apprenticeship Scheme (TAS) and the Extended Skills Training Scheme (ESTS).

The organisation responsible for work placements and follow up is the Employment Training Corporation (ETC) falls under the Ministry of Education. Vocational courses are linked with industry through the two training schemes available (TAS and ESTS). The ETC offers a wide range of training opportunities for persons willing to learn a trade or skill and thus improve their chances of finding and retaining full time employment.

I.1.4. Tertiary education

Higher education is mainly provided by the University of Malta. The governing body is the Council, which acts on the advice of the Senate but which also has responsibility for appointing faculty staff, promulgating regulations, overseeing and approving expenditures and ensuring that the University responds to the needs of the country.

Diplomas and Certificates are awarded in such fields as Nursing, Diplomatic Studies, Management, Administration, Librarian Studies, Religious Studies and Political Science after studies lasting between one and three years. The Bachelor's (General) Degree is obtained in three years; the Bachelor's (Honours) Degree is awarded after four or five years, depending on the field of study.

The second stage leads to the award of a Master's Degree after a period of one to two years. Candidates must hold an appropriate first degree with at least second-class Honours. In special circumstances, candidates without an Honours Degree may be admitted after a one-year preparatory course and success in a qualifying examination. In Education, the Master's degree is conferred after two years part-time study. Holders of a Bachelor of Education (four years) or a Bachelor's Degree followed by a professional teaching qualification called the Postgraduate Certificate in Education (PGCE) are eligible. In both cases, two years of teaching experience are required. Master's Degree courses require candidates to submit a dissertation in addition to the successful completion of the

⁵² Eurostat – Data – Education: Thematic Indicators Progress Towards the Lisbon objectives in education and training

required courses. The professional qualification of Doctor is conferred after five years in Medicine and six in Law (three years after the award of a BA degree in Legal and Humanistic Studies).

The third stage leads, after at least three years of study following the award of a Master's Degree, to the Doctor's Degree (Doctor of Philosophy, PhD). Candidates are required to submit a thesis after a period of research on an approved topic. Students normally join university courses at the age of 17/18 years although some mature applicants are admitted mostly to part-time and evening courses.

Local students do not pay fees and are given maintenance grants by Government during their course of studies. All Maltese students following a full-time degree at the University of Malta who are under the age of thirty years receive a stipend. A limited number of scholarships are available in terms of bilateral agreements with some countries. Overseas students are charged fees.

I.1.5. Adult education

The Department for Further Studies and Adult Education (DFSAE) is responsible for the provisioning of adult education under the Ministry of Education. The Adult Education and Evening Course Section within this department provides various services including vocational, academic, craft and leisure subjects as well as courses in drama, music and art, and adult basic literacy. The Government Evening Classes Centres, are attended by 6,600 in 2003 - up from 3,995 in 2002; and the Adult Education Centres had 1 281 registered adults in 2003, up from 900. Part-time evening courses are also provided by the Government in areas of culture and leisure: in 2003, the School of Music had 1,845 students, the Academy of Dramatic Arts had 550, and the School of Arts 1,042. In the same year, 760 senior citizens enrolled to take up courses at the University of the Third Age. Finally, 3,186 individuals (up from 2,777) preferred to attend evening classes offered by private centres.⁵³

In total, according to NSO figures for 2003, 15,213 persons received some form of further education and training in that year - a net increase of 32.3% over 2002. It should be noted, however, that these figures relate only to adult/evening education (excluding all courses offered by the institutions mentioned in the first two paragraphs), and that they refer to learners of all ages. In fact, 4,810 participants were under 20 years old; at the other end of the scale, 4,555 learners were aged over 40.

Courses for adults are also held by the **Employment Training Corporation (ETC)** which aims at providing and ensuring an equitable access to training programmes and employment services to contribute towards the social and economic development of the community. The ETC also set up the Night Institute for Further Education providing further opportunities for adults wishing to pursue various vocational courses, including IT and Computer Practice. Support is also given to those students who have a low level of general education and basic skills, through the Basic Skills Unit of the Learning Support Centre. The centre also offers a wide variety of part-time day and evening course for adults.

I.1.7. General learning indicators

As can be seen from figure below, Malta has made significant progress over recent years in stepping up participation rates in Post-secondary and Tertiary education. Over the last decade, Malta has witnessed significant overall expansion in the higher education sector. In day courses alone, the student population increased by 67% over the ten years between 1994 and 2004. In the last five years, the growth rate has been 31%. The past decade has also witnessed a marked increase in students attending part time or evening courses conducted by the University of Malta and MCAST.

⁵³ Education Statistics, NSO 2003

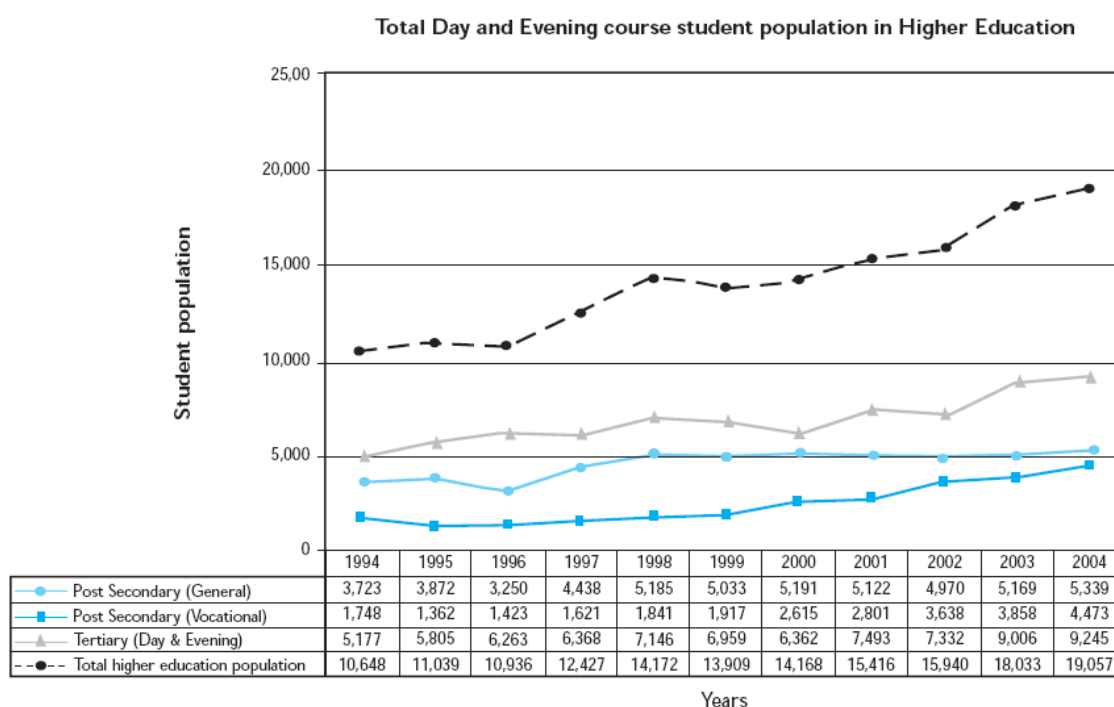


Figure 11: Total day and evening course student population in Higher Education (students per year)⁵⁴

The total student population (full-time and part-time), increased slightly, from 102,635 students in 2002/2003 to 103,342 students during 2005. This minimal increase of 0.7 % or 707 students reflects the increases in student population registered at post secondary vocational and adult evening education.

		Registrants					
		Jan 05 – Jun 06			Jan 05 – Jun 06		
		Started			Finished		
		Total	Male	Female	Total	Male	Female
IT -Related	Malta	1,509	986	523	1,203	816	387
IT -Related	Gozo	437	217	220	378	203	175
IT -Related	Total	1,946	1,203	743	1,581	1,019	562
		Non-Registrants					
		Jan 05 – Jun 06			Jan 05 – Jun 06		
		Started			Finished		
		Tot	Male	Female	Tot	Male	Female
IT -Related	Malta	233	86	147	229	97	132
IT -Related	Gozo	10	3	7	14	8	6
IT -Related	Total	243	89	154	243	105	138

Table 8: No. of Persons (Registrants and Non-Registrants) attending ETC-organised IT courses⁵⁵

⁵⁴ Data as at start of Academic year October – 1994; 2002 NSO Education statistics; 2003; NSO provisional data; 2004; University of Malta as at September 2004. State higher education funding, Report of the State Higher Education Funding Working Group to the Minister of Education, Youth and Employment. November 2004.

<http://www.education.gov.mt/ministry/doc/pdf/hef.pdf>

⁵⁵ NRP 2006

The results outlined above are encouraging and Government intends to continue in this direction and continue to organize similar training courses. In addition, Government is also planning to open similar training centres in other areas of the Maltese Islands such as Birkirkara.

I.1.8. Current situation vis-à-vis ICT literacy education

Malta has made huge strides to bring about an inclusive information society and in order to promote eAccessibility, the Government launched a large number of electronic services and invested substantially in ICT in public schools between 1994 – 2004. This has enabled the Maltese education sector to today be ranked as one of the most technologically-connected in the world. All state schools are connected to the internet. ICT in education is frequently used not merely for the teaching of its use for its own sake but also as a pedagogical tool. It is also used as a teaching tool during mathematics lessons and an initiative has been launched to use ICT across the curriculum.

The Department of Technology in Education argues that ICT competence is not to be seen as a subject area that is separate from the other subjects, but as a competence that supports the developmental objectives and attainment targets of the entire curriculum. The success of this depends on the attainment of a degree of ICT literacy primary level within public schools. The Department of Technology in Education therefore has been striving to use ICT across the curriculum and to have a double result in that it helps the particular curricular area and contributes to the attainment of ICT literacy in an informal way. ICT in primary schools has so far never been formally assessed, but it is the intention of the Department of Technology in Education to continue not teaching ICT as a separate subject in state schools but to continue to integrate into and contribute its potential to other subjects.

In secondary schools, computer skills are directly targeted by the ICT curriculum. ICT is a compulsory subject and prepares students for the European Computer Driving License (ECDL), which is an internationally recognised qualification in ICT skills. Whether the Maltese educational system is succeeding in making secondary school students ICT literate in the broader sense of the term depends much upon the teaching method adopted in secondary schools.⁵⁶

At post-secondary and tertiary levels, ICT education is developed with a number of recognised educational institutions, state and private owned, which offer diverse opportunities to pursue a career path in ICT. The two state institutions which offer ICT courses at this level are the University and MCAST. The number of ICT graduates in these two institutes is increasing albeit at a slower pace than required, particularly in view of the potential of current developments in the field. Over a period of three years (2002-2005) the percentage increase of ICT graduates amounted to 33 % which is relatively still low when compared with the expected needs of the industry.

IT academies have also been set-up in Malta which provides opportunities to students to attain an international industry certification. To widen the potential range of ICT specialisations and support to individuals in pursuing the acquisition of ICT skills, Government established tax credits for ICT training to increase the accessibility and affordability of gaining the ICT knowledge required by the industry. Competencies in ICT in primary education can be divided into three main areas, those focussed on the learning process, on technical and operative skills and on social and ethical competencies. The identification of the constituent parts of ICT and their role in the primary classroom features predominantly in the ICT Level Descriptors for Primary (2004). The document identifies four levels with different key focuses, and defines the various competencies that primary school pupils in Malta are expected to achieve at different levels.

I.2. Place of eLearning in educational system

eLearning is slowly but surely finding its place in Malta's educational system mostly thanks to very practical and concrete measures undertaken by the Ministry of Education. A significant number of

⁵⁶ ICT Literacy & Education in Malta. Lawrence Zammit. Director Technology in Education 2004.
<http://schoolnet.gov.mt/dtie/ICT%20Literacy.doc>

eLearning efforts, projects and services have been initiated by the Department of Technology in Education (DTIE), in primary and secondary education. These efforts have been extensively covered in Section 2.5 below.

Of concern is the supply of open and distance courses and services at tertiary level which is generally limited to adhoc projects or those offered by foreign universities and educational institutions. Very limited opportunities for open and distance learning are currently offered by Maltese educational institutions. On the other hand, distance education programmes offered by foreign universities have attracted several students, especially post-graduate ones, but no statistics on this emerging trend are available at present. A few private agents from foreign Universities are offering online/blended courses in a range of subjects.

The University of Malta does not yet offer a holistic approach to Open and Distance Learning, but its first online modules are now being produced by the Fondazzjoni Temi Zammit, as part of the Avicenna Virtual Campus Pilot Project. The University is also participating in other eLearning Initiatives.

Very few enterprises seem to use eLearning tools for employee training; however no statistics have been collected on this question. The Malta Council for Science and Technology plans to finalise an ESF project to assist enterprises to set up their own R&D facilities and make use of eLearning.

I. 3. ICT skills and attitudes towards ICT usage

An area of good practice in Malta is definitely information society, where Malta emerges as a leader among the new members and the social cohesion drive.⁵⁷ The Survey on Information Communication Technologies – Usage of Enterprises 2003 aimed to measure the level to which Maltese businesses have integrated ICT practices into their normal work routines. A similar survey, Survey on ICT Usage in Households 2002,⁵⁸ was also conducted with the primary objective to obtain relevant indicators from the people themselves. Both of these surveys and their outputs have been covered extensively in the section of ICT usage in the introduction.

The Survey on internet use by students (2005)⁵⁹ indicated that most students, or 94.7%, aged between 7 to 16 years old make use of computers. It was found that a comparable proportion of boys and girls make use of computers. Variation in computer use is related to educational level and school type. Form 3 to 5 students make use of computers mostly (97.8%). At the same time students attending independent schools use computers more than students attending government or church schools.

Whereas there is no significant difference between districts vis-à-vis computer use, computer use at home by students residing in Gozo and in the Southern districts is lower than in other areas.

Another survey titled “Survey on Information Communication Technology in Schools 2005”⁶⁰ was carried out in all schools in the Maltese Islands, for the academic year 2003/2004, with the primary objective of collecting key information about ICT in teaching, learning and administration. There are 8,521 computers present in schools in Malta and Gozo, of which 88.1% are desktops and the remaining 11.9% laptops. The majority of schools have over 70 computers available for use. There are an average of 0.16 desktop computers per pupil at primary level, 0.09 desktop computers per pupil at secondary level, and 0.1 desktop computers per pupil at primary/secondary schools.

⁵⁷ Annual Innovation Policy Trends and Appraisal Report, Malta 2004-2005, European Commission
http://trendchart.cordis.lu/reports/documents/Country_Report_Malta_2005.pdf

⁵⁸ Survey on ICT Usage in Households 2002. http://www.nso.gov.mt/statdoc/document_file.aspx?id=117

⁵⁹ Internet use by students (2005). NSO. http://www.nso.gov.mt/statdoc/document_file.aspx?id=1472

⁶⁰ Survey on Information Communication Technology in Schools.
http://www.nso.gov.mt/statdoc/document_file.aspx?id=1495

The majority of schools have all classrooms and offices, but no media rooms, staff rooms or libraries connected to the school's network. Asked about the number of ICT peripherals available in the school, the most common facilities are digital cameras and video cameras, and DVD players.

Nearly 90% of all schools have computers that are connected to the internet, to the tune of 5 700 computers. Whilst all secondary schools have an internet connection, 84.5% of primary and 85% of secondary schools are connected. The majority of schools have fewer than 50 computers connected to the internet. The principal means of internet access in most schools is ADSL – 51.7% of schools with an internet connection favour this type. A further 37.1% use cable internet and the remaining 11.2% use a dialup connection. 40.4% of all schools have their own website.

When asked if the school monitors e-mails and internet usage, 70.2% replied that they do. The most popular method used for monitoring is by means of a walled garden, followed closely by a filtering system. Some schools also monitor usage by means of supervised access.

Just 25 schools provide ICT facilities outside school hours. Of these, 14 provide ICT facilities for use by pupils, 5 for use by the local community, and 6 for use by both pupils and the local community.

The schools' main source of technical support was found to be the schools' head office, followed by an external service supplier. The schools' own support staff and schools' teaching staff were also common forms of technical support.

Of all the schools surveyed, 89.4 % said that they have a Management Information System (MIS) in place. This MIS was mostly used for attendance (73.3%), reports for parents (59.6%) and personnel (55.3%).

The most common activity for which teachers use the computer on a regular basis is the preparation of worksheets and handouts. Also, it is used for lesson planning, information services, schemes of work, teaching, and assessments. It was found that 93.0 % of teachers have access to a computer at home

42.0% of teachers – 37.7% of males and 43.9% of females – have been trained in the use of ICT equipment. The majority of these were trained in this particular subject between the years 2000 and 2004. 8.4% of teachers have been trained in ECDL.

Finally, 54.0% of teachers described themselves as being 'confident' in ICT, besides which 31.2 % said they felt 'not confident' and 14.7% said they felt 'very confident'. What is interesting to note is that whilst 20.8 % of males described themselves as 'very confident', only 12.0% of females felt the same. Of the persons who described themselves as 'very confident', 56.1 % are aged less than 29. The majority of those who described themselves as 'not confident' were aged 50 and over.

A total of Lm 307,336 was spent on ICT by private schools in 2004. This amounts to Lm14.85 per pupil on average. The largest amount of money was spent by primary schools, followed by mixed primary/secondary schools and finally secondary schools. The lion's share of the expenditure – 43.4% – went on hardware, followed by expenditure on software with 17.6%. The least amount of money – just 2.4% of the total expenditure – went towards internet costs.

On a similar note, in the cases where interviews were held with the related actors, the interest in eLearning by their students was in most cases very high since students valued the freedom it allowed them to follow the offered courses/modules. However no follow-up studies seem to have been made to assess their impact.

II. OVERVIEW OF E-LEARNING IN MALTA

II.1. Institutional structures and resources for eLearning

The local main actors involved in eLearning include:

Ministry of Education, Youth and Employment

The Mission of the Ministry of Education⁶¹ (MEYE) is to provide Maltese citizens with real and fair choices in the important sectors of education, culture and sports. For this purpose it ensures that:

- public education will provide the best service to Maltese citizens;
- the appreciation of cultural and artistic expressions would be enhanced not only among Maltese and Gozitans living in Malta but also among those living in other Communities;
- special attention be given to the development of sports, and Maltese youth be given the necessary space, opportunities and means to attain a pre-eminent role in society

The **Education Division** is the government department within MEYE responsible for the provision of an effective and efficient system of education. The Education Division together with the **Department of Libraries and National Archives** and the Employment and Training Corporation (ETC) falls within the responsibilities of the Minister of Education. The Minister's portfolio includes also the **Foundation for Tomorrow's Schools** and the **Foundation for Educational Services** that were set up in May 2001. The Foundation For Tomorrow's Schools has been established with the objective of developing alternative avenues to finance school construction and refurbishment and to project manage the school infrastructural work itself. The Foundation for Educational Services was conceived as a mechanism that enables the Education Division to provide a range of primary and secondary prevention and intervention measures aimed at reducing failure, literacy and absenteeism.

Initial teacher training is the responsibility of the **Faculty of Education** at the University of Malta, which is the national training institution. In-service training is the responsibility of the Education Division. This training influences teaching methods but teachers in classrooms have great freedom in choosing their own methods of teaching. In state schools, the Education Division chooses most of the teaching materials and there is a prescribed textbook by subject. Schools in the private church/independent sector choose their own teaching materials, but are often guided by materials used in state schools.⁶²

Of special relevance to eLearning as understood within this study, **the Department of Technology in Education (DTIE)** within MEYE is responsible for the introduction of technology education as an education tool in primary education and as a core subject in the secondary. However in the Primary the emphasis is on the use of ICT to teach and learn the curriculum subjects, rather than a subject in itself. Efforts of the Department include:

- Continued emphasis on the development of teachers in the use of ICT in their subject areas;
- Increased emphasis of the pedagogical use of ICT (i.e. on all forms of work, organisation and assessment, as well as a tool in such development, ICT across the Curriculum);
- ICT certification for all students through the introduction of European Computer Driving Licence (ECDL);
- Ensuring fast internet access to all students and improving student to computer ratio in the primary and secondary schools;

⁶¹ <http://www.education.gov.mt>

⁶² Structures of Education, Vocational Training and Adult Education Systems in Europe, Malta; EURYDICE/CEDEFOP/ETF 2003

- Setting up of a National Web-based Education Resource Centre;
- Maintaining the infrastructure of the ICT school network;
- Evaluation of current state of use of ICT in Schools;
- Training and support of school administrators and school clerical personnel in the SIS programmes.

In a nutshell all that is related to IT in education falls under the jurisdiction of this all important delivery arm within the Ministry of Education Youth and Employment.

The ICT Secondary Sector unit within DTIE aims to explore and exploit the potential of ICT, to enhance the quality of teaching and learning experiences and practices for students and teachers and prepare them for a future in which new technology is ever changing. The ICT Secondary Sector Unit also provides ICT teachers and schools with the necessary ICT tools, resources, expertise, information, advice and support to make delivery of ICT in education more effective. The unit supports the ninety six ICT teachers (96) and over 18,000 students in Forms 1 to Form 5 in Junior Lyceum School, Area Secondary Schools and Boys' and Girls' Schools. Under this section there are 23 schools with computer lab technicians. This section works closely with MITTS Ltd personnel for the deployment and maintenance of computers in the secondary schools amounting to over 1400 computers in 92 school laboratories. The Secondary Sector Unit initiatives include the designing, updating, implementation and support of ICT Syllabi to meet new requirements in the technological and educational spheres. ECDL has been included in the ICT Syllabus and the staff at the secondary sector has helped in its implementation, monitoring and testing. In-service training courses in ICT are regularly held for teachers in July and September. Teachers are given support also through the Collaborative 'ICTSec' website,⁶³ which includes curricular information, teaching resources, Half Yearly and Annual past papers, teaching and examinations schedules, pedagogical approaches.

The **Design & Technology Learning Centre** also within DTIE aims towards fostering a holistic approach to all learners in the creative application of knowledge, skills and understanding through technological awareness, design methodology and the application of problem solving skills to real life problems.⁶⁴

Of particular note to eLearning are also the efforts of the **Curriculum Department** whose general aims towards ICT in Education include:

1. Helping learners become competent, confident, responsible and critical users of ICT by making efficient, effective and creative use of basic software and hardware in their everyday classroom activities;
2. Assisting learners to become responsible, critical and reflective users of ICT by recognising the capabilities and limitations of the technology and its impact on society in general;
3. Encouraging learners to develop the appropriate social skills that are essential for co-operative and collaborative learning by using ICT;
4. Empowering ICT-disadvantaged learners by ensuring sufficient access for those learners who have little out-of-school opportunities to use the technology;
5. Encouraging learners to develop the appropriate personal skills essential for independent lifelong learning through ICT;
6. Helping learners with special needs to integrate themselves within school and society by increasing their independence and by developing their knowledge, abilities and interests; and,
7. Enabling learners to take control of their own learning.⁶⁵

⁶³ <http://skola.gov.mt/ictsec/page.asp?id=34>

⁶⁴ http://schoolnet.gov.mt/des_tech/

⁶⁵ http://www.curriculum.gov.mt/docs/syllab_pr_ictrationale.pdf

The Ministry for Investment, Industry and Information Technology (MITI)

The Ministry for Investment, Industry and Information Technology (MITI)⁶⁶ has four main areas of responsibility. MITI is designated as the political champion of the application of information and communication technologies within the Government and the broad national community and economy at large. The Minister leads the Government's efforts to:

- Develop further the Maltese information society and economy, locally and within the international arena, making the Maltese experience a best practice to be followed by other countries;
- Strengthen the role of ICT in Government not only to improve service delivery but as a tool of extending democracy and accountability, eradicating clientalism and realise efficiency gains; and
- Transform Malta into a regional technology centre of excellence for systems development, training specialisations and service provision in the Euro-Mediterranean region.

University of Malta

Malta has two main tertiary-level education institutions, the oldest being the University of Malta, with a student population of around 9,245⁶⁷. Entities like the Malta Centre for Restoration, the Junior College or the Foundation for International Studies, are linked in different ways to the University. The other main higher education institution is the Malta College of Arts, Science and Technology, founded in the year 2000. By 2002, this post-secondary vocational college had 1,635 students. In the same year, 782 students attended the Institute for Tourism Studies, while other vocational education institutions attracted a few more hundreds.

The National Action Plan for Employment published in 2004 states that the University of Malta will be establishing a Lifelong Education Unit "to attract more adult students, particularly those in mid-career and others seeking post-graduate education. **The Computing Services Centre (CSC)** is responsible for the campus network infrastructure and provides IT and computing services to the campus community.

The Malta College of Arts, Science and Technology (MCAST)

The MCAST provides universally accessible vocational and professional education and training with an international dimension. The Malta College for Arts, Science and Technology introduced flexible modular programmes to facilitate lifelong learning and will be setting up an Accreditation of Prior Learning Framework "to encourage adults to return to education".

The Institute of Tourism Studies (ITS)

The Institute of Tourism Studies is a higher and tertiary level institution aimed at meeting the changing needs of the Hospitality and Tourism Industry. The main responsibility of the Institute is to furnish the Tourism Sector with professional personnel who can guarantee an excellent standard of products and services within the Hospitality Industry.

The Employment and Training Corporation (ETC)

The ETC provides adult education courses and traineeships combining employment, off-the-job and on-the-job training, to meet the specified needs of employers. It also subsidises the costs of specific courses for adult learners, under certain circumstances. The Foundation for Educational Services, whose principal role is to empower parents in the education of their children and to provide additional educational support to low achievers, runs family literacy programmes to combat illiteracy and is currently setting up community-based Lifelong Learning Centres.

In total, according to figures published by the National Statistics Office, 15,213 persons received some form of further education and training in 2003 – a net increase of 32.3% over 2002.⁶⁸ It should be

⁶⁶ <http://www.miti.gov.mt>

⁶⁷ www.um.edu.mt

⁶⁸ Structural, Indicators, 3rd quarter 2005. National Statistics Office: http://www.nso.gov.mt/docs/2005_Q3.pdf

noted, however, that these figures relate only to adult / evening education; they exclude all courses offered by higher education institutions and they include learners of all ages. In fact, 4,810 of the said participants were under 20 years old; at the other end of the scale, 4,555 participants were aged over 40.

National Information Society Advisory Council (NISCO)

NISCO brings together more than 50 stakeholders from public, private entities and civic society, the Ministry for Investment, Industry & Information Technology is the national responsible Institution. The council meets regularly every two months. Stakeholders share a common interest in ICT and the advancement of the 'Information Society'. Meetings take the form of a round-table discussion where participants are invited to present their views on the subject.

Fondazzjoni Temi Zammit (FTZ)

FTZ is a Maltese non-profit foundation drawing key stakeholders together in a strategic partnership to boost regional development. The Foundation's vision is painted upon the premise that knowledge is the "essential enabler" around which the new economy revolves. Besides supporting the development of learning organisations, it also intends to promote a favourable environment for research and innovation to help equip our society to face the challenges of the present and the future. In practice, FTZ wants to establish itself as the island's leading multi-stakeholder partnership for regional development, provider of lifelong education and training, and promoter of a strong research and innovation culture. It aims to create greater social cohesion and contribute to the moulding of tomorrow's knowledge-based society – "an inclusive society without frontiers to knowledge".

The Foundation for Information Technology Accessibility (FITA)

FITA was established by the Malta Information Technology and Training Services Limited (MITTS) and the Kummissjoni Nazzjonali Persuni b'Dizabilita' (KNPD) on 2nd October, 2001. The aims and objectives of the Foundation are the following (arranged numbering)

1. To promote equal opportunities for all, in particular in relation to information technology matters;
2. To provide training services in information technology to disabled people;
3. To gather and disseminate information and to increase awareness on information technology matters;
4. To liaise with and facilitate public and private endeavours in respect of the creation of equal opportunities in respect of information technology;
5. To offer advice and consultancy services to private and public organisations in information technology and its use by disabled persons.

Actors		Functions
Ministry of Education, Youth and Employment http://www.education.gov.mt/		provide Maltese citizens with real and fair choices in the important sectors of education, culture and sports.
	Education Division	responsible for the provision of an effective and efficient system of education. http://www.gov.mt/servicecluster.asp?s=7&l=1
	Department of Technology in Education (DTIE)	responsible for the introduction of technology education as an education tool in primary education and as a core subject in the secondary http://www.gov.mt/frame.asp?l=1&url=http://schoolnet.gov.mt/ictprimary
	ICT Secondary Sector Unit	explore and exploit the potential of ICT
	Design & Technology Learning Centre	Foster a holistic approach to all learners
	Curriculum Department	Establish parameters within which every school will be empowered to design and propose an educational provision that meets its particular curricular needs. http://www.gov.mt/frame.asp?l=1&url=http://www.curriculum.gov.mt
Ministry for Investment, Industry and Information Technology http://www.mifi.gov.mt/		designated as the political champion of the application of information and communication technologies within the Government and the broad national community and economy at large
University of Malta http://www.um.edu.mt/		Establish a Lifelong Education Unit to attract more adult students, particularly those in mid-career and others seeking post-graduate education.
	Computing Services Centre (CSC) http://www.csc.um.edu.mt/	responsible for the campus network infrastructure and provides IT and computing services to the campus community
Malta College of Arts, Science and Technology (MCAST) http://www.mcast.edu.mt		provides universally accessible vocational and professional education and training with an international dimension
Institute of Tourism Studies (ITS) http://www.its.edu.mt		furnish the Tourism Sector with professional personnel who can guarantee an excellent standard of products and services within the Hospitality Industry
The Employment and Training Corporation (ETC) http://www.etc.gov.mt		provides adult education courses and traineeships combining employment, off-the-job and on-the-job training, to meet the specified needs of employers
National Information Society Advisory Council (NISCO)		brings together more than 50 stakeholders from public, private entities and civic society, the Ministry for Investment, Industry & Information Technology is the national responsible Institution
Fondazzjoni Temi Zammit (FTZ) http://www.ftz.org.mt		Maltese non-profit foundation drawing key stakeholders together in a strategic partnership to boost regional development
Foundation for Information Technology Accessibility (FITA) http://www.knpd.org/mittsfita		Principal advocate and coordinator for making ICT accessible for disabled people in Malta

Table 9: Summary of actors and their functions

II.2. Strategies, policies, action plans and projects

Over the past years Government has amplified its efforts to improve the educational sector both at primary, secondary and higher educational levels. In order to strengthen the Maltese educational system in such way to make it respond in a more effective and timely manner to the needs of the children, Government has launched a strategic document entitled “**For all Children to Succeed**”.⁶⁹ This policy document gives a strategic direction for a successful educational setup and proposes that schools are reorganized in to colleges. This document has since gone through a process of consultation, accepted by Government and been legislated in amendments to the Education Act (July 2006). Each college will consist of a number of primary and secondary schools.

Amongst the benefits there will be a smoother transition from one educational phase to another, increased autonomy, decentralisation, and sharing of best practices. In September 2005, three Colleges and a network were piloted, that is, the Cottonera, Gozo and St. Benedict's College, as well as the Special Schools Network. Of relevance to eLearning is government's commitment in this document to emphasise on lifelong learning and the use of ICT in making the network more effective. Government envisages that discussions will also be held to encourage church and independent schools in this area to enter into a partnership with the state schools network.

A need was felt to design a national policy based on the cultural needs and the national climate, and to identify shared understandings and expectations of early childhood education and care. A Working Group reviewed the current educational system and made the necessary recommendations. The Working Group published its report ‘**Early Childhood Education and Care**’⁷⁰ in April 2006. The report provides recommendations which contribute to the provision of good, quality care in the field. It covers aspects of finance, participation and access, transition, staff qualifications, learning programmes; monitoring and evaluation as well as research. The recommendations will be implemented in phases.

Currently it is the University of Malta which confers degrees. In order to strengthen and develop this sector greater collaboration is envisaged between the University of Malta and the Malta College of Arts Science and Technology in the conferment of degrees especially in the area of vocational education. This synergy between the two institutions will be facilitated by the newly set-up **National Commission for Higher Education**. The setting up of the Commission falls within the Government's strategic objectives of further developing higher and tertiary education and proposing a clear vision and sustainable targets and objectives for these sectors. For this purpose the legislative instruments were included in Act XIII 2006⁷¹ which amends the Education Act of 1988.

The **Malta Qualifications Council (MQC)** was set up in January 2006 to define a National Qualification Framework (NQF) which will provide learners with a map of all levels of qualifications, of entry and exit points at every level of qualifications as well as levels of qualifications by sector and by occupation. The NQF, is being developed in the framework of lifelong learning, and will focus on learning outcomes defined in terms of knowledge, skills and competencies. Similar to the European Qualification Framework, the Maltese NQF is meant to be a common reference point between training providers and learners. The first draft of the NQF was launched for consultation in November 2006. A final draft is expected to be completed by mid 2007.⁷²

A **National Curriculum Council** has been established to indicate, catalyse and support national educational priorities and to safeguard students' entitlement. It is also empowered to promote and monitor national educational standards. The National Curriculum Council is appointed by the Minister of Education. It is accountable and answerable to the Director General of Education. Implementation

⁶⁹ For all children to succeed; June 2005; Ministry of Education, Youth and Employment, http://www.education.gov.mt/ministry/doc/pdf/for_all_children_to_succeed.pdf

⁷⁰ Early Childhood Education and Care, A National Policy <http://www.education.gov.mt/ece.htm>

⁷¹ <http://www.doi.gov.mt/EN/parliamentacts/2006/Act%20XIII.E.pdf>

⁷² <http://www.mqc.gov.mt/>

of the curriculum in schools is the responsibility of a central authority: the Division of Education, and of the schools themselves. Other partners such as the Faculty of Education, parents' associations and other social partners are coming to play a more participatory part. The implementation of the NMC commenced in October 2000. It envisages school-based curriculum development.

Government is also in the process of providing **training to the actual trainers** with the aim to ensure that teaching and learning standards are raised and maintained and that schools transform themselves into community learning centres. Moreover, this process includes the re-skilling of teachers for multi-tasking activities, educational project management, and for new teaching and learning competencies previously uncharted. This training process has started in January 2005 and more than 2000 teachers have received training in several areas.⁷³

The main strategies so far of the Government of Malta in providing ICT and Education have included the following:

- providing primary and secondary schools with computers and ensuring that each primary class will possess at least 4 multimedia computers, appropriate software, one large monitor, a printer and one portable computer for every teacher;
- secondary schools are being equipped with one to three computer laboratories, and an effort is being made to bring down the number of pupils per computer;
- **curricular integration of ICT and the supporting of a secondary-level ICT course**, in accordance with the terms of the European Computer Driving Licence; and the inclusion of computer science as an optional subject in form 3;
- the equipping of primary school teachers with portable computers;
- teacher training: basic courses on the use of multimedia software for all teachers in primary education; financing of a two-year University of Malta evening course for teachers on the use ICT, leading to recognized qualifications; assistance offered to teachers by ICT specialist teachers working in various schools;
- installation of the **Schools Information System (SIS)** to assist schools with administration, which has now been decentralized to their level: provision of the necessary computer equipment (1 or 2 computers, one dot-matrix printer and one laser printer per school); training school heads and administrative staff to use the system (database management module listing information about pupils, pupil attendance and parent information management module, staff management modules, financial management module, timetable management);
- **creation of the Department of Technology in Education (DTIE)**, an ICT central unit within the Ministry of Education that coordinates, supports and evaluates new ICT initiatives.⁷⁴

In 2004, the Ministry of Education, Youth and Employment published a **National Action Plan for Employment**⁷⁵ which included a series of guidelines that are of relevance to eLearning and focus on:

- the National Curriculum - providing students with the skill and motivation for autonomous learning;
- improved certification;
- strengthening basic skills - describing basic literacy measures to be taken by MCAST, the Education Division, ETC, Local Councils and FES;
- reducing skills mismatches - particularly through traineeships provided by ETC;
- facilitating lifelong learning - mainly through actions to be implemented by the University, MCAST and the Department of Further Studies and Adult Education;
- retraining of workers - pursued by the Education Division, ETC, MCAST and the Institute of Tourism Studies;

⁷³ Ministry of Education, Youth and Employment

⁷⁴ ICT@Europe.edu, Eurydice, Directorate-General for Education and Culture European Commission
http://www.eurydice.org/ressources/eurydice/pdf/019DN/019_MT_EN.pdf

⁷⁵ National Action Plan on Employment, 2004, Ministry of Education
http://www.education.gov.mt/edu/edu_division/report_III_01.htm

- encouraging in-work training by employers - through incentives being considered by Malta Enterprise and ETC;
- strengthening VET - MCAST and the Institute for Tourism Studies providing training under the ETC's Apprenticeship Scheme;
- strengthening of ICT competence - a role undertaken by the Ministry for Investments, Industry and IT; and
- use of European Social Funds - describing a series of lifelong learning projects approved for funding.

Malta has been actively developing **eGovernment** since 2000, through the Ministry for Investments, Industry and IT which is responsible for all matters relating to the Information Society. eLearning, which is considered as a subset of eGovernment, is much less developed as it has only started being given specific policy attention in 2005. However, private initiative is playing an important role as facilitator of eLearning supply and take-up. The setting up of a Ministry to deal specifically with IT is a welcome step that highlights the importance that the present administration is attaching to the development of the information society and economy, this initiative builds on what had been going on in this area in previous years. The development of national IS policies may be traced back to 1994 when the first related policy, namely the National Science and Technology Policy, was conceived. In the same year the Information Technology Project took off. The University of Malta (UOM) introduced undergraduate degrees in Computer Science, Computer Systems Engineering and Informatics in 1996. In 1998, the **Information System Strategic Plan (ISSP) 1999-2001** was formulated. The **Legislative Framework for Information Practices** followed a year later.

In 2004, Government launched the eGovernment programme with the following three objectives:

- To deliver a first-class public service,
- To increase citizen participation in government decision-making,
- To streamline public services and realise efficiency gains.

These objectives are being addressed through a number of parallel implementation streams. Government is primarily pursuing public-private relationships with the local ICT sector for the design, development and implementation of a range of electronic services. The core elements of the eGovernment programme are being developed within Government's IT agency, MITTS Ltd., which provides a common platform and launching pad for all services.

A **National ICT Strategy 2004 – 2006**⁷⁶ was published by the Maltese Government in 2003. The strategy is based on two main broad thrusts:

- The enhancement of the Maltese information society and economy, making the Maltese experience a best practice to be followed by other countries.
- The strengthening of ICT in government, not only to improve service delivery but also as a tool of extending democracy, accountability and realise efficiency gains.

Malta's eLearning Strategy is considered as a subset of the eGovernment programme but it is in the conceptual and visioning stages; the Strategy has been drafted and development started in 2005 but implementation has yet to start. As the eLearning Strategy is still being developed, its main deliverables have not been included in the National ICT Strategy. Currently, the main drive for eLearning emerges from personal belief in the importance and usefulness of such services of a handful of leaders in the public service but no top-down holistic champions seem to have made any concrete pushes. The Ministry for Investments, Industry and IT plans to trigger off a large scale set of policies and initiatives after implementation.

The National ICT Strategy is largely built around eGovernment and the strategic which directly targets eLearning i.e. **Objective 2, aims to “Promote and extend holistic ICT-education and accessibility**

⁷⁶ National ICT Strategy 2004 – 2006, Ministry of IT and Investments: <http://www.miti.gov.mt/docs/ITStrategy.pdf>

to technology” through the proliferation and the delivery of first-class, accessible and secure eLearning services, in order to consolidate the eGovernment programme. Tactical areas for action under this objective included:

- Increase the ICT content delivered in all schools and at all levels.
- Introduce vocational qualifications in ICT and certify valid ICT-experience.
- Set up of virtual campuses between local and foreign ICT educational institutions and develop intra- and inter-educational high speed networks.
- Increase the teaching capacity of the ICT teachers at all levels of the educational system.
- Implement a national public eLearning platform.
- Introduce a national culture of knowledge management and knowledge transfer within and between different organizations.
- Match the temporary needs of the private sector and the supply of ICT-skills during students’ academic recesses.
- Make ICT-education available for the unemployed and employees facing redeployment or redundancies to systematically increase the competitiveness of the labour market.
- Provide a continuing ICT education for all citizens.
- Help students participate in international ICT-education programmes and help them translate their ICT innovations into commercial products.
- Sustain the proliferation of local broadband connectivity; increase Internet centres in Local Councils, Government buildings, schools, libraries and commercial centres; propagate wireless access in public spaces and housing estates.
- Engage organizations representing persons with disabilities to adapt ICTs for the needs of their members.
- Ensure early adoption of the newest technology in the country.
- Promote access to the Internet at the place of work.
- Explore the possibility of offering fiscal incentives to households which make an investment in ICTs in their homes and explore the use of television to deliver Internet to households.
- Ensure that the cost of Internet access is always equitable.

The principles underpinning the eLearning Strategic Objective places the needs of the user at the centre of its agenda. The National ICT Strategy includes the tactical approaches to address user orientation and Government has also set up the **Foundation for Information Technology Accessibility**⁷⁷ to be the principal advocate and co-ordinator for making ICTs accessible for people in the Maltese islands.

The 2001 “**Report on the National Consultation Process on Lifelong Learning**”⁷⁸ recommended the establishment of a National Commission on Lifelong Learning, to develop the process leading to a national policy and plan on lifelong learning.

Government intends to sustain the pace of reform in education so as to further increase existing participation rates in further and higher education in an inclusive manner in line with the nation’s socio-economic development needs. In the recently published “**Malta’s National Reform Programme (NRP) 2005-2008**”⁷⁹ Government is coming to:

- implement inclusive education and training policies aimed at adult learners and at reducing the number of early school leavers. The targets set in Malta’s National Action Plan for

⁷⁷ <http://www.knpd.org/mittsfita/>

⁷⁸ Report on the National Consultation Process on Lifelong Learning, 2001, Ministry of Education
http://www.education.gov.mt/edu/edu_division/report_III_01.htm

⁷⁹ http://www.mcmp.gov.mt/pdfs/National_Reform_Programme_Malta.pdf

Employment 2004 where re-confirmed in this document at 35% for early school leavers and 65% of 22 year olds should complete upper secondary education by 2010;

- ensure that education and training pathways are attractive, accessible and flexible to provide maximum possible fulfillment of the potential of all persons throughout their working lives. The NRP sets Government aims at removing any barriers for education and training whilst providing specific assistance for those willing to learn but facing particular constraints (including those students/families in need and Gozitan students/trainees). The target set by Malta in the National Action Plan for Employment 2004 is of 7% of the adult working age population by 2010 and this figure is hereby reiterated as part of the National Reform Programme;
- respond to new occupational needs, key competences and future skills requirements.

Measures related to eLearning have been highlighted in the NRP and include:

- M04.1 Implement the reforms of the compulsory education system in the strategy document entitled “For All Children to Succeed”.
- M04.2 Set up a higher education directorate to guarantee the quality of provision and inclusive participation in further and higher education.
- M04.3 Initiate training in basic computer skills for those registering for employment and establish Community Technology Learning Centres to enable them to practice the skills learned.
- M04.4 Intensify guidance services in order to enable the establishment of a comprehensive career pathway.
- M04.5 Ensure that formal, informal and non-formal qualifications and skills are certified.
- M04.6 Initiate teacher training for new competencies linked to parent capacity building, prevention of social exclusion, the nurturing of active citizenship and the provision of community based lifelong learning opportunities.
- M04.7 Establish a forum between ETC, UOM, MCAST, ME, FOI, NSO and other stakeholders with the aim to monitor the matching of the demand and supply side of skills.⁸⁰

Another relevant strategy for ICT and Education was developed by the eFORESEE Malta Pilot document titled “**Exploring Knowledge Futures in Information and Communications Technologies and Education in 2020**”, the first of a series of foresight exercises that were carried out in Malta between 2002 and 2003, as part of a project funded by the European Union under the Fifth Framework Programme for Research, Technological Development and Demonstration.⁸¹

Another relevant policy that is currently being drafted is certainly the **National Digitisation Policy for Cultural Heritage** which aims towards “*Ensuring that Maltese Cultural Heritage is preserved and therefore appreciated by present and future generations*”. At the moment there is no regulatory framework or policy which establishes the necessary framework for digitisation in Malta. The champion behind the policy will be Heritage Malta together with the Ministry for Tourism and Culture, however several possibilities will be examined in order to have as wide and representative involvement of all stakeholders, including but not limiting to private museums, the Church, education institutions, etc.⁸²

With regards to training by enterprises in general (not specifically eLearning), it may be useful to point out that **regulation 14 of the Business Promotion Act** provides for training grants to employers who train certain categories of their employees. Malta Enterprise has recently reviewed the Act to render its provisions more appealing to employers and might be considered as a good incentive for

⁸⁰ The National Reform Programme (NRP); October 2005
http://www.mcmp.gov.mt/pdfs/National_Reform_Programme_Malta.pdf

⁸¹ Report on eFORESEE, Malta Foresight Pilot-Exploring Knowledge Futures in Information and Communications Technologies and Education in 2020; Malta Council for Science and Technology; February 2003
<http://www.cs.um.edu.mt/~gpac1/Teaching/Foresight/Papers/eforesee-ict.pdf>

⁸² <http://www.maltadigitalheritage.com/>

private enterprise to start offering training via eLearning. The Employment and Training Corporation is even considering the introduction of an incentive scheme for persons in micro-enterprises to undertake some form of training.

The table below gives a chronological list of the major policy developments:

Document Title	Organisation Responsible	Legal Status	Comments
National Action Plan for Employment (2004)	Ministry of Education	Action Plan	Action Plan and strategy for the above policy
National Action Plan against Poverty and Social Exclusion 2004-2006	Ministry for the Family and Social Solidarity	Action Plan	Action Plan and strategy for the above policy
National & Science Technology Policy (1994)	Maltese Cabinet	Government and parliament decision	Not implemented
Development of Information Technology Project (1994)	Malta Council for Science and Technology (MCST) / Ministry of Education and National Culture	Government decision	Action Plan and strategy for the above policy
Information System Strategic Plan (ISSP) 1999-2001 (1998)	Malta Information Technology and Training Services Ltd. (MITTS)	Government decision	Direction for further IT investment within the Public Service
Legislative Framework for Information Practices, 1999	Office of the Prime Minister	White paper	
Vision and Strategy for the attainment of e-Government, 2000	Office of the Prime Minister	White paper	
National ICT Strategy, 2004	Ministry for Information Technology and Investment	Government decision	Launched through the National Information Society Council (NISCO)
National Broadband Strategy, 2004 ⁸³	Ministry for Information Technology and Investment	Government decision	Launched through NISCO; public consultation, which closed on 14 May 2004

Table 10: Main policy documents and consultative papers

Government's plans to continue on the existing policy and efforts by developing **Malta's first eLearning Policy should be concluded by the end of 2007**. The aims of this eLearning policy are to integrate the promotion and use of eLearning in the local educational landscape, while building on the existing good practices which have had an important impact on education. The promotion of eLearning is intended to consolidate Governments' efforts implemented to date in the education sector including the investment in technology infrastructure in schools, the inclusion of ICT in the national curricula, and the delivery of teacher training on the use of ICT across the curriculum.

⁸³ <http://www.miti.gov.mt/docs/broadband.pdf>

Government intends to invest further in an eLearning platform that will be used on a national scale and will target a wide variety of learning communities ranging from child to adult education.

Diverse stakeholders including schools and teachers, enterprises, and non-governmental organisations and other stakeholders that have an important role in disseminating knowledge to specific audiences and the general public will be invited to plug in the platform and enrich it with the relevant content.

The project will be implemented through a phased approach. The first phase will see the implementation of eLearning in primary and secondary educational levels.

The main objectives of Government's planned eLearning policy are to:

- Provide an online environment for learning which diverse communities within society will be able to tap into for learning, information, re-skilling, sharing of best practices and collaboration with other parties;
- Trigger the development of e-content and other eLearning services in the local ICT industry;
- Improve learning experiences by promoting personalised and flexible learning;
- Reduce the risk of exclusion for hard-to-reach groups;
- Enhance the rate of life-long learners in Malta with direct impacts on economic growth; and
- Increase collaboration and sharing of best practices between teachers, parents and students, and members of other learning communities.

The terms of reference for the provision of the eLearning vision and strategy spearheaded by MITI are certainly a step in the right direction and aim to provide the following:

- 1) A detailed report on eLearning good practices adopted by Governments in other European nations;
- 2) A SWOT analysis of the local education environment, local software development industry and an assessment of the readiness for eLearning;
- 3) A gap analysis highlighting the inconsistencies found, and the resources needed to implement the eLearning project;
- 4) The roles and responsibilities of all stakeholders that will take have an active role in the implementation of the project and recommendations on the structure in which they will operate;
- 5) Detailed profiles of the eLearning target audiences and their learning needs, and recommendations on potential eLearning services for each target audience;
- 6) An eLearning vision and strategy for Malta;
- 7) Recommended technology platforms for the implementation of the eLearning vision and strategy including open source technologies;
- 8) Detailed comparative analysis of the major eLearning platforms available on the market with recommendations on the eLearning platform most suitable for the local needs;
- 9) Detailed operational models for content development, upgrading of content, and assurance of quality control of content, clearly indicating the roles and responsibilities of the parties involved, with recommendations on the most efficient model;
- 10) Detailed income generation models to allow for the financial sustainability of the eLearning platform for the long term, with recommendations on the most effective model for Government;
- 11) An extensive short-term and long-term change management plan for the introduction of eLearning in the local educational sector;
- 12) A report on relevant EU funds which can be tapped into for the eLearning project,
- 13) Detailed description of the methodology and assumptions used by the bidder throughout the exercise;

- 14) A comprehensive action plan reflecting the eLearning vision and strategy put forward, and the recommendations given in the previous deliverables, and clearly defining each stage of the implementation roadmap.

In implementing this initiative, Government intends to take stock of the policies adopted to date and the progress achieved thus far in the educational landscape to ensure that eLearning fits in this scenario and builds on the successes already achieved. Furthermore, issues which will directly influence the success of the national eLearning initiative will need to be considered in the transition plan which Government will deploy. These issues include the readiness of diverse stakeholders and target audiences for the adoption and use eLearning practices; technology accessibility in schools and households; bandwidth connectivity in schools; and ICT skills of specific stakeholders which have a direct impact on the take-up of eLearning (such as parents and teachers).

The establishment of an eLearning platform to be used on a nation-wide scale and the enrichment of such a platform, with relevant content and services, will be implemented strategically to integrate effectively in the broader educational landscape and ensure the best results.

Government intends to commission a reputable firm to undertake market research and develop a comprehensive eLearning strategy and action plan. The eLearning strategy is intended to build on existing good practices in the education sector as highlighted above, and allow maximisation of use of the eLearning technologies that will meet the needs of diverse learning communities within society. Issues of context, effectiveness, efficiency, and quality will need to be considered in developing the eLearning strategy and action plan.⁸⁴

II.3. The legal framework supporting eLearning applications

To our knowledge no legal framework exists as yet specifically for eLearning application. The Constitution of the Republic of Malta and the Education Act provide the constitutional and legal framework and the main aims and objectives of the Maltese educational system. The **Education Act** enacted in 1988 replaced previous legislation and introduced innovative concepts. One of the major innovations was the recognition of teaching as a profession. This requires that teachers be in possession of a professional warrant to be able to teach in schools. The granting of teaching warrants is the prerogative of the Minister of Education acting on the recommendations of a Teachers' Warrant Board. The Board is composed of teaching professionals employed within the Education Division. The Act also introduced the concept of decentralisation, gave stronger rights to parents in the education of their children and guaranteed the existence of private schools.

Education provision is based on the principle that all children between the ages of five and sixteen are entitled to free education in all state schools regardless of age, sex, belief and economic means (Education Act, 1988).

Also gave the state the right to establish the national minimum curriculum for all schools and to establish the national minimum regulations for them.

The 1988 Act also obliges the State to provide free university education to all those students who are in possession of the necessary entry qualifications. The University of Malta is largely autonomous and the law allows it to administer its own funds, formulate its own rules and regulations and appoint its staff. However, the Minister of Education has the right to query certain aspects of the university's running.

A legal framework is required in order to regulate the vocational education sector. To this effect, a legal notice entitled "**Malta Qualifications Council Regulations, 2005**"⁸⁵ has been enacted to

⁸⁴ Request for proposals, Development of an eLearning Vision, Strategy and Action plan for Malta, Ministry for Investment, Industry and Information Technology. June 2006
<http://www.miti.gov.mt/docs/elearning2006C%20-%20RFP%20V1.pdf#search=%22elearning%20in%20malta%22>

⁸⁵ <http://docs.justice.gov.mt/lom/legislation/english/subleg/343/26.pdf>

provide a framework that outlines the setting up of **National Standards on Vocational Education and Training (VET)** provision.

More recently, a new education law has been passed by Parliament. The law makes a provision for setting up a Directorate for Quality and Standards in Education and a Directorate for Educational Services.

With regards to Intellectual Property legislation, Malta ratified the **Universal Copyright Convention** in 1969, and in 1977 joined the World Intellectual Property Organisation. In 1994 Malta became a founder member of the World Trade Organisation and was thus bound by the Agreement on Trade Related Aspects of Intellectual Property Rights as from 2000. In 2002 new legislation concerning design protection was also introduced. Other important pieces of legislation with respect to eLearning are the **Data Protection Act**,⁸⁶ **Intellectual property Act**⁸⁷ and the **Electronic Commerce Act**,⁸⁸ as these acts were drawn up by a specially-appointed Inter-Ministerial Working Group that was established in 1999 specifically to address the inadequacies of traditional legislation in supporting the development and widespread use of an electronic setting. The Office of the Commissioner for Data Protection, which is responsible for ensuring enforcement of the Data Protection Act, is well established and is enforcing the provisions of the Act with reasonable rigour.

Accession to the European Union in 2004 was another milestone in the development of the Intellectual Property Rights regime in Malta. Apart from the further upgrading of our national IP laws through the transposition of the relevant acquis, accession also enabled Malta to join the **Community Trademark system**. Today the main threat is the ease of copying intellectual property as a result of digitisation and readily available equipment. This can only be curbed by vigilant internet surveillance and encrypting of products to prevent copying. However, this is a very hard battle to win due to the internet.

II.4. The dedicated specific information and communication technologies infrastructures

Malta has a sophisticated telecommunications infrastructure with large bandwidth networks providing high capacity communications to and from the island. Networks are completely digital and international connections have been significantly expanded through satellite technology and high capacity fibre optics linking Malta with Europe. Mobile telephony operators provide wireless Internet connections based on GPRS technology and Voice Over Internet Protocol Services (VOIP) are already widely available enabling companies to make substantial cost savings on telecommunications expenses. Moreover, Malta has two forms of broadband delivery technologies – DSL and Cable modem access: 18 Internet Services Providers; four licensed network operators – GO (ex-Maltacom plc), Melita Cable, Vodafone and Mobisile Communication. DSL is available in 95% of the national territory and 81% is covered by bi-directional hybrid fibre as well as co-axial cable allowing broadband access via cable modem.⁸⁹

The Education Division and Ministry of IT and Investments has invested heavily over the past 10 years to provide a technical infrastructure within all state schools that delivers ICT capabilities to students and teachers. Computer laboratories in secondary schools and classroom computers were introduced in primary schools. The pupil to computer ratio in primary schools averages 7:1 while that in secondary schools is currently at 13:1.⁹⁰ The deployment of equipment and infrastructure has been accompanied by a degree of teacher training and staff development opportunities.

⁸⁶ http://docs.justice.gov.mt/lom/legislation/english/leg/vol_13/chapt440.pdf

⁸⁷ http://docs.justice.gov.mt/lom/legislation/english/leg/vol_13/chapt414.pdf

⁸⁸ http://docs.justice.gov.mt/lom/legislation/english/leg/vol_13/chapt426.pdf

⁸⁹ ICT Malta. A centre of quality for the ICT industry.

⁹⁰ <http://www.maltaenterprise.com/filebank/documents/ICT%20Malta%20brochure.pdf>

⁹⁰ ICT Literacy & Education in Malta. Zammit Lawrence. 2004

Well in excess of Euros 75 million has been invested in e-Government and more than 95% of government services can be accessed on-line. Moreover, the government has entered into a cooperation agreement with Microsoft Corporation and a vertical strategic alliance with Hewlett-Packard. The Microsoft agreement has the following components:

- Special licensing arrangements for the public sector and for schools secured at attractive prices together with the provision of specialised support and consultancy services.
- Collaboration agreements between Microsoft and the Government covering a number of areas, one of which is the provision of an on-line eLearning facility and training improvements.

Please refer to Section II.8 for details of ICT usage and computers in schools.

II.5. eLearning services and projects

II.5.1. eLearning services

The following section attempts to provide a comprehensive list of all eLearning efforts and services being undertaken in Malta by various local players and is in no way an exhaustive list.

The **Department of Technology in Education under the Ministry of Education** showcases its efforts towards eLearning at the primary and secondary level via its website <http://www.skola.gov.mt>. This website is a portal with various international links to sites covering, in part or in whole, various aspects of the National Minimum Curriculum.

- State schools are showing interest in incorporating **ICT across the Curriculum (ICTaC)**⁹¹ and a suggested ICT Road Map for Secondary Schools and guidelines on taking First Steps in Planning has been made available. Teachers have taken up the challenge and are fine tuning their teaching methods by using ICTaC road map which is being used in any **School Development Plan (SDP)**. The SDP is the basic instrument of planning the use of ICT across the curriculum and involves an ICT self Audit which attempts to answer the following: (arranged numbering):
 1. To what extent can you operate various types of equipment?
 2. What knowledge do you have about the ways in which ICT can enhance and support pupil learning and your teaching?
 3. In what ways is your working environment supportive or not supportive of your development in the area of ICT use?
 4. What learning programmes are likely to provide for your needs
- **e-Volution** is a free training package designed to kick start development in the use of ICT in education.⁹²
- The **Informa project** aims is to keep the ICT and other educators informed of the latest developments in education. The site also attempts to keep other stake holders informed about the benefits which ICT has for them. All those involved with the information are thus kept “in forma” and up to date with the latest updates and educational theories and innovations.
- The development and testing of the **Automated Testing System (SSR)** prototyped by a team of support teachers was implemented successfully in Form 5s on a national level in all secondary schools as part of their annual ICT examination. It brought a change on the students' final ICT assessment. Instead of the traditional pen and paper test, they attempted practical tasks on the computer itself. This system tracked the student's performance while using the actual application. Results were collected automatically into a password protected database on the school server and then collected remotely into one database at the ICT Centre. This system eliminated hours of corrections, standardized the assessment of practical skills, by-passed the manual method of collecting, recording and transcription of results, and

⁹¹ <http://skola.gov.mt/ictsec/ictac.asp>

⁹² <http://skola.gov.mt/ictsec/e-revolution/default2.html>

provided immediate feedback at the end of every test. Performance in each test item was analyzed on a national level. Further investigations of performance in every school/type of school/gender may be accomplished.

- **The establishment of the School Information System (SIS) Training & Support Centre** which provides the training and support of school administrators and school clerical personnel in the use of the SIS programmes.
- Thanks to efforts being done by the Secondary Support Unit within the MEYE, ICT teachers in schools are given constant support through a number of tangible initiatives. **The ICT Secondary Collaborative website**⁹³ is being consolidated further with ICT resources and pedagogical support. It also provides a platform for communication between the ICT Support Staff and teachers in schools. Work on restructuring the website on the ASP model to include a database is at an advanced stage – this will make access to resources for teachers and students easy and effective, is currently being done. All ICT teachers are now provided with a Pen Drive to help them in their daily computer laboratory lesson delivery. Support for hardware and software problems was also given whenever required. To give better technical support at school level, all computer laboratory technicians are attending a Technicians A+ course at MCAST. Two annual in-service courses are held for ICT teachers. Teachers are kept informed of developments not only through school visits but regularly through emails.
- The use of ICT across the curriculum is being encouraged by the provision of support to twenty schools which applied to include ICT across the Curriculum in their School Development Plans. The use of ICT by other school subjects is being further strengthened by the Worldwide **Microsoft Authorized Refurbisher (MAR)** program which is part of **Microsoft's Partners in Learning (PIL)**; a worldwide initiative committed to empower teachers and students to achieve their fullest potential by promoting expanded IT skills and curriculum development while providing greater access to the latest computer technologies. The MAR program works with eligible refurbishers to provide legally-installed Microsoft operating systems on donated computers to eligible recipients. The primary goal of the MAR program is to increase the number of donated and low-cost computers available to eligible charitable organizations and eligible academic users. The PIL initiative, for which a five year plan has been drawn up, is being done in conjunction with MIIT.
- Other commitments being undertaken by the MEYE include the **ICT in Practice Support Initiative** that is responsible for
 - Drawing up of ICT Annual Examinations for Forms 1 to 5;
 - Compilation of a database for ICT Teachers;
 - Technical support to the Examination Department in running ECDL tests;
 - Collating of hardware inventory of computer labs, communicating with school lab technicians and following up of fault reports by schools;
 - Research on Visual Basic Application for its usefulness in automated systems;
 - Collating, analyzing statistics for the SSR automated testing system.⁹⁴
- The **Malta Mathematics Resource Centre** is an on-line resource centre which supplements other resources found on the web site of the Curriculum Department and the Malta Ministry of Education.⁹⁵

The **Ministry of IT and Investments (MITI)** is running a number of interesting services aimed towards eLearning.

⁹³ <http://skola.gov.mt/ictsec/>

⁹⁴ Support strategies for the implementation of ICT across the Curriculum in State Primary Schools;
<http://schoolnet.gov.mt/ictprimary/supportinitiatives/ictip.html>

⁹⁵ <http://skola.gov.mt/math/>

- The **myWeb project**, which attempts to fight the digital divide by offering free basic computer literacy courses to members of the general public, was a clear example of eLearning's potential. This project has proved very popular with the public and attendance has been very good. Courses were held in secondary school computer laboratories in schools that served as community centres across the Maltese Islands. This project aims at providing training in basic ICT with special focus on the use of the Internet to the general public and ensures that the investment in ICT in schools is exploited to the maximum. This project also helped addresses the objective to combat the digital divide provided the basic training to give participants from the general public an opportunity to participate in lifelong learning and in existent and future opportunities for eLearning. It empowers the public to avail themselves of the battery of e-services offered and directly fight the digital divide. It also gives the opportunity for schools to contribute to their community by offering their ICT facilities which would have otherwise been idle. The return on investment of ICT in schools and the potential for eLearning is therefore also boosted.
- **MyPotential** is another scheme launched by the MITI in partnership with local ICT training providers that shows the possibility of public private partnerships in the field of training and education. The objectives of the partnership established for myPotential are to:
 - Create an environment of learning opportunities in the ICT field for students, unemployed persons and persons in employment;
 - Increase the affordability of ICT certifications whilst ensuring excellent quality service levels;
 - Ensure a constant supply of ICT graduates to match the needs of the industry in a timely manner;
 - Promote life-long learning and encourage individuals to advance their careers in ICT and entrench skills flexibility;
 - Develop a resilient ICT labour market to ensure it is a key comparative advantage for Malta to attract foreign direct investment; and
 - Entice further growth in the local private ICT training industry.⁹⁶

II.5.1. eLearning Projects

The Fondazzjoni Temi Zammit is currently one of the most active players in distance learning services and is involved in the following projects:

- **Avicenna Virtual Campus (AVC)**
<http://pleiad.unesco.org/portal>
 This UNESCO-led, multi-cultural EUMEDIS pilot project, first proposed by the Maltese partner, brings together higher education institutions from 15 Euro-Mediterranean states to create a regional community of e-learners. Every country represented in the consortium has set up its own Avicenna Knowledge Centre (AKC), to produce, adapt and share eLearning modules. The AKC will offer virtual mobility options to students, as well as opportunities for lifelong learning.
- **Virtual University for Small States of the Commonwealth (VUSSC)**
http://www.col.org/virtualu_invite.htm
 The Fondazzjoni Temi Zammit is a founding member of the VUSSC – a truly global Virtual University networking educational institutions from 22 small states of the Commonwealth. Under the leadership of the Commonwealth of Learning, this ambitious project has been designed to target the specific needs of small states.

⁹⁶ <http://www.miti.gov.mt/site/page.aspx?pageid=2164>

- **Differentiated teaching module – primary: preparing trainee teachers to respond to pupil diversity (DTMp)**
http://www.um.edu.mt/pressreleases/2004/comenius_bartolo.html
 The University of Malta is coordinating this Comenius 2.1 project for the training of school education staff. The project aims to produce a multicultural, multimedia, internet-based teacher-training module to enable trainee teachers to respond to the diversity of pupil needs in primary education. In this project, the role of the FTZ is to develop the online modules for the consortium.
- **Setting up Community Knowledge Centres (CKCs) (UNESCO Participation Programme)**
 FTZ is collaborating with Local Councils to set up three community knowledge centres equipped with the resources needed to function as virtual classrooms. The centres, promoting accessibility and inclusion in education and targeting young people and women, will empower the local communities to respond to the challenges of the knowledge society, effectively assisting in the creation of learning communities. Besides facilitating autonomous learning, the centres will lead to the production of three online modules related to the priorities set out by the UNESCO Programme, namely migration, youth and gender issues.
- **Programme for Flexible Education - Centre for Flexible Learning (CFL) (UNESCO Participation Programme)**
 FTZ and the Faculty of Education of the University of Malta are jointly setting up the Centre for Flexible Learning (CFL) and developing a Programme for Flexible Education (PFE). The Centre will (i) diversify and increase study opportunities in Malta and the Mediterranean region; (ii) train teachers in technology-enhanced flexible learning systems; and (iii) train the workforce through targeted vocational courses offered online or in blended mode. The planned Flexible Learning Systems programme of studies – offering courses from certificate to doctorate level – will emphasize different learning patterns, settings and media combinations.
- **Science Online (Sci-O) (UNESCO Participation Programme)**
 This project aims to raise the public understanding of science and to assist young people taking examinations in science subjects by offering them online material related to their syllabus. It will complement the Ministry of Education’s “Physics Online” initiative, offering an open and distance learning (ODL) course to improve basic science education and lifelong learning, making science more attractive to young people and encouraging the uptake of science careers.
- **NUclear Physics EXperience (NUPEX): *funded under FP5* (NUPEX HPRP-CT-2002-00006_FP5)**
<http://www.nupex.org>
 Another EC-supported project (Improving Human Potential, FP5) that the Foundation has been involved in concerns the teaching of nuclear physics in secondary schools. The broad public is often sceptical about nuclear science and its applications because of a lack of relevant information. Scientists having the knowledge and science mediators having the ability to communicate facts, arguments and standpoints to the public have therefore created a web-based science communication system which can improve awareness about developments in the whole field of nuclear science, including astrophysics and medical applications.

The Department of Italian at the University of Malta has recently embarked on an EU distance learning project with the Universities of Barcelona, Warsaw, Pecs and Perugia. The coordinating body is ICON [Italian Culture on the Net – University of Pisa]. The Department has been entrusted to produce modules on-line on Italo-Maltese comparative literature and the teaching of Italian through literature. <http://www.elleu.org>

The Literacy Unit of the University of Malta is currently engaged in the following projects:

- The Unit is the main pedagogical partner in the FP6 project **UNITE** (<http://www.unite-ist.org>) – eLearning **environments for the promotion of Basic Skills**. This project is co-ordinated by the Fraunhofer Institute for Multimedia in Germany. A consortium meeting will be held in Malta in May.
- The eLearning distance course in Basic English for Technical Purposes (ETP) was designed and delivered by the Unit to on-line students from 15 different Euro-Mediterranean countries as part of the Unit's participation in the EUMEDIS project **ODISEAME**. The on-line course which was oversubscribed twice has been recognised by EUMEDIS as an outstanding model for eLearning courses.
- The Unit is a major participant in European projects dealing with the Teaching and Learning of Basic Language Skills via eLearning, namely LinguaNet, e-EuroInclusion, ELNPlus, ELL and FEEL.

The Department of Computer Science & Artificial Intelligence (CSAI) and the **Department of Manufacturing Engineering (DME)** are currently engaged in the **Mediterranean Virtual University project (MVU)**. MVU is an EU EUMEDIS-funded project which is coordinated by the University of Strathclyde (Glasgow, Scotland). It concerns the setting up of a Virtual University between 11 partners, mostly from the Mediterranean region, aimed at developing eLearning training modules in various domains. Through MVU, course participants will be able to register and learn at their own pace a number of topics using state-of-the-art multimedia training material. MVU has a number of modules available mostly related to Computer Science and Engineering. Four of the modules are being developed at the University of Malta, 2 by the Department of Computer Science & Artificial Intelligence (CSAI) and 2 by the Department of Manufacturing Engineering (DME). <http://mvu.cs.um.edu.mt/home.html>

The Euro-Mediterranean Initiative for Technology and Innovation (EuroMedITI)

The principal objective of EuroMedITI is that of engaging European and Mediterranean Businesses, Academic and Research Entities, and National Governments for the development, customisation and deployment of innovating technologies in sectors that have a special relevance to the Euro-Mediterranean Region. The initiative aims to develop and empower an outstanding technology and innovation platform in Malta for business-driven services in Training, Applied Research and Development, Incubation, and Dissemination in the Mediterranean Region.

Mediterranean Trading and Innovation Centre (METIC)

METIC is an EU-funded project under the Interreg III programme linking universities with industry through the promotion and development of innovation centres and cross-border co-operation between Malta and Sicily with special reference to urban regeneration; alternative energies; disposal and recycling of solid and liquid waste; tele-medicine; and the sea.

The areas of focus identified for this project are:

- Rehabilitation of historical sites: methods/techniques and materials in use;
- eLearning and Telemedicine;
- Alternative Energy Sources;
- Waste water and Solid waste: Reuse, Recycling and Disposal;
- Aquaculture and Fisheries: Integrated Management of the Sicilian Channel;
- Agriculture: Animal and Vegetable Products.

The Institute for Tourism Studies (ITS) was involved in an eLearning project called **ITSELNET**, which is an EC funded project to build a Mediterranean Network of teachers in the field of Information and Communications Technologies (ICTs) applied to trade and industry.

ITSELNET, accessible at www.its.gov.mt is intended to facilitate the management of courses within the Institute as well as stimulate innovation in the development and delivery of ITS courses. Besides offering support to classes held at ITS, ITSELNET will be exploited to provide distance learning to students outside ITS, especially executives and employees in the tourism industries.⁹⁷

The **SmartCity@Malta project** is being organized by Malta Enterprise together with The Ministry for Investment, Industry & Information Technology, The Ministry of Education and The Ministry for Competitiveness & Communication. It aims to tackle entrepreneurship education and trigger a cultural change by sponsoring projects within local educational institutions.

A number of excellent efforts funded under the **European Social Fund (ESF)** have taken off, and more are expected to come for the 2007-2012 period. The Malta Council for Science and Technology is currently running a two-year project co-funded by the European Social Fund, the Government of Malta and the Malta Council for Science and Technology called **FOR-LINK**. FOR-LINK aims and objectives are to develop local public and private sector R&D and innovation capacities and competencies for more effective participation in the knowledge-driven economy, as well as providing wider public outreach via eLearning modules.⁹⁸

The Department of Further Studies and Adult Education is participating in a project titled **“Information and communications technology training programme”**. This Action aims to develop a range of ICT educational skills, training and certification for Teachers throughout the Maltese islands. The Action’s Activities expect to create a teaching staff, which is more confident with ICT and its application in the curriculum. This Action aims to provide training and European recognised ICT Skills certification to 250 teachers.⁹⁹

A similar project, also funded by ESF, titled **“Enforcing the knowledge based society”** is currently underway under the direction of the General Workers’ Union (GWU). This Project aims to improve the Headquarters’ internal environment of the GWU Office in Gozo so as to provide free accessibility to internet facilities and to aid and enhance research facilities, while providing improved learning material such as printed media and other related sources. It will also include running of computer courses and other IT related courses.¹⁰⁰

Similarly “EDUKATE - Education and training for disadvantaged women” is being funded by the ESF and run by ACCESS. The funds in this project will be utilised to support the establishment of an education, training and information centre that will target disadvantaged women in order to enhance, promote and motivate their active participation in the labour market and public life. Funds will support training in empowerment, motivation, self-esteem, literacy, IT and vocational training in order to increase the participants' potential employability. The project will also include training and support in setting up a business cooperative or self-employment.¹⁰¹

The Computing Services Centre (CSC), amongst a number of other local IT training providers, is also offering the **“European Computer Driving Licence (ECDL) Core programme”** which is an internationally recognised qualification that enables university students and staff to demonstrate their competence in using a personal computer and common computer applications at a basic level. The ECDL Core programme is aimed at ordinary computer users rather than technical computer people. It aims to:

1. promote and encourage computer literacy for all;
2. raise the level of knowledge about Information Technology (IT) and the level of competence in using personal computers and common computer applications for all citizens within Europe and internationally;

⁹⁷ <http://www.maltatoday.com.mt/2005/05/01/b4.html>

⁹⁸ <http://www.for-link.net/>

⁹⁹ http://mfss.gov.mt/esf/measures/mes_2_3_part_3.pdf

¹⁰⁰ http://mfss.gov.mt/esf/measures/mes_2_1_part_30.pdf

¹⁰¹ http://www.msp.gov.mt/esf/measures/mes_2_2_part_21.pdf

3. ensure all computer users understand best practices and the advantages of using a personal computer;
4. increase the productivity of all employees who need to use computers in their work;
5. enable better returns for investments in IT;
6. provide a basic qualification which allows all people, regardless of their background, to be part of the Information Society.
7. equip candidates with the IT skills necessary to follow the ECDL Advanced programme

CSC is also currently making trials of a moodle learning platform at University.¹⁰²

Mediterranean Virtual University (MVU) is an EU EUMEDIS-funded project which has the University of Malta as the local partner. It concerns the setting up of a Virtual University between 11 partners, mostly from the Mediterranean region, aimed at developing eLearning training modules in various domains. Through MVU, course participants will be able to register and learn at their own pace a number of topics using state-of-the-art multimedia training material. MVU has a number of modules available mostly related to Computer Science and Engineering.¹⁰³

UoM is also participating in the “**European Masters in Early Childhood Education & Care (EMEC)**” project. This masters’ degree is a two-year full-time taught programme (120 ECT) which is based on a variety of distance learning methodologies and some face to face meetings.¹⁰⁴

II.6. Specific issues and solutions

The disparate efforts in eLearning seem to be mostly based on **ad hoc installations of various IT platforms** and **hardly any collaboration or common positions/sharing of best practise** is prevalent between the various eLearning initiatives indicated above. This is particularly the case with regards to tertiary eLearning efforts, whether originating within the public or private sector. Consequently it is not that easy to identify clearly the major problems with the existing eLearning services and service providers. At the moment an eLearning working group has been established by the Computer Services Centre at the University of Malta, which is working on mapping out a University policy on eLearning, aimed towards bringing together the disparate individual initiatives across the various faculties, and the considerable expertise which exists at the University. This working group hopes to have a road-map produced by the end of fourth quarter 2007.

The implementation of eLearning programmes within higher education creates **new roles that teachers must play in the classroom** and **require new skills besides the traditional teaching skills currently used**. One of the aims of eLearning in education is to assist students to achieve a level of self-sufficiency and actualisation. Consequently the role of the lecturer shifts from information provider to supporter, while establishing a culture of independent learning and peer participation. Hence lecturers are faced with the challenged of developing **a new model of effective teaching**.¹⁰⁵

This has significant implications for lecturers using eLearning techniques and should be examined thoroughly by educational institutions implementing such programmes. It also implies that lecturers **must be provided with the necessary time and resources** to ensure that eLearning material and supporting tools are developed and implemented to meet the specific nature of the subject matter being taught and needs of students. Similarly, the transition towards these **new teaching styles must be managed effectively** in order to ensure that lecturers are supported throughout the course design period and beyond.¹⁰⁶ The above discussion over the changing role of lecturers naturally leads to

¹⁰² <https://secure.um.edu.mt/auth/moodle/>

¹⁰³ <http://mvu.cs.um.edu.mt/home.html>

¹⁰⁴ <http://www.hio.no/content/view/full/56929>

¹⁰⁵ <http://jite.org/documents/Vol3/v3p313-323-131.pdf>

¹⁰⁶ <http://jite.org/documents/Vol3/v3p313-323-131.pdf>

concern about their associated changes on the lecturers' existing workloads. The importance of this pedagogical and political issue cannot be stressed enough especially in the Maltese context, and the answer to the workload dilemma depends entirely on the **willingness of the institution to employ eLearning** and how well the delivery is organised. It is clear that numerous factors contribute to the workload of a teacher using eLearning; ranging from the amount of time spent authoring the material to the level of interaction necessary between student and lecturer. It is very important to analyse cases not only on an individual basis to identify those variables which contribute to the workload, but also to identify those which contribute to the success of the course. This in turn will allow eLearning providers to ensure that adequate resources are being provided, and that they are also being used effectively. Familiarity with related technology has a direct impact towards the success of eLearning courses, therefore the importance of training cannot be emphasised enough. This necessitates a **continuous need for teacher training lecturers to keep up to date with technological developments.**¹⁰⁷ If the push to instil a culture of eLearning within the national educational system is to be made, **specific reforms in teacher/tutor training need to be made** in order to meet the needs for provision of sufficient eLearning services. This should also look closely at the **changes in teaching practices** that would be required in order to provide eLearning services.

Quality assurance is another key issue in the implementation of eLearning in Malta since the number of non-accredited institutions offering degrees is increasing rapidly. eLearning brings about a number of quality concerns. This means that quality eLearning programmes must strive harder for recognition, and rigorous controls need to ensure eLearning students are not at a disadvantage to traditional students.

The Government of Malta, in close collaboration with its various partners, should adopt action to address the following challenges and recommendations that are based on the ICT Policy priorities defined for eLearning:

- Definition of professional profiles for eLearning ICTs
- Standardise the curriculum and training process of training centres in Malta especially with regards to eLearning;
- Encourage adoption and provision of universally-recognised certification systems for ICT professionals via eLearning tools;
- Create Centres of Excellence to train computer professionals and training on how to implement ICT solutions especially in eLearning;
- Define basic eLearning training programmes for government officials, management and community leaders;
- Promote competitions that recognise and reward individuals and organisations who apply ICT solutions to successfully address the national eLearning problems being addressed; and
- Introduce and promote the use of distance learning and eLearning techniques for teacher training.

II.7. Acceptance and usage of eLearning services

It is difficult to assess the extent of eLearning supply and take-up in Malta as there are no official statistics available on these issues and no research has been carried out on the overall balance of supply and demand. The Ministry for Investments, Industry and IT is currently developing a post-implementation review methodology that will facilitate accurate measurement of take-up in the future, but the indications so far are positive.

¹⁰⁷ <http://jite.org/documents/Vol3/v3p313-323-131.pdf>

Computers in schools

A survey on “Information Communication Technology in Schools”,¹⁰⁸ conducted by NSO in 2005, estimates that the total number of computers available in schools amounted to 8,521. Of these computers 7,510 (88.1%) were desktop computers, while the remaining 1,011 were laptops. The average number of computers per school stood at 53. This average stood at 59 in Public schools and 39 in Private schools. It resulted that on average, the number of desktop computers available in secondary schools is greater than that in primary schools. In fact, this average stood at 49 in secondary schools and 44 in primary schools. The total number of desktop computers per 100 pupils is 11.¹⁰⁹ In this case, these averages favored the primary schools with 16 computers per 100 pupils as compared to 9 computers per 100 pupils in secondary schools. 37.9% of all schools have all their classrooms connected to a network, whilst 18.6% have some classrooms connected. 42.2% of schools have a network connection in all of their offices.

Internet in schools

All the secondary schools said that they had internet connections available. On the other hand, a majority of 84.5% of the primary schools said that they were connected to the internet. When measured over all schools, this figure amounted to 95%.¹¹⁰ The greater part of all the schools, 95%, said that they had a broadband internet connection on their premises, having 10.2 internet connected computers per 100 pupils. 59.9% of these have a connection speed of 512 kbps or more.

40.4% of the schools said that they had their own website, the majority of which were secondary schools. In fact, whilst 59.1% of the secondary schools had a website, only 30% of the primary schools had one. It resulted that 73.3% of the teaching staff had an e-mail account provided by the school. This figure stood at 80.6 % in primary schools, 91.2% in secondary schools and only 12.6% in mixed primary/secondary schools. All teaching staff within Public schools had an e-mail account provided by their schools. 70.2% of the schools (66% of primary and 77.3% of secondary) said that they monitor emails and other material browsed on the internet.

Other ICT tools in schools

After computers, digital cameras/video cameras were the most common ICT tools found in schools during 2003/4. There was an average of 0.53 of these per school. The second most popular ICT tools were DVD players with an average of 0.50 per school.

ICT amongst teachers

All teachers were asked whether and how they use computers in their work. 44.5% said that they use computers for teaching purposes. This percentage stood at 76.6% among the primary school teachers and 27.8% among the secondary school teachers.

A large number of teachers who did not use a computer for teaching purposes still used it for their preparatory or administrative work. As an example, 81.9% of the teachers said that they use computers to prepare handouts and worksheets for students and 54.1% said that they carry out their lesson plans with a computer. Only 13.4% said that they do not use a computer on a regular basis. The teachers were further asked whether they had access to a computer at home. 93.1% said that they either owned one or had it on loan from the school or other entities. This percentage by level stood at 95.9% among the primary school teachers and 90.1% among secondary school teachers. 42.0% of the teachers said that they had already completed an ICT equipment course. 17.2% said that they had completed this course between 2000 and 2004. Only 8.4% said that they had completed an ECDL course.

¹⁰⁸ Survey on Information Communication Technology in Schools; Nov 2005; NSO.
http://www.miti.gov.mt/docs/News2005_239.pdf

¹⁰⁹ Benchmarking Access and Use of ICT in European Schools, 2006
http://www.empirica.biz/empirica/publikationen/documents/Learnind_paper_Korte_Huesing_Code_427_final.pdf

¹¹⁰ Benchmarking Access and Use of ICT in European Schools, 2006
http://www.empirica.biz/empirica/publikationen/documents/Learnind_paper_Korte_Huesing_Code_427_final.pdf

76.5% of the teachers at primary level said they were either confident or very confident with the use of ICT tools in their work. This percentage stood at 62.9% among the teaching staff at secondary level. Only 31.2% of all teachers said that do not feel confident with the use of ICT tools. The majority of these persons were aged 45 years or older. As an example, it resulted that whilst 59.6% of the teachers aged 55-59 years were not confident with ICT tools, only 2.8% of the teaching staff under 25 years were not confident with them.¹¹¹

II.8. Impacts of eLearning developments

Unfortunately due to the lack of concrete policy and efforts of eLearning in Malta, no concrete metrics are available to measure the direct impacts of the efforts that are running in the area of eLearning besides the figures indicated in section II.7.

So far eLearning has been developed in the framework of different programmes aimed at general education and the use of ICT in the classroom. The most relevant developments are those spearheaded by the Ministry of Education and the Ministry of IT & Investments which are definitely reaping results. Schools have been equipped with computers and networked thanks to the school building programmes initiated. Very good efforts are also being aimed at teachers to provide them with the necessary equipment, training and support to deliver learning using ICT.

Consequently the overall use of ICT in the classroom is already having a positive impact on the availability of teaching material to students; while facilitating better intra-school and teacher sharing of learning material and eLearning pilot projects. Other peripheral impacts due to a more prominent presence of ICT in education are being noted vis a vis more uptake of ICT skills by both the teachers and students, which in turn results in a stronger impetus to use eLearning educational techniques in the school curricula. Other positive impacts are being noted in the better integration of students with special needs, or parents undertaking certain courses beyond office hours at their own convenience thanks to ICT.

On many counts the *My Web* and the *My Potential* projects initiated by MITI continue to have a significant impact on addressing digital literacy and enabling public partnerships in the area of VET in Malta respectively, thus supporting the future development of eLearning in Malta. These projects, in conjunction with all the other projects and services currently running and identified in Section 2, have created a very good environment for eLearning to develop, while increasing public awareness and demand towards eLearning.

¹¹¹ Survey on Information Communication Technology in Schools; Nov 2005; NSO.
http://www.miti.gov.mt/docs/News2005_239.pdf

III. ASSESSMENT OF THE STATE AND DEVELOPMENTS OF E-LEARNING

III.1. Main shortcomings and achievements

In the past, the fact that Malta is a small country worked against the concept of eLearning and discouraged the development of ICT in education. Some of the main shortcomings that hinder the supply of eLearning services in Malta are **resistance to change in public service**, the **complexity involved in the re-engineering of services** necessary for the implementation of eLearning and **lack of vision and leadership on the part of Government and public administration**. There are also demand-side issues such as the limited real need for eLearning in Malta since the country covers a small geographical area. However at the same time the fact that the country is an archipelago provides scope for online services between islands that can be facilitated with the use of eLearning. Cultural factors such as a **slow and relaxed attitude to change and the adoption of new concepts**, as well as accessibility factors related to the cost of the technology and its perceived complexity, also inhibit take-up.

Although 'fostering eLearning' forms part of the National IT Strategy, there is no specific strategy for eLearning itself as yet and the most concrete strategies that have been initiated are mostly driven by the Ministry of Education, Youth and Employment. However Government has recently committed itself to having in place an eLearning strategy by the end of 2007.¹¹²

On the other hand, ICT-related surveys suggest that Malta is well placed to benefit from developments in this sector and is considered to be among the front-runners of the new EU member states in ICT (eEurope+). At the same time, the European Innovation Scoreboard, year after year, indicates **low participation in lifelong learning by Maltese people aged between 25 and 64**. The **adult literacy rate is also low** according to EU standards. However, awareness of the need for lifelong learning is rising, as are opportunities to access it. **Access to the internet has risen sharply**, trebling between 2000 and 2004 to the current rate of 31.3% of the population, and the general feeling is that if the supply and flexibility of education and training opportunities were to be greater, the uptake would be higher.¹¹³ Also, many **households now have a computer and Internet connection**. Those who do not have Internet access at home can either make use of the Local Councils or of Public Internet Kiosks.

All said, the number of local efforts are themselves commendable and can provide a good start. Digital literacy is a priority in addressing the digital divide. The development of widespread digital literacy is sufficiently made possible through enhanced access to technology and through the availability of customised learning methods targeting specific audiences in the Maltese society. The **helloIT Programme** and its stream of initiatives by the Ministry for Investment, Industry and IT are good effort to address the divide between those that have access to technology and those that do not; and between those that have mastered the skill to use the technology and those that did not. In fact, an important target group for the helloIT programme is made up of individuals over the age of 60 since there is the real danger that older people have limited access to important sources of information and services such as eLearning due to their lack of confidence in their abilities to handle computers. The basic ICT Awareness Course **myWeb**, which is provided via eLearning or at the Community Technology Learning Centres is a tangible special measure that aims to nurture the confidence needed to use basic forms of technology. Also, specialised teaching posts for support and peripatetic teachers by the Ministry of Education have been created to help classroom teachers with ICT integration and implementation. These teachers are each assigned a number of schools where they organise demonstration lessons to class teachers in order to give practical examples of ICT implementation across all aspects of the Curriculum. As a result, teachers are leaving aside the lecture type of teaching and moving into a more active constructionist approach.

¹¹² <http://www.miti.gov.mt/site/page.aspx?pageid=2740>

¹¹³ http://trendchart.cordis.lu/tc_country_list.cfm?ID=40

The strong point is that the Maltese Government has invested strongly in ICT, and all schools are networked, connected to broadband internet with a computer.

The main obstacle for eLearning in our country remains that till now there is **no single policy document that attempts to consolidate all these various detached, albeit excellent, efforts** across the country and bring them together towards a common goal.

III.2. Factors behind the existing developments

This section will mention briefly the major factors driving the development or otherwise of eLearning in Malta.

III.2.1. Economic factors

One of the main drivers for eLearning is definitely the **attention that is being given to the ICT sector** in Malta, both by Government and private entities, and **significant investment in this direction is being noted at all levels. The substantial outsourcing of major capital projects** initiated by government has also contributed substantially to local capacity building in ICT, and **Malta is slowly emerging as a country with excellent potential to achieve competent centres of excellence** in the ICT sector. The **dedication of a Ministry towards IT** specifically, and the **various ambitious policies and strategies by local government** have started to reap good results both in terms of human capacity and in meeting the demands of today's environment and requests for IT competence despite Malta's **small size and small economies of scale**.

III.2.1. Technological factors

There are no technological factors that are particularly specific to eLearning from an infrastructural point of view due to the **substantial investment in schools and telecommunications** that Government and private sector have made. Malta in fact enjoys one of the **highest percentages of computers per student population** in primary, secondary and tertiary education, and very **good internet and mobile penetration rates**.

However it is interesting to note that the lack of expertise and support in using eLearning platforms, plus training both for teachers and students, is still contributing significantly to the limitations of uptake.

III.2.2. Legal factors

The most salient legal issues that affect eLearning are those related to Intellectual Property, and their affect is similar to that of any educational activity, with the difference that certain eLearning efforts like Distance Learning, are more exposed to malicious attacks since they are available online. Also heated discussions on the ownership of eLearning content or tools produced by lecturers/teachers has often been raised in local academic circles especially since **the University of Malta still has no IPR policy**.

The effect can be somewhat mitigated by applying the principles of Open Educational Resources based on Creative Commons (CC) licensing, as is promoted by the Commonwealth of Learning (COL) and practiced (in varying levels) by US institutions like MIT and Carnegie-Mellon.¹¹⁴ **CC licences have in fact been ported to Malta** by Projects in Motions Ltd. in order to address the potential in this model.¹¹⁵ Nonetheless, promotion of this concept or the legal protection of content is a substantial endeavour by itself and is hard to apply to existing material in many cases.

III.2.3. Policy factors

As has been pointed out, most of the eLearning efforts that have been noted locally were in most cases results of independent efforts at the integration of ICT in education, or else independent efforts pushed

¹¹⁴ <https://oli.web.cmu.edu/jcourse/webui/portal.do>

¹¹⁵ <http://creativecommons.org/worldwide/mt/>

ahead by European funding by various NGOs, school departments/faculties or sporadic shots at addressing internal needs by private companies.

The **lack of a coherent strategy for eLearning** can only lead to the assumption that **no consensus exists between the various stakeholders involved**, let alone the various schools, or faculties at universities. Public private partnerships in this direction also do not seem anywhere close to being established, or facilitated. Consequently it is **doubtful whether such a disparate approach that is literally demand driven is conducive to further development to Malta's eLearning potential**; as opposed to a policy driven approach.

III.2.4. Socio-cultural factors

One of the major weaknesses of Malta's socio-cultural make up is that the **employment rate is among the lowest in Europe**, due to the fact that the **female participation rate is the lowest among the EU-25**. Female participation in the labour market is increasing, but rather slowly, and is being met with significant resistance from the more conservative proponents of Maltese society. A number of excellent schemes to prepare the female workforce with basic skills using eLearning tools have been undertaken and are reaping interesting results, however more long term efforts for the re-skilling of the female labour force via eLearning could prove very useful.

III.2.5. Regional factors

Although Malta is a **very small country** and is officially made up of just two regions, one of which is the island of Malta and the other is the island of Gozo, regional differences do exist. The limited regional statistical data that is available indicates that there are some tangible regional socio-economic differences between different parts of the islands. The survey on ICT use in households mentioned earlier in the document, for instance suggests that the lack of accessibility to ICTs may be more an educational issue rather than a financial one. Consequently the lack of demand for eLearning by users can be attributed to the **economy of scale prevalent on a small island like Malta** and that **everything is within close proximity**. Also low income families and the level of educational attainment broadly follows the same pattern of regional disparity; and **income levels and ICT penetration rates seem correlated and lower in the south of the island**. Consequently income and regional differences play a relevant in ensuring potential uptake of eLearning uniformly across the Maltese islands.

III.2.6. Demographic factors

Demographically, Malta shares the problem faced by most European countries. It has an **ageing population** that is bound to intensify social and economic pressures as the generation of post-war baby-boomers reaches pensionable age. Apart from necessitating an immediate reform in the pensions system to guarantee a sustainable welfare system in future, this has several other more direct implications on the information society and economy. Essentially, it implies that, in a few years time, **a substantial part of the population may be at the risk of social exclusion because access to ICTs would be a necessary prerequisite** to full integration in society when the same generation would have grown up in a world without ICTs.

Government is trying to mitigate the extent of such a potential digital divide by **offering free ICT education for adults and free Internet access, through local councils**. Moreover, it has offered a **free e-mail address to every Maltese citizen**, in parallel with its **extensive campaign to promote its e-government and m-government services**. These initiatives have proved to be very successful, possibly because of the cultural fabric of Maltese families. Children tend to live with their parents until they get married and parents hence have the possibility to follow the progress of their children through their years of formal schooling. Since most mothers do not work, they generally spend a lot of time with their children while they study or play with their computer, and hence they have both the **opportunity to be exposed to ICT and the incentive to familiarise themselves with the technology**. Consequently **digital illiteracy is already a barrier to the potential uptake of eLearning**, but this could become worse unless addressed more aggressively in the near future.

III.3. Drivers/barriers for future eLearning in Malta

The following section highlights the major drivers and barriers that affect Malta's eLearning developments. The main drive to participate in eLearning probably stems from the need for self-improvement, due to the high competition that exists for good career opportunities. An analysis of the statistics available suggests that potential demand for eLearning should be quite high. A Malta Council for Science and Technology report¹¹⁶ explains that the low indicator for the working age population (25 – 64) with some form of tertiary education “*is influenced by the very limited opportunities that were available for tertiary education in Malta for a significant number of years*”.¹¹⁷ In fact, whereas in the early 1980s (up to 1986), intake at the University amounted to around 300 students annually, this number steadily increased thereafter, surpassing the 2 000 mark by 1992; it is now close to 10 000. Previous European Innovation Scoreboard surveys also confirm the upward trend, as the percentage of working age population with some form of tertiary education has risen from 7% to 9% between 2000 and 2003. The European Innovation Scoreboard 2004 for Malta further indicates a low participation in lifelong learning¹¹⁸ at 4.2% in 2003, compared to an EU average of 9%, by the working age population. A significant barrier to lifelong education for the Maltese working population may be literacy limitations as the adult literacy rate, which stands at 92.3%,¹¹⁹ is also low by EU standards.

III.3.1. Major drivers for eLearning development

Distance learning provides new and exciting opportunities to deliver high-quality, targeted knowledge and training direct to individuals' desktops through a standard Internet or Intranet connection. eLearning is not about taking classroom-based training and pushing it down a wire, and is not just about the provision of distance learning. Rather, eLearning presents a new perspective on how technology can be applied to enhance what we do well now, and to introduce new innovative ways to maximise the accessibility, enjoyment and the effectiveness of learning for the individual and the organisation.

Some of the major drivers for eLearning in Malta include:

- the **need for building a knowledge-based economy** in Malta remains lacking but of high priority on Government agenda.
- **making people as the main source of competitive advantage and education** is being championed by the various ministries concerned
- an ever growing **shift towards a highly skilled workforce** wherein they can learn at their own convenience or in the workplace using eLearning is being argued for by the Federation of Industry and Unions.
- a clear **skill shortage in specialized jobs** that can easily be taught via Distance Learning from Malta and capitalised on.
- the **brehtaking speed of technological change and its impact on ICT literacy** is not adequately addressed as yet in Malta; however adequate medium-term efforts have been made and are showing results.
- a **need for improved productivity improvements through learning** on demand are being noted by the private and public sector.
- a **local need for flexibility and convenience when it comes to learning** that can fit in with the Maltese workers' lifestyles, and that can provide a wider range and options for learners and enterprises.
- the opportunity to deliver **personalised learning to meet individual needs is now being expected** by the Maltese student who is willing to pay for the convenience.

¹¹⁶ Micallef & Restall, 2004

¹¹⁷ Source: European Innovation Scoreboard, 2004

¹¹⁸ Lifelong learning is here defined as participation - during the four weeks prior to the survey - in any of the following: initial education, further education, continuing or further training, training within companies, apprenticeships, on-the-job training, seminars, distance learning and evening classes.

¹¹⁹ UN Human Development Report, 2003

- the **potential cost-savings** when comparing instructor-led training with eLearning delivery, and the sharing of learning tools and materials, make for an irrefutable case in pushing towards the adoption of eLearning in Malta's educational institutions.
- the **potential global reach** that can be achieved with Distance learning from Malta especially for South Mediterranean countries.
- the **timely and relevant delivery of knowledge** leading to the term "just in time" learning contrasting with classroom learning which is characterised as "just in case" learning.
- The clear **need for more measurable learning**, and a centralised tracking and monitoring of activity facilitated via eLearning tools is badly needed in order to provide a high standard of education in Malta.
- the **potential to make teachers' work easier** by reducing administrative tasks and avoiding repetition is becoming obvious especially at the University of Malta.
- the **potential to monitor and improve student outcomes** by improving the tracking and structure of courses delivered and opening the communication channels.
- supplying the local market demand for increasing access to specialized courses and **positioning Malta, especially the University of Malta, as a quality eLearning provider** across primary, secondary and tertiary education.¹²⁰

III.3.2. Major barriers for eLearning development

In line with Government's efforts to take the maximum leverage from technology, the introduction of eLearning both in the formal tertiary education sector and for the public at large is the next step for Government to promote further ICT education. Through investment in eLearning, Government would also be supporting the social inclusion of those who have difficulties in physically attending training courses and therefore would be militating against **insularity and double insularity problems** which Malta and Gozo continuously face. The implementation of eLearning in general is, however, facing a number of challenges.

The major barrier, as has been noted in the first sections, is clearly **the lack of concrete policy** specifically aimed towards eLearning. This is further prejudiced by the **lack of a consolidated effort to pool resources** and establish a policy towards eLearning trials within Government schools and University. This is probably mostly due to the fact that in the past, **the small size of the Maltese territory** worked against the concept of eLearning and discouraged the production of eLearning courses. eLearning is seen as a viable option only for specialised courses that are not offered locally.

At the same time Maltese have **a culture of expecting education for free**, and launching commercial educational initiatives using the latest ICT education tools is very hard and **prohibitive financially**. Doing so on the basis of new methods and technologies is harder still. Unfortunately **eLearning is closely associated with Distance Learning** in the mind of many, and the appreciation that eLearning is a much broader term that looks at the provision of ICT in 'day to day' education is often overshadowed by this concern. Similarly **financial benefits for such capital investments in such a small country are hard to demonstrate**. Costing of such services is also very hard as it cannot be easily compared to what other EU countries are doing. An external start up injection of funds, possibly through Structural Funds, will be needed if an adequate and comprehensive eLearning national initiative is to grow to its potential in a realistic time-frame. Government has an important role to play in widening delivery channels for eLearning. Although Internet access is relatively high, there are **still households who opt not to have a PC and internet at home**. Most of these households claim that the reason is not financial but purely because they do not see the need for it. Yet many of these households have access to other potential delivery channels of eLearning such as digital TV. For socio-cultural reasons, the take up of digital TV is relatively faster than that of Internet and other technologies which are not associated primarily with entertainment. The majority of Maltese people are not particularly inclined to take up latest technologies but tend to be rather conservative and

¹²⁰ http://www.otheredge.com.au/klogs/fl/images/Drivers_full.html

extremely cost conscious. While most people have a mobile phone, take-up of mobile telephony services other than SMS is low in spite of all the marketing efforts to promote 3G services by the leading mobile telephony operators. Part of the reason is the prohibitive cost of these services, which is largely due to **the small market size and relatively high investment costs**, as opposed to the extremely cheap cost of SMS. The other part of the reason is that **people simply do not see the need to make use of more sophisticated services to learn**; distances are short and communities are tight-knit such that information travels easily and largely by word of mouth. Policy attempting to bridge the uptake of technologies for educational purposes should remain at the forefront of governmental objectives.

Awareness of the need for eLearning has risen, and opportunities in this regard are multiplying across different providers. Malta has a **high rate of persons without higher secondary education** in the EU. However, **participation in lifelong learning, and on-the-job training, is still low**, and particularly so for low-skilled workers”.¹²¹ The contrast observed in the educational statistics relating to the workforce and younger generations seems to indicate that if the supply and flexibility of education and training opportunities were to be greater, the take-up would definitely be higher.¹²²

Local organisations have ongoing needs to train employees, partners and customers but the **logistical challenges and cost of delivering all of this through eLearning can be prohibitive**.

The **resistant attitude of some public service officials**, particularly of some of the more senior ones in the educational sphere, towards adoption of new technologies and electronic delivery of public services, as well as towards change in general, is one of the major limiting factors towards promotion of eLearning. A new generation of public officials is likely to contribute to increased promotion of eLearning, however policy needs to address this resistance within the public sector, in order to provide impetus to educational stakeholders and the private sector.

One also has to be very aware of **online security issues** in general, as when providing any online service. The sensitivity level of an eLearning site should be compared to that of a commercial site like an online shop especially where financial transactions are made to pay for eLearning courses offered. One also needs to be aware of the possibility of students cheating, as might happen in any educational context. The methods used might be different than that of traditional education but the effects and precautions required are on the same level.

Other barriers keeping students from participating in eLearning initiatives are likely to be **lack of time** and **financial considerations**. Other issues include:

- the **lack of technology skills** in providing eLearning platforms and the preparation of material for online platforms, and a **lack of confidence with using technology in teaching and learning** seems prevalent across teaching staff in Malta.
- the **time commitment that needs to be** put in for professional development geared towards eLearning; and the ongoing conversion of materials for suitability via eLearning is not being factored in and expected on top of teachers' already packed days.
- the required culture change that needs to be put in place to address the lack of organisational rewards and incentives for adoption require a **change in the current teaching and learning practise** currently being used in Malta.
- an **unknown return on investment** until pilots are evaluated makes it harder for local government due to financial limitations of the various Ministries.
- the current **lack of industry appropriateness and the level of ICT use in workplaces** in relation to training and education.

¹²¹ National Action Plan for Employment, 2004

¹²² “Evolving Business Models in eLearning”, Tom Barron, March 2002.

<http://www.sricbi.com/LoD/summaries/EvolvBizModelsSum.pdf#search=%22national%20elearning%20drivers%20and%20barriers%22>

- the **limited technical and cultural access to technology for teachers.**¹²³

The following figure summarizes the relevant factors and drivers/barriers affecting eLearning locally:

Factors	Drivers	Barriers
Economic	<ul style="list-style-type: none"> ▪ ICT sector is one of the new target sectors following decline of established industries ▪ Successful outsourcing in development of eGovernment encouraged development of local ICT industry ▪ Objective to streamline public learning service and adopt more efficient work practices across the education sector 	<ul style="list-style-type: none"> ▪ Fiscal constraints limit public expenditure on ICT in education ▪ Unknown return of investment ▪ Low awareness of the potential of eLearning ▪ Time commitment necessary to support eLearning ▪ The limited technical and cultural access to technology for teachers
Legal	<ul style="list-style-type: none"> ▪ Good connections between Ministry for IT, Ministry of Education and Justice Ministry 	<ul style="list-style-type: none"> ▪ No comprehensive eLearning legislation
Policy	<ul style="list-style-type: none"> ▪ Ministry for Investment, Industry and Information Technology (MIIT) efforts to address digital literacy are providing results ▪ Ambitious National ICT Strategy ▪ Policymaking is centralised 	<ul style="list-style-type: none"> ▪ Lack of vision/policy on how to move towards a consolidated effort via an eLearning policy ▪ eLearning well integrated into National ICT Strategy but no concrete efforts made so far
Technological	<ul style="list-style-type: none"> ▪ Regular teacher training in ICT ▪ State-of-the-art Government network ▪ Large number of eLearning services/projects launched ▪ Online sophistication is quite high ▪ PC and Internet penetration is high ▪ Broadband penetration is rapidly increasing ▪ Mobile penetration is very high 	<ul style="list-style-type: none"> ▪ Cost of broadband and mobile telephony is still relatively high ▪ Security and cheating issues ▪ Lack of confidence in ICT technology
Socio-cultural	<ul style="list-style-type: none"> ▪ Fluency in the English language makes internationally available eServices accessible for most of the population 	<ul style="list-style-type: none"> ▪ Resistance to change within public sector educational stakeholders ▪ Lack of industry training and ICT at the place of work ▪ Lack of technology skills ▪ Lack of innovation culture ▪ Lack of demand for eLearning ▪ Small size of country, high degree of centralisation and diffusion of local learning agencies dampen need for eLearning
Regional	<ul style="list-style-type: none"> ▪ Policymaking is centralised ▪ Local implementation activities are coordinated by the Department of Local Councils ▪ Local councils are active in addressing regional disparities 	<ul style="list-style-type: none"> ▪ Disparities with respect to basic literacy and digital literacy, educational attainment and life-long learning, employment and income
Demographical	<ul style="list-style-type: none"> ▪ Ageing population widens scope for eLearning 	<ul style="list-style-type: none"> ▪ Ageing population gives rise to a generational digital divide ▪ Disparities with respect to basic literacy and digital literacy, educational attainment and life-long learning, employment and income

Table 11: Drivers and barriers to eLearning developments

¹²³ http://www.otheredge.com.au/klogs/fl/images/Barriers_full.html

IV. ANALYSIS OF POLICY OPTIONS

The purpose of this section is to highlight the most important policy issues and options available for the Government of Malta to foster the development of eLearning services. These policy issues have been identified through research on eLearning and through interviews conducted with various stakeholders across public administration and private entities involved in eLearning. Please refer to Annex 1 for details about the interviews conducted.

IV.1. The most important policy objectives in Malta

The **restructuring of the Education Division**, which is the central entity responsible for pre-primary and compulsory education, remains one of the most tangible policy objectives in Malta, and results are already starting to be noted.

A major challenge which the present education system faces is the **effective and efficient operation of the different educational services** in order to provide quality education ‘for all children to succeed’, a leading objective of the Ministry of Education. The educational infrastructure and system has grown to such an extent that it requires a more timely and effective delivery of services and support. It also requires clarity in the audit and accountability process. A **review of the current central organization and management structure** was carried out. The review recommended the separation of the two roles of operator and regulator currently being provided by one entity – the Education Division. For this purpose two Directorates; the Directorate for Quality and Standards in Education and the Directorate for Educational Services are being set up. The necessary legal provisions have already been put in place by Act XIII of 2006 which amended the Education Act of 1988.

The current restructuring of the State primary and secondary education sectors is focusing also on further decentralization and **initiating a shift from a hierarchical apex-governed education system to a new network organizational system** that can deliver quality education.¹²⁴ Through networking, schools will be in a better position to meet the needs of students and provide adequate eLearning services, by using eLearning which is expected to allow schools to work in partnership with one another, share resources, facilities and services and jointly solve problems while creating or developing new practices.

The **School Building Programme** which is implementing a vast school building and refurbishment programme is considered to be another crucial element in providing the necessary infrastructure to facilitate eLearning. Similarly the concept of schools acting as community learning centres is gaining support and uptake within the local educational sphere. The National Minimum Curriculum promotes and lays the foundation for this initiative with regards to lifelong education and the involvement of the various stakeholders in the educational process. The Foundation for Educational Services, via its parent support programme, provides parents with the necessary skills to help their children’s learning at all stages of their development.

The **National IT Strategy** overall does take account of various aspects of eLearning orientation and the necessary steps to finalise a National strategy for eLearning by the end of 2007 have been announced. Government has issued a public call for tenders and has been covered extensively in section II.2.2. This is definitely a step in the right direction and it should be expedited so that the opportunities in eLearning should be exploited.

A tender document published by Government in late 2006 for the initiation of a national strategy and vision aimed towards eLearning identifies the following national policy objectives to achieve this aim:

¹²⁴ National summary sheets on education systems in Europe and ongoing reforms; Malta. December 2006
http://www.eurydice.org/ressources/eurydice/pdf/047DN/047_MT_EN.pdf

- i) Research and **provide a detailed account of successful eLearning strategies and models** implemented by other Governments in European and other countries, with particular reference to the eLearning platforms used, content development and quality assurance models, financing models for the initial and ongoing investments required, business models adopted, and the policies developed to entice eLearning adoption;
- ii) **Conduct a gap analysis** and find out the inconsistencies between the current situation and the desired situation, and highlight the resources needed to fill in the gaps with particular reference to implement the eLearning project including technology, content and services;
- iii) **Identify the potential internal and external stakeholders** that will be key in the initial and ongoing phases of the project, and indicate the roles and responsibilities of each stakeholder and the structure in which each stakeholder will relate to the other;
- iv) Conduct **research on the major eLearning platforms available** in the market highlighting the technology infrastructure and services provided by each, and the relative capital expenditure required; and present specific recommendations for the most suitable eLearning platform given the current technology infrastructure in place and the learning needs of the target audiences (as per milestone v);
- v) Develop **models for the ongoing availability of adequate content** that will reside on the eLearning platform, including recommendations on quality assurance, the structures that will need to be put in place and the roles and responsibilities of the parties involved; and recommend the most suitable model for the local scenario;
- vi) Recommend **income-generation models for the eLearning platform** which will enable the financing of the platform recurrent cost;
- vii) Develop a **short-term and long-term change management plan to smoothen the introduction of eLearning** at compulsory education levels and mitigate resistance to its ubiquitous use.

IV.2. Suggested policy measures

IV.2.1. Education and training system

eLearning can provide teaching organisations with an opportunity to meet the changing local demand for education and catering for opportunities to sell local education overseas via distance learning. This increase in demand is widely attributed to the changing culture of employment, where a job for life is no longer the norm and to the advent of the so-called ‘knowledge-driven society’ (Katz, 2001).¹²⁵ Society requires higher levels of skills and qualifications to fill the same ‘worthwhile’ jobs and eLearning can cater for the capacity constraints and resource limitations in order to cope with this growing demand.

It is widely acknowledged that implementation of eLearning leads to a fundamental shift in learning styles.¹²⁶ From one end eLearning demands that students cannot be passive about their learning and take responsibility for their own learning, and on the other hand the student’s success depends on the level of interaction between students and lecturers that is required to stimulate good results. Consequently it seems legitimate to assume that not all students respond well to using an eLearning environment. In view of these circumstances, policy makers drafting eLearning policy or implementing eLearning projects or services must be aware that students will react differently to this changing paradigm of learning and rather than implement changes across the board, should aim to **offer courses tailored specifically towards the different learning styles.**

Online learning and virtual universities can also allow educational experiences to be tailored to the needs of individuals or groups of individuals. Other social groups, such as learners with family commitments and with disabilities, can also benefit if the physical and temporal obstacles to education

¹²⁵ Katz, R. (2001, May 18). Campus champs tackle heavies. *Times Higher Education Supplement*.

¹²⁶ Implementing eLearning programmes: the implications for higher education. <http://jite.org/documents/Vol3/v3p313-323-131.pdf>

are removed with the help of technology. However it is important to keep in mind that eLearning cannot sufficiently provide learning tools and environments for everybody. Many of the students will not have the skills to learn independently and, consequently, it is unlikely that they will be successful in an eLearning environment. Therefore foundation and IT proficiency courses must continue to be provided locally and delivered face to face for those who need them. Typical examples for Malta include the My Web initiative.¹²⁷ **Concrete policy measures aimed at providing life-long learning that is easily customisable and available via distance learning, at the convenience of the learner, are crucial.**

Low awareness of the potential of eLearning should be addressed since it poses the risk of resistance to eLearning in schools. Regular teacher training being organised by the Education Division¹²⁸ is having the desired effect, and **increasing teachers' ICT confidence should be further strengthened.** This training has been gradually moving away from ICT basics to the pedagogical use of ICT. Teachers themselves can thus contribute to the diffusion of ICT as a teaching and learning vehicle at all levels of education, and **teacher training should continue to include an increased ICT element.**

Furthermore, for those who fail through the formal educational system in terms of ICT, Government is providing the opportunity to all public secondary school leavers to undergo training in basic ICT skills leading to an internationally recognised certification and is providing a number of computer labs within public secondary schools for use after school hours. This is further complemented by the Employment and Training Corporation, which provides IT courses which range from short basic courses to advanced ECDL and programming courses, and MCAST which provides a range of ICT courses at different levels, building on the student's prior learning.

Government's investment in the area of ICT education **should be further geared to ensure a constant output of ICT practitioners possessing the ICT skills demanded by the industry,** to minimise the skills' gaps and fill in adequately the ICT-related jobs generated as a result of investment in technology by firms operating in Malta. This also applies to 'close the gap' by jobs created through foreign direct investment (particularly in view of SmartCity@Malta). ICT education and training is also a crucial element of e-accessibility and the resultant benefits for the quality of life of an insular population, young and old alike.

In line with Government's strategy to establish Malta as a centre of excellence in ICT¹²⁹, Government should **accelerate the pace in the ICT area** to ensure that the specialized human resources are available in line with the needs of the industry. Specifically in the education sector, Government should **aim to shift from the provision of the technology itself to the integration of ICT within the pedagogical content** and to **provide digitized library services to students, researchers, teachers and lecturers.** In this regard, steps need to be taken to deploy the planned national eLearning platform.

Widening the opportunities for youths/adults that have already left school, to further their education and training, requires the adoption and **implementation of "extended policies" such as open, distance and eLearning strategies.** **Collaboration between all relevant stakeholders is essential** in this respect. Education and training pathways need to become more attractive, accessible and flexible to provide maximum possible fulfilment of the potential of all persons throughout their working lives.¹³⁰ In this context, the provision of research grants, scholarships (locally and abroad) for those who wish to continue with their studies is also being supported and this should have an impact on students who wish to follow eLearning post-graduate courses with universities abroad.¹³¹

¹²⁷ myWeb is a 20 hour awareness programme where participants acquire basic skills in using the computer, the Internet and email. <http://myweb.gov.mt/English/Pages/page1.html>

¹²⁸ Also supported by the ESF under the Structural Funds Programme for Malta 2004-2006.

¹²⁹ In the light of setting up of 'SmartCity@Malta'

¹³⁰ <http://www.leonardomalta.com/national%20priorities.htm>

¹³¹ http://www.education.gov.mt/mgss_ug.htm

IV.2.2. Institutional

For traditional teaching organisations, a move towards eLearning requires a fundamental change in the structure of the institution. The transition from one type of structure to another represents an obstacle which must be negotiated with caution. As schools and universities try to move from the lecture-based classroom into technology supported learning, there is a **need for academics, managers and policy makers to appreciate the need for the changing landscape of education**. Hence it is important for academia to **understand the problems associated with the transition from traditional to e-teaching** and to take account of such difficulties when making fundamental changes to the structure of the institution. Educational policy needs to reflect this changing scenario and **offer incentives/support for academics to start providing their existing course via eLearning tools**.

It is quite clear, even for Malta, that students are becoming more demanding of local knowledge providers. If Government intends to provide an educational system that grows and responds to the needs of an increasingly heterogeneous group of students it must work actively to offer the necessary choice to support students' specialised interests. This is particularly the case when trying to meet the needs of working people who cannot be out of the office for five days whilst still running their business or at work. Implementation of an eLearning policy must **offer the same benefits as face to face tuition and capitalise on the eLearning potential** to overcome international boundaries and recruit students from around the world, while being able to cater for students' demand for learning when and where they want it.

Users of technology need to feel comfortable with it to successfully employ it in their daily routine and **technology is something that has to become second nature** and not something out of the ordinary. This has not yet been achieved in Malta. According to an unpublished study¹³², some teachers claimed that the training that they had been given before computers were introduced into the classrooms was somewhat lacking, the reasons they gave indicates that this may have been due to time restrictions and to the fact that all training was of the face to face type and did not include easy to follow documentation that could be referred to at later stages.

One major problem that affects the **provision of effective training is access to teachers during working hours**. A potential solution that could partly solve this problem would be to coordinate morning training sessions during the teaching practice periods that are in May and November when classes in secondary education are taken over by university students for a six-week period.

Public Private Partnerships are an opportunity which needs to be given serious attention. There are many examples of good practices from all over Europe that show the success of public private partnerships in training and education. Private stakeholders can make an important contribution to the design and development of national VET policies and systems.

The role of governments worldwide today is shifting from direct delivery of training to the creation of the necessary conditions to ensure the efficient operation of markets, through financial incentives and appropriate initiatives to fill any existing gaps. Policy makers in Malta should look closely at its experience of public private schemes in the past years. An evaluation of the MyPotential scheme recently launched can answer a few interesting questions. As the participation of the private sector in vocational education and training grows, Government can assume the role of catalyst, promoter, supporter, motivator, financer and regulator by supporting the public and private agents operating in the training market in order to satisfy unmet needs.¹³³

The promotion of an open training market in Malta would free the state from direct provision of training services and shifts its attention to governance of the VET system as a whole. The state could **provide the overall policy framework for training, and sharing the process of decision-making with its private partners** while enabling the delivery function to the private sector. This **sharing of**

¹³² Vassallo, E. (2004), An Evaluation of the Laptops for Teachers Programme in Malta, M.Ed. study, University of Exeter

¹³³ "Changing roles in vocational education and training" by Rosanne Galea.

<http://technology.timesofmalta.com/article.php?id=2757>

roles and responsibilities depends on the extent to which the state is ready to delegate its perceived authority in the educational arena. Delegating its role as principal actor and provider of training to the private sector however also depends on the extent to which the private sector is able and willing to assume this delegated authority. This is where the provision of **financial incentives** by the state comes into play if this has to be effective. **Open Educational Resources**. On a separate note, ideally all institutions dealing with eLearning in Malta should follow a policy of using, supporting and **promoting Open Educational Resources (OER)** in order to achieve the critical mass required as soon as possible. Any government eLearning policy **needs to be non-exclusive, not only in social terms but also in technical, security and institutional terms**. That is, no technology, institutional or security measure should be adopted to the exclusion of others. Software lockout is a real risk in this crucial sector of technological dependency and the local market is way too small for such an institutional lockout typical with proprietary software in education. Collaboration even between competitors is essential when looking at the government ICT infrastructures and **public policy or procurement explicitly supporting innovative educational technologies based on OER models** remains crucial.

IV.2.3. Infrastructure and technology

Malta boasts a very good infrastructure and ICT continues to make marked improvement. The comprehensive development framework that the Government of Malta is exploring rests on the conviction that social and structural issues are as important to poverty reduction and sustainable development as sound macroeconomic performance. Education, along with eLearning is getting greater prominence in this debate. This growing recognition of eLearning's central role in improving welfare **requires education stakeholders to participate more fully in the broad strategic dialogue with Government and within ministerial teams**. This includes setting the overall priorities for Malta's eLearning agenda, and identifying the appropriate platform necessary. The outcome of this dialogue should have an impact on the strategy for educational actions and the importance of eLearning should be reflected in the Government's eLearning strategy; and in the resources that Government decides to allocate to the Education sector and eLearning. If the strategy is successful, many existing and new eLearning initiatives should be well under way by the time the next education strategy is developed. These initiatives should begin to yield gains in access to quality education in Malta.

Government should be fully committed to implementing this sector strategy, with the wider endorsement of all education shareholders. To do so will **require a tricky combination of effective leadership, serious professionalism, strong local partnerships, and most importantly of all, deep interaction with educational stakeholders**.

Because the investment in eLearning can be too costly due to initial investment in infrastructure and training that is required, not to mention the ongoing investments in upgrades and change; many local educational institutions cannot afford the cost of embarking on a solo venture. Consequently, it is necessary for them to partner with all the major stakeholders without the interference of the partners' varied political agendas.¹³⁴ Policy measures aimed at **facilitating private investment in eLearning, or perhaps allowing for the creation of public-private partnerships in eLearning remain crucial**.

Although the research in this area is not conclusive, the 'laptop for teachers' initiative, and other similar efforts,¹³⁵ have proven to contribute to teachers' improvement of ICT literacy. Having access to a computer allows those teachers who were willing to do so to have the time to experiment with new technology and to use their laptops for lesson preparation, administrative tasks and also for lesson delivery.¹³⁶ The surveys conducted by the National Statistics Office for computer use by teachers and students in schools and at home¹³⁷ have reaped interesting results for policy makers, and **related data**

¹³⁴ <http://elearnqueen.blogspot.com/2005/07/best-practices-for-online-and-hybrid.html>

¹³⁵ <http://schoolnet.gov.mt/ictprimary/laptops.html>

¹³⁶ ICT Literacy & Education in Malta, Lawrence Zammit, Director Technology in Education

¹³⁷ http://www.nso.gov.mt/statdoc/document_view.aspx?id=1440&backUrl=publication_catalogue.aspx

collation studies by NSO should be strongly encouraged to provide adequate insight on policy effect.

IV.2.4. Other issues

Careful investigation and planning is essential to introducing an eLearning component into the National education options. With distance learning being such a new phenomenon, the issue of how well students perform is crucial to an eLearning program's longevity and replication. Critics point out that many online students enter these programs already one or more grade levels behind, and lack the discipline necessary to work independently.¹³⁸ If local learning organisations decide to prioritise eLearning, then they must **provide support that is realistic, appropriate, timely, and expandable for the future**. In their eagerness to offer eLearning courses and services, institutions may make the typical mistake of force-fitting the program to the institution's vision and mission while diminishing the educational experience provided. Consequently **policy measures to ensure quality assurance are fundamental to protect the student**.

Centralised systems work well for providing technical support, teaching resources and general policy; however individual **schools need to 'own' their ICT policy and work towards achieving it with clear, identifiable and measurable goals**. This can be tied directly with a centralised investment in ICT resources and schools with a strong ICT policy, and a clear vision towards achieving it, deserve all the support they can get. Future investment in ICT will **require the presentation of a detailed plan to a specific authority or council which can decide on the allotment of funding earmarked for ICT projects independently**.

In secondary schools especially, **holistic approaches to ICT integration and eLearning need to become the norm** rather than the exception. The ICT skills that Maltese students are acquiring during their ICT lessons need to be used in other subjects in order to entrench the skills learned. Some schools have already embarked upon such cross-curricular projects and are realising the potential of ICT however more schools need to make this step.

Such projects need to be fully owned by the schools' administration and teachers, and ideally not something that is imposed on them. **Schools with initiative are to be given full support in terms of materials and infrastructure, pedagogical expertise and technical support** as is being done by the DTIE's ICT across the Curriculum (ICTaC). Resources must be channelled to the schools that are able to show that they have the interest and the potential to exploit them for the benefit of their students and teachers. This will enable Malta to move beyond ECDL, which deals with the provision of skills and does not necessarily impart their application.

One of the difficulties in secondary schools, remains the availability of computer lab time to teachers of subjects other than ICT, Mathematics or Computer Studies. Additional IT laboratories should be financed for schools that have a clear ICT policy.

The ideal scenario would include **appointing an ICT coordinator in all schools**, as has been done in all public bodies, who could offer immediate support to teachers and to school administrations that want to use ICT but do not have the know-how to do so. This could help overcome teachers' resistance to change and their fear of technology. The ICT coordinator would be proactive and actively participate to contribute to the school's ICT policy. Such proactive roles could include addressing needs such as training, assisting the school administration in evaluating the success of the ICT policy implementation and taking corrective measures if necessary.¹³⁹

The emergence of technologies like portable devices and wireless networking can be exploited to further widen the access that teachers in our schools have to technology and the internet. The high cost

¹³⁸ <http://www.techlearning.com/shared/printableArticle.php?articleID=163100416>

¹³⁹ <http://schoolnet.gov.mt/dtie/ICT%20Literacy.doc>

of wired network infrastructure is hindering the provision of Internet connectivity in different areas of Maltese schools. However **wireless technology is quickly becoming a cost-effective solution and its adoption in schools should be encouraged** in order to enable ICT use in classrooms and in libraries. A similar argument applies in the creation of well-equipped multimedia classrooms or labs.

The Department of Technology in Education (DTiE) should **continue to provide professional courses in ICT to all interested teachers** and find self-sustainable ways of securing funding for such courses. The DTiE's success in securing a grant from the European Social Fund of the European Union to implement training programme for teachers is an effort that should be encouraged by the administrators of the Maltese Structural Funds and the Ministry of Education. Similarly eTwinning Actions undertaken by the Ministry of Education, that aim to achieve synergies and cooperation through ICT with international counterparts, are excellent initiatives and merit encouragement. These actions can build on existing partnerships that some schools might already be working on and create new ones. The DTiE has been entrusted with the set up and management of a National Support Service for eTwinning which will be responsible for promoting the action and providing support to local schools.¹⁴⁰

Immense progress has been achieved in education in the last 30 years in Malta, however big challenges still remain. Overall, Malta is managing to keep up with the basic provision of eLearning services, especially in primary and secondary care, and all the necessary infrastructural investments have been made and reaping results. This is particularly relevant in the case of primary and secondary education thanks to very tangible efforts by the Ministry of Education, Youth and Employment. Unfortunately no concrete push has been made specifically aimed towards eLearning at the tertiary level, accept for the isolated pilots funded by European Funding programmes and elaborated in this section. The main success has been in access, but too many people are still excluded, from certain levels of education and not learning the skills they require to thrive in today's complex, competitive world. The challenges are to improve the quality of teaching and the relevance of learning, and to offer everyone - including the hardest to reach - a good education. Access to quality teaching and life long learning should remain a prevailing concern. There is little point in expanding access unless there is reasonable quality. If people are not gaining the knowledge, skills and values they need, resources invested in teaching and learning are wasted. There must be, in policy and actions, an unrelenting concentration on eLearning. The next logical step in Malta's eLearning efforts need to focus on quality that can provide an educated, skilled population which can operate in tomorrow's societies and meet Malta's changing labour market needs. Good quality eLearning education requires efficient systems that provide supportive learning environments, motivated staff with mastery of their subject matter, adequate access to resources, and students who are ready to learn.

The future requires purpose and motivation to further address eLearning, to secure a future for Malta's students, and should continue to strive to build on its strengths and Malta's contribution to the Lisbon Objectives.¹⁴¹

¹⁴⁰ <http://skola.gov.mt/etwinning/>

¹⁴¹ ICT Literacy & Education in Malta. Lawrence Zammit. Director Technology in Education 2004.
<http://schoolnet.gov.mt/dtie/ICT%20Literacy.doc>

V. MAJOR R&D CHALLENGES FOR E-LEARNING

Renewed progress in eLearning in Malta now clearly requires strong, productive partnerships and concrete policy. The job is too large for any one institution or agency alone, and too important for a single perspective to be pushed across. Government needs to now start working closely together with local stakeholders in a prolonged effort to ensure Malta's future eLearning needs in education are met; and to build public and teacher understanding of the educational change needed for eLearning to thrive. Many other stakeholders have important roles to play too, including students, parents, families, communities, teachers groups, foundations and private firms.

Global knowledge in eLearning should be assessed to see what kind of interventions have worked well; establish in what settings, and how best to use or adapt other countries' experiences to fit local needs and circumstances. The final intention should be to assess our comparative advantages and select areas to support where Malta is most likely to help make the greatest impact through eLearning. Government must undertake its own analysis, in terms of the pedagogical, organizational, financial, economic, cultural and political factors in order to determine what role it can best play to achieve shared goals in education and life-long learning locally.

Government's planned strategy should include guidelines and principles to help education staff to implement eLearning in Malta and be based on the following operating principles:

- focus on the student by listening and learning while taking into account the cultural context;
- analyse comprehensively, act selectively;
- use knowledge well;
- concentrate on development impact;
- work with others in productive partnerships.

Of course, various research and development challenges are posed in addressing some of the above issues, and an attempt to illustrate the major difficulties is made in the next section.

V.1. Technological developments and challenges posed by their application in Malta

The issue of isolation and lack of physical interaction is associated with eLearning, and this is particularly the case one small island state like Malta. Consequently multi-dimensional tutor-student relationships should remain a prime concern to Government and teaching institutions. It seems that distance learners still require interaction, however eLearning can still potentially provide student centred and tutor facilitated education that allows communication with other students and tutors. **R&D in addressing physical isolation and better teacher support remains necessary.**

The type and method of delivery of training offered via eLearning is another issue that requires separate study since many teachers have received training in basic skills which though being necessary, does not fully prepare teachers to successfully integrate ICT into the curriculum and actively contribute to the acquisition of ICT literacy by their students.

FTZ's experience with colleagues from the Commonwealth of Learning have shown that the pedagogical culture of different teacher groups can be a more difficult stumbling block to overcome than local cultural issues amongst learners. In order to use eLearning techniques effectively teachers have to understand the value of learning design and facilitator-supported learning that is initiated and directed by the learner. While these principles are well known to newer generation teachers in the rest of Europe, they might not be so well understood by older generation teachers and efforts to instill these principles are necessary for the long-term. **Research towards developing adequate learning design suited to the Maltese education sector is necessary.**

The issue of inter-cultural eLearning wherein the teachers and students come from a variety of cultural backgrounds, are much more complicated than can be delved into here and a tangible reality for a 'mixed island' like Malta. **Research to adequately address inter-cultural issues related to eLearning** are worth a study all by themselves.

Another important aspect is that eLearning is inherently an interdisciplinary multi-sectoral effort that involves the subject expert, educational experts, technology providers, and technology experts; all acting independently but interacting with each other and with financial, administrative, quality control and certification departments. This seems to be a serious challenge for educational institutions locally and unless practitioners are allowed to **cross departmental borders with relative ease**, the quality of what is delivered will be much poorer than could be developed by a dynamic inter-organisational team. Studies on how this can be achieved, and possibly on the **potential impact of public-private partnerships and their feasibility** in this sector would be necessary.

V.1.1. Learning objects, metadata and repositories

At the heart of eLearning lies what is known as learning objects. A lot of research is lacking with regards to the discovery and shareability of learning objects, and how they can be used as key elements to creating broader, inter-institutional applications of technology, learning and teaching. **The use of semantically consistent and easily created metadata that allows for the objects themselves to be easily found and transported between institutions and repositories also begs enquiry.** This is especially salient for Malta due to the fact that tertiary education is centralised via one university and duplication of work and effort cannot be afforded. **Ownership, management and asset control of learning object repositories are the three issues of prime concern.**

In addition to learning objects and metadata, eLearning stakeholders locally, particularly at the University of Malta, are also interested in **developing ways to integrate and expose (in a technical sense) their existing systems, resources and services in university-wide course management systems** ideally using Open source software platforms as indicated in Section V.1.2. below.

V.1.2. Technical infrastructure

Each individual school or university technical infrastructure is unique to that institution. In most cases, academic institutions in Malta support their own technical ICT infrastructures and culturally (seems unfinished). This situation can often cause friction and protective tendencies when trying to integrate eLearning across these institutions. This is particularly relevant when the service is provided by a state owned company responsible for Government IT infrastructure, which tends to be extremely concerned with convergence to 3rd party services or linkages. **Consequently a lot of research and development would be necessary for service convergence using platforms that are highly customizable.** Persistent themes for research locally in view of convergence requirements include:

- **Providing quick, seamless access to systems and information.**
- **Developing robust middleware to support authentication and authorization** across a range of systems and services.
- **Providing better interfaces** among systems.
- Developing or **testing flexible, open-source tools** for specific functions.
- **Establishing stable and comprehensive learning management technologies.**

V.1.3. The need for standards

Very little research effort locally seems to be addressed towards developing consensus on the creation of technical and pedagogical standards for managing learning objects and processes that are compatible to international efforts. Thus, **the search for and development of practical specifications and standards for eLearning communities, both on an international and local level, remains crucial** in view that teaching institutions are becoming ever more technology-centric. A critical R&D challenge related to standards again is presented in establishing technical standards for managing learning objects and processes.

V.2. Privacy, identity and security aspects of eLearning applications

Government is putting in place a number of essential services to promote and support the entire eLearning programme. Electronic identity was launched in March 2004 to enable citizens to access a number of interactive and transactional e-services requiring secure identification. Citizens can apply for an electronic identity by presenting themselves at any district office of the Department of Social Security with a copy of their ID card and a valid e-mail address. Their details are registered and submitted to the electronic identity administrator, who performs validity checks and sends the applicants a first-time password through their registered e-mail address and an activation number by post. This password and activation number enables citizens to activate their electronic identity and services account on the government portal. This is certainly a commendable approach and **further research and development would be needed to integrate the existing service to eLearning applications in national eLearning efforts** for the authentication of online students for instance.

The issue of how to manage intellectual property through digital rights management is closely associated with institutional repository management. Education communities around the world are all grappling with this issue and there are no quick and easy solutions because of the **complexities involved in developing, sharing and managing digital content.** Research in this area could prove beneficial to solving this complex task.

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Abstract

In 2005, IPTS launched a project which aimed to assess the developments in eGovernment, eHealth and eLearning in the 10 New Member States at national, and at cross-country level. At that time, the 10 New Member States were Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia. A report for each country was produced, describing its educational system and the role played by eLearning within both the formal education system and other aspects of lifelong learning. Each report then analyzes, on the basis of desk research and expert interviews, the major achievements, shortcomings, drivers and barriers in the development of eLearning in one of the countries in question. This analysis provides the basis for the identification and discussion of national policy options to address the major challenges and to suggest R&D issues relevant to the needs of each country – in this case, Malta.

In addition to national monographs, the project has delivered a synthesis report, which offers an integrated view of the developments of eLearning in the New Member States. Furthermore, a prospective report looking across and beyond the development of the eGovernment, eHealth and eLearning areas has been developed to summarize policy challenges and options for the development of eServices and the Information Society towards the goals of Lisbon and i2010.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

