Digital Literacy
European Commission Working Paper
and
Recommendations from Digital Literacy High-Level Expert Group

This Report presents the outcome of the Digital Literacy Review that the Commission has undertaken as part of the commitments made in the Riga Declaration in 2006 and in the eInclusion Communication in 2007 (COM(2007) 694 final).

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It is based on the study "Public policies and stakeholders initiatives in support of Digital Literacy" commissioned by *DG Information Society and Media* in 2006 and undertaken by the Danish Technological Institute and on the Digital literacy module of the "Community Survey on ICT usage in Households and by Individuals" published by *Eurostat* in 2007.

The Report was also supported by the Digital Literacy High-Level Expert Group, which was set up in preparation of the Commission Communication on eInclusion and of the 2008 eInclusion initiative to provide expertise and guidance to the Commission. The Group was invited to comment on the findings of the Review and to propose Recommendations for digital literacy policies.
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Digital Literacy Report: a review for the i2010 eInclusion initiative

COMMISSION STAFF WORKING DOCUMENT

TABLE OF CONTENTS

1. Introduction 4

2. Retrospective on Digital Literacy Initiatives 5

2.1. Stage 1: digital literacy to improve access 6

2.2 Stage 2: promoting basic ICT user skills 8

2.3. Stage 3: Improving quality of use and participation in the Information Society 13

2.4. Digital Literacy in Europe: Conclusions 15

3. Good Practices: Successful Implementation of Initiatives 16

3.1. Motivation 16

3.2. Affordability and Sustainability 17

3.3. Content and Delivery Mode 18

3.4. Accessibility and Usability 19

4. Conclusions 20

Summary

Digital Literacy is increasingly becoming an essential life skill and the inability to access or use ICT has effectively become a barrier to social integration and personal development. In response, EU Member States meeting at Riga in 2006 agreed on a series of eInclusion targets, including reducing by half the gap between digital literacy levels of disadvantaged groups and the average for the EU by 2010.

This Report presents the outcome of the Digital Literacy Review undertaken by the Commission as part of the commitments made in the Riga Declaration and in the eInclusion Communication. In the framework of this Review, 470 digital literacy initiatives across the EU were analysed together with the results of the digital literacy module of the *Community Survey on ICT usage in Households and by Individuals*. The main conclusions are:

(1) Member States have invested in large digital literacy programmes over the last ten years as part of their Lisbon priorities for information society and as a result regular Internet use has grown rapidly, particularly among young persons for whom skill levels and usage rates exceed that of the USA.

(2) Digital literacy remains a major challenge and more efforts need to be dedicated to supporting disadvantaged groups, in particular those over 55.

(3) There is evidence that secondary digital divides may be emerging in relation to quality of use and more needs to be done to increase the levels of confidence and trust in online transactions and the use of ICT for lifelong learning for all.

The Review also identified good practices to bring disadvantaged groups online and the key features are summarised, grouped according to: motivation, affordability and sustainability, content and delivery and accessibility and usability.

1. Introduction

In the *Renewed Social Agenda for Europe*[1], the Commission highlighted how technological change, globalisation and an ageing population are transforming Europe's societies and the role that ICTs can play to create more social and economic opportunities for citizens and improve their access to quality services. Digital literacy for all is essential to enable all Europeans to access these opportunities. The objective of this paper is to report on the Review of policies in Europe[2] to promote digital literacy.

Digital Literacy is one of the most important but also challenging areas to achieve an information society for all. Despite its inclusive effects, the information society has also created new divides. The knowledge society is becoming ubiquitous with more everyday activities, goods and services available electronically and, increasingly, only available online. Digital Literacy is increasingly becoming an essential life competence and the inability to access or use ICT has effectively become a barrier to social integration and personal development. Those without sufficient ICT skills are disadvantaged in the labour market and have less access to information to empower themselves as consumers, or as citizens saving time and money in offline activities and using online public services. In response to its growing importance, EU Member States agreed, in the Riga Ministerial Declaration[3], to a series of eInclusion targets, including reducing by half the gap between digital literacy levels of disadvantaged groups and the average for the EU by 2010. To give an overall benchmark, the i2010 Annual Report in 2007 found that 40% of the EU population have no Internet skills but higher percentages are to be seen in older age groups, people outside the labour force and those with a low level of education.

Digital Literacy

What is it? Digital literacy is the skills required to achieve digital competence, the confident and critical use of ICT for work, leisure, learning and communication. Digital Competence was included as one of the eight essential skills, in the *Recommendation on Key Competences for Lifelong learning*.

How is it measured? Digital literacy is underpinned by basic technical use of computers and the Internet. To measure this, the *Community Survey on ICT usage in Households and by Individuals* asked if respondents had carried out six basic computer and six basic internet activities. Those who had done 5 or 6 are classed as high skilled, 3-4=medium; 1-2=low; those who had not carried out any of the activities, are considered as having no skills.

Since 2000, the European Union has stepped up its activities to improve eLearning and to develop skills. The eEurope Action Plan put eLearning and eSkills high on the political agenda and led to the eLearning Programme, which directly promoted Digital Literacy. This has continued under the renewed Lisbon Agenda, which highlights Digital Literacy as a key area for policy intervention.

The working definition of Digital literacy adopted in this paper (see box) is the skills required to achieve digital competence. It is underpinned by basic skills in ICT and the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet. Digital competence is one of the eight essential competences that every European should have to prosper in a knowledge-based society and economy, as defined in the

1 http://ec.europa.eu/social/main.jsp?catId=547&langId=en

2 The analysis covers the EU plus Norway and Iceland.

3 http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf

recent Recommendation on Key Competences for lifelong learning[4].

2008 is the year of the eInclusion initiative and the Commission has conducted a Digital Literacy Review as part of its commitments made in the Riga Ministerial Declaration and the eInclusion Communication. This report presents the outcome of the Review. The main inputs to this Review were:

- a special module of digital literacy levels carried out as part of the *Community Survey on ICT usage in Households and by Individuals*[5];
- an inventory of digital literacy policies in the Member States with an in-depth review of 30 cases identified as best practices[6].

The Review was also supported by academic and industry experts through the Digital Literacy High-Level Expert Group[7] and by the Member States within the i2010 High-Level Group[8]. It also received the support of the Media Literacy Expert Group.

Section 2 of this paper summarises how digital literacy has evolved over the last decade. Section 3 focuses on the approaches which have been shown to successfully address the needs of disadvantaged groups.

2. RETROSPECTIVE ON DIGITAL LITERACY INITIATIVES

Digital literacy policies have evolved as the information society has developed in Europe, essentially in three stages. Firstly, the priority was given to access and connectivity; secondly, policies began to promote skills for basic computer and Internet use and lastly, more sophisticated and sustainable digital skills were drawn in. So far, most effort has been devoted to the first and second stages whereas the third stage, which promotes more advanced Internet use (including critical thinking, trust, confidence and multiplatform use) is only now starting in most countries. The overall assessment is positive with clear progress made in Internet regular use and computer and Internet skills but a lot remains to be done to extend these benefits to all sections of the population. A feature common to all countries is the lower level of digital literacy among the elderly, less educated, people outside the labour force, manual workers and those living in regions that are economically lagging behind. The largest gap is for those aged over 55. Compared with the USA, Europeans in this age group are far behind (by over 20%) and could benefit greatly over the next few years from digital literacy initiatives. There is also emerging evidence of a second digital divide in terms of quality of use: some users lack the skills to take advantage of the more advanced services available on the Internet and are unable to carry out online

4 Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning (2006/962/EC). The eight key competences are: *Communication in the mother tongue; Communication in foreign languages; Mathematical competence and basic competences in science and technology; Digital competence; Learning to learn; Social and civic competences; Sense of initiative and entrepreneurship; Cultural awareness and expression.*

5 *Community Survey on ICT usage in Households and by Individuals*, EUROSTAT, 2007. In 2007 the Community Survey included a module on digital literacy levels. They were measured on the basis of computer and internet activities declared by the households and individuals interviewed. Computer activities are: a) Copying or moving a file or folder; b) Using copy and paste tools to duplicate or move information within a document; c) Using basic arithmetic formulas in a spreadsheet; d) Compressing (or zipping) files; e) Connecting and installing new devices, e.g. a printer or a modem; f) Writing a computer program using a specialised programming language.

Internet activities are: a) Using a search engine to find information; b) Sending e-mails with attached files (documents, pictures, etc.); c) Posting messages to chatrooms, newsgroups or an online discussion forum; d) Using the Internet to make telephone calls; e) Using peer-to-peer file sharing for exchanging movies, music, etc.; f) Creating a web page.

6 *Public policies and stakeholders initiatives in support of Digital Literacy*, European Commission, 2008.

7 http://ec.europa.eu/information_society/activities/einclusion/docs/diglitgrpmandate.pdf

8 http://ec.europa.eu/information_society/activities/einclusion/participate/index_en.htm

transactions. From a policy perspective, this secondary divide is particularly significant in terms of online public services such as eGovernment and eHealth.

The Review has shown that despite all the efforts and progress made, digital literacy remains a major challenge and more efforts need to be dedicated to supporting disadvantaged groups, in particular those over 55. This is particularly needed to meet the Riga Target of halving Internet and digital literacy disparities. Lastly, to avoid new digital divides, more should be done to increase the levels of confidence and trust in online transactions and to upgrade digital skills.

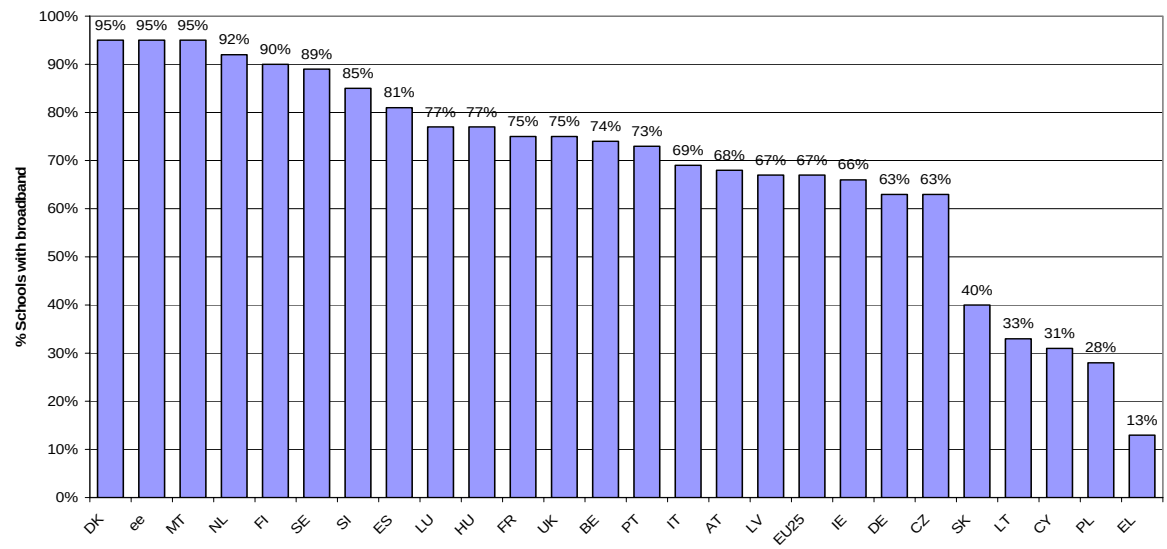
2.1. Stage 1: digital literacy to improve access

In this initial stage, digital literacy initiatives focused on providing infrastructure and access points in schools, public Internet access points (PIAPs) in poorly served geographical areas and on bringing ICT into formal education. Measures also included the provision of affordable computers and other devices, as well as lowering access costs to encourage purchases and home use.

Member States have equipped schools with computers since the late 1990s and have successfully reached the Lisbon targets for equipping and connecting all schools (see chart 1)[9]. The initiatives are generally 'top-down' measures initiated and financed at the national (or regional) level but there have been some local, bottom-up approaches. For instance, in the UK the e-Learning Foundation is active at the local level to ensure that schools are adequately equipped with PCs. Many of the '*computers into schools programmes*' developed by Member States have expired or are near completion and those that remain are concentrated in Central, Eastern and Southern Europe. Their original targets simply to get schools connected have been upgraded and, as shown in the chart, most schools now have broadband connections.

Since 2000, there has been a major increase in access to ICT in education and training and the Lisbon targets for equipping and connecting all schools in Europe have been met. However, despite this, the impact of ICT on education and training has not yet been as great as expected and the

Chart 1



Source: European Commission (see footnote 10)

9 *Benchmarking access and use of ICT in European Schools*, European Commission, 2006 (http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm). The chart shows broadband connection for educational purposes (connections only related to administrative use are excluded). Note that since this data was collected there have been further advances and many more Member States now are close to 100% broadband connectivity.

transformation experienced in other public and private services has not yet reached teaching and learning processes. Although ICT has the potential to develop a 'learning continuum' that would support lifelong learning and embrace formal, informal and workplace learning, this has not yet been realised[10].

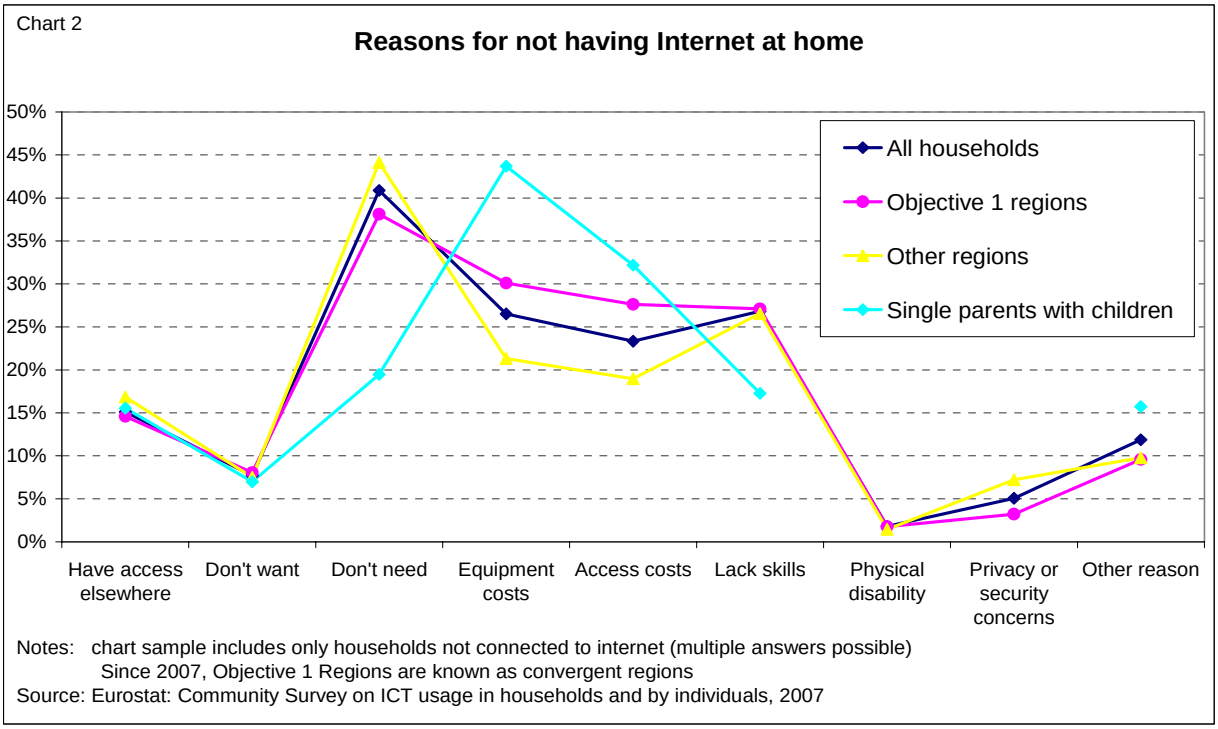
Under digital literacy policies to promote access, those focused on expanding **public Internet access points** (PIAPs) have been very common. The location of access points varies widely and includes schools, town halls, job centres, public libraries, post offices and telecentres. The expansion of PIAPs has been the result of either national or regional initiatives. The policy has benefitted from the rise in private sector Internet cafes providing widespread access to the Internet and leading to a shift in the role of PIAPs towards providing mentoring, advice and contextualised training, in many cases targeting specific disadvantaged groups[11].

Stage 1 measures also directly encouraged the purchase of ICT equipment by individuals, providing financial support in the form of cheap loans or tax credits. These are either generally available or targeted to specific population sub-groups. There has also been a trend towards cheaper and easier devices. These programmes have not only increased computers and Internet use at home but have also introduced opportunities for inter-generational learning.

Statistical analysis: Barriers to Internet access at home

Stage 1 measures targeted increased access but a large swathe of the population still has no home Internet access (57% in 2007). The *Community Survey on ICT Usage in Households and by Individuals* found the main reasons for no access were: (1) '*lack of interest/need*', (2) '*affordability*' (for both equipment and Internet access prices); and (3) '*no skills*'. Based on Eurostat data, the Review[12] has also shown that these reasons

Chart 2



Notes: chart sample includes only households not connected to internet (multiple answers possible)
Since 2007, Objective 1 Regions are known as convergent regions
Source: Eurostat: Community Survey on ICT usage in households and by individuals, 2007

are fairly uniform across countries and different types of households, with the exception of cost factors which were felt more acutely by single parents and people

10 See *The use of ICT for supporting innovation and lifelong learning for all* (SEC(2008) 2629 final).

11 See *Public policies and stakeholders initiatives in support of Digital Literacy, Topic Report 1*, European Commission, 2008 and Public Internet Centres and education of @dults (http://www.pic-project.eu/)

12 See *Supporting Digital Literacy: Public Policies and Stakeholder Initiatives, Topic Report 2*, European Commission, 2008.

living in regions lagging behind. There are also some variations: in Hungary, Estonia, Portugal, Romania and Bulgaria, '*equipment and access costs*' are equal or higher than '*lack of interest/need* as a barrier. There is also a wide variation among Member States in the proportion of the population citing such barriers.

The finding that 41% of households respond they don't need the Internet will partly reflect choice and partly unfamiliarity with its benefits and the services available. In response, many countries are launching awareness campaigns to ensure citizens can make an informed choice. In relation to affordability, the price of equipment was felt to be slightly more of a problem than access prices (27% compared to 23%, respectively).

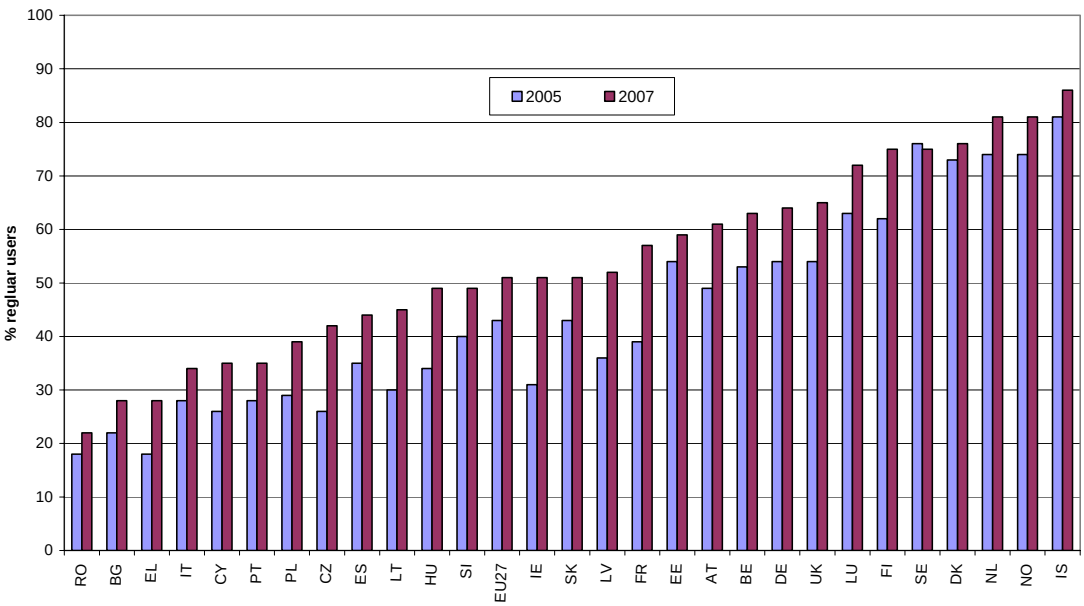
A gradual reduction in access and equipment costs, due in part to competitive markets promoted by the regulatory framework, will reduce this barrier. The importance of digital literacy policies is confirmed by the high proportion citing lack of skills as one of the main barriers to having Internet at home.

people 16-74 years old. For example, Ireland saw a 20% increase and even those at the top of the scale have continued to increase the number of users (e.g. Finland where 75% of the population are now users and the numbers rose between 2005 and 2007 by 13%). In these countries, growth was achieved by extending Internet use to groups such as the unemployed with formerly lower rates of use, which is an illustration of the success of digital literacy programmes. Increased usage by disadvantaged groups is illustrated in more detail in chart 5.

2.2. Stage 2: promoting basic ICT user skills

Digital literacy initiatives in stage 2 focused on teaching computer and Internet usage skills with basic introductions to operating systems and office applications and to some Internet activities (mainly email and web search). Initially such measures were offered to the general public, but increasingly, as Internet use increased in the countries, they were tailored to specific

Chart 3



Source. Eurostat: Community Survey on ICT usage in households and by individuals, 2005 and 2007

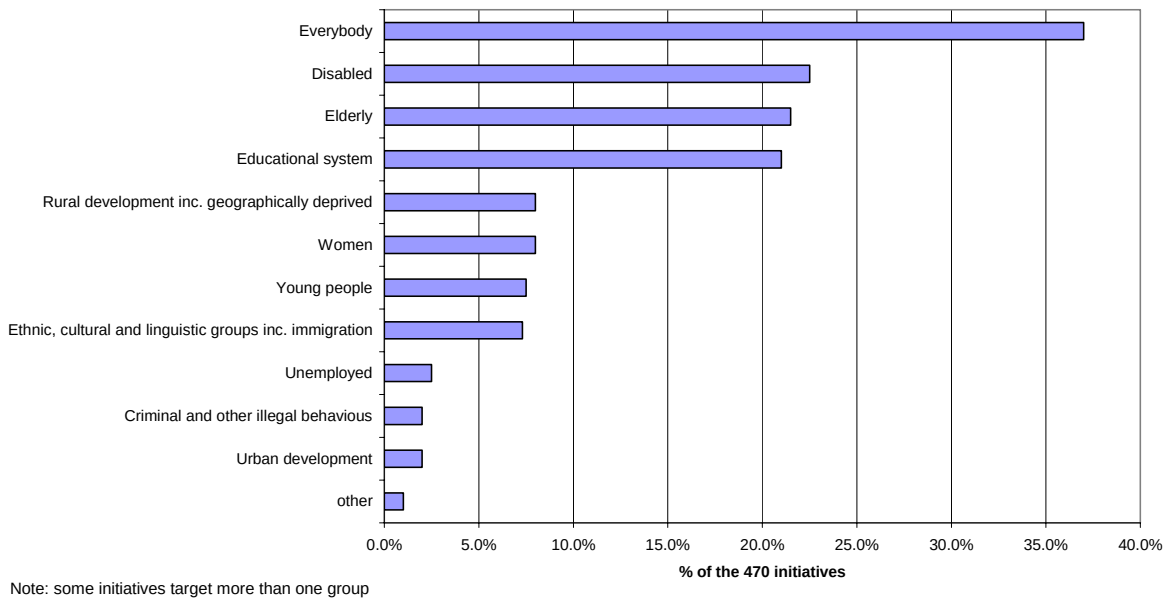
The Eurostat surveys on ICT use illustrate how rapidly Internet usage has increased throughout Europe. Chart 3 shows growth by Member State between 2005 and 2007 for

disadvantaged groups. More recently, the Review identified some more innovative initiatives going beyond basic Internet skills and extending to social web tools and

community networks, open software and involving users in content creation.

An indication of the progress made to reduce the gaps in usage between the targeted

Chart 4



Note: some initiatives target more than one group
Source: European Commission, 2008.

All countries have put in place initiatives addressing the digital literacy of the general public, and most countries have also introduced schemes targeting specific disadvantaged groups.[13] The initiatives have evolved in terms of the people concerned, type of content taught and delivery modes. In order to target disadvantaged groups more effectively, most countries have seen a proliferation of PIAPs in deprived areas including the provision of training facilitators and advisers. This stems from the realisation that many people need not only access to equipment and network connections but support services to be able to use them. PIAP tutors help address issues of digital illiteracy and technophobia, permitting population groups at risk of digital exclusion to use ICTs in a 'safe space'.

Statistical analysis: Promoting basic ICT Skills

The Digital Literacy Review looked at 470 initiatives and identified the beneficiaries shown in chart 4.

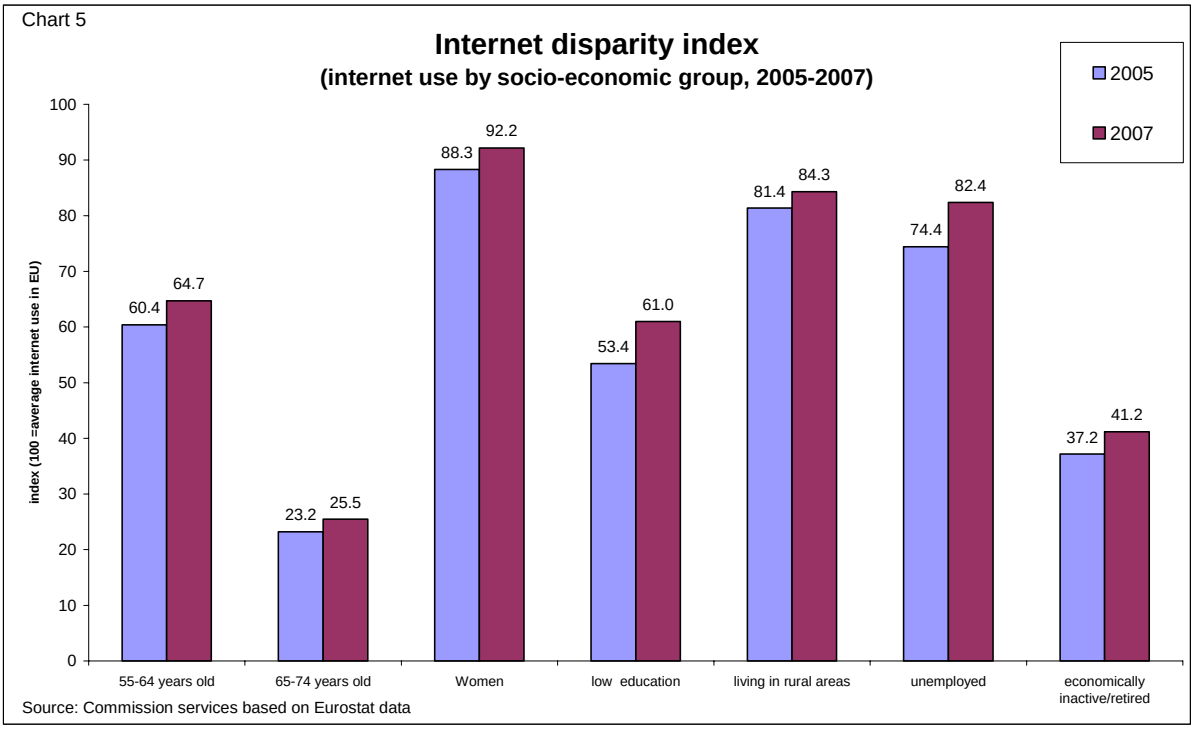
groups and the EU average is shown in chart 5 below. All disadvantaged groups improved their position, with the unemployed and people with a low level of education registering the highest reductions of the disparity index. In the case of the unemployed, the gap between their literacy rates and the EU average was 25.6% points in 2005; this was reduced by a quarter by 2007.

Chart 5 shows that the group with the largest gap in usage rates compared to the EU average is those aged 65-74 (Eurostat surveys only sample up to age 74 and no information is available for older groups). There is a wide variation in usage of this age group in each Member State as shown in Chart 6, which also includes comparable data[14] from the USA. This partly reflects the variation in usage rates for the whole population: high rates in Nordic countries, the Netherlands and the UK; below average

13 For a more detailed account on the initiatives, see *Supporting Digital Literacy: Public Policies and Stakeholder Initiatives, Topic Report 1*, European Commission, 2008.

14 USA data is for 2007 but measures % of people over 65 using the internet at least occasionally whereas Eurostat data is for persons aged 65-74 using the internet in the last 3 months. Strictly comparable USA data is therefore likely to be higher. No data is available for 2007 for Poland and Malta.

Chart 5



Source: Commission services based on Eurostat data

rates in Mediterranean countries and Central and Eastern Europe.[15]

Figures for the United States, though not strictly comparable, show that European leaders do not lag behind and five countries (Iceland, Norway, Netherlands, Sweden and Denmark) have higher usage rates. These five along with the UK, which is equal to the USA, give a benchmark for elderly inclusion that could in time be achieved by all countries.

In 2007, as part of the Riga Dashboard[16], the Commission reviewed progress towards the Riga targets and concluded that it would be very difficult to achieve the goal of halving disparities with disadvantaged groups. The main reason for this is that some of the main causal factors, e.g. education and economic activity rates, are difficult to change in the short term. Overcoming the other main factor, age, has to contend with the fact that the Internet skills decline with age and that higher levels of skills amongst the elderly go together with higher education levels.

As well as those of retirement age, chart 5 also reveals the large gaps for the economically inactive, those with low education and those aged 55-64. For these groups, education is a key factor in exclusion of both younger and older people. Adult education is one of the main pillars of lifelong learning. The growing use of Internet and ICT-based tools for adults opens up new learning opportunities. In particular, it can help support the informal learning which is so important to them. But also 1 in 8 adults outside formal education use the Internet for formal learning activities and are as such re-connected to formal education.

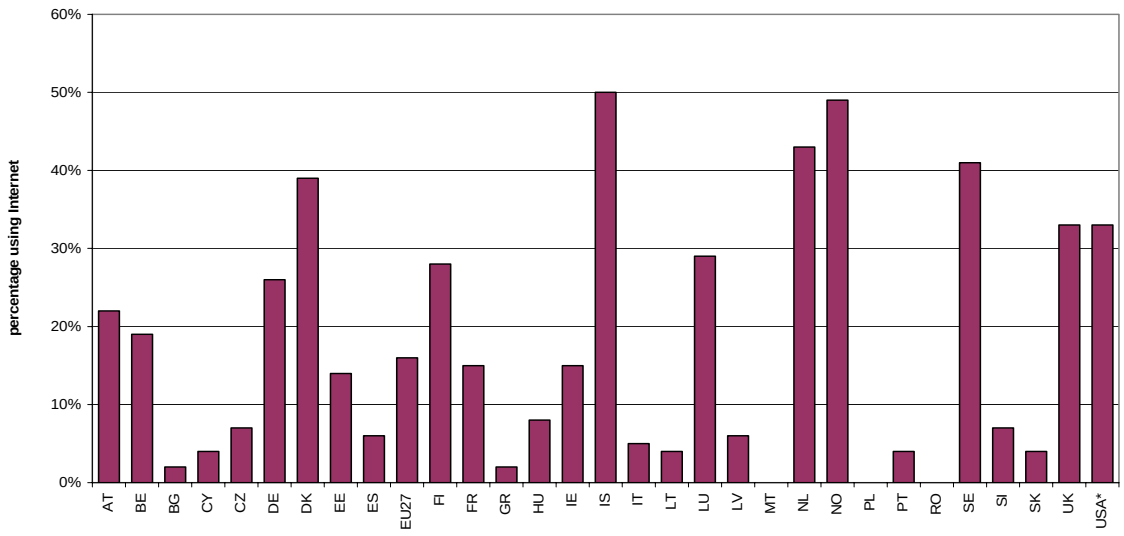
Using the 'no-Internet skills' definition specified in the introduction (see box), chart 7 shows the relative position of different population subgroups and household types. This data is also available disaggregated by Member State and the key points to emerge from these breakdowns are as follows[17]:

15 For a dynamic analysis of growth in usage see section 3.4 of *Benchmarking in a Policy Perspective, Report No 5, eInclusion,* European Commission, 2006 (http://ec.europa.eu/information_society/eeurope/i2010/docs/studies/wp5_benchpol_e-inclusion.doc)

16 *Measuring progress in e-Inclusion. Riga Dashboard*, European Commission 2007.

17 See *Supporting Digital Literacy: Public Policies and Stakeholder Initiatives, Topic Report 2*, European Commission, 2008.

Chart 6

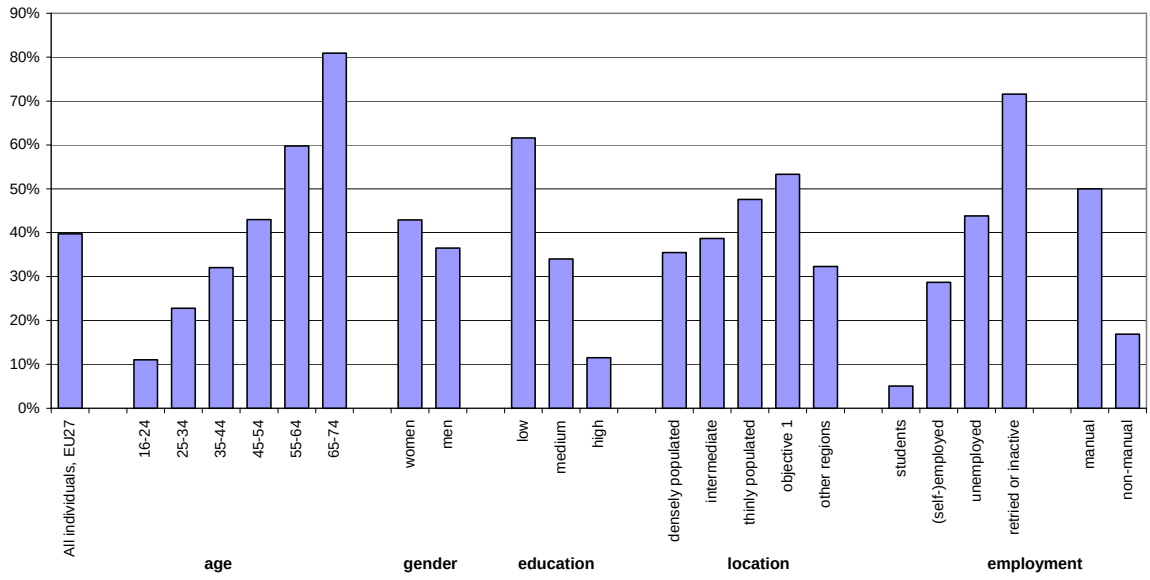


Source. Eurostat: Community Survey on ICT usage in households and by individuals, 2007

- The biggest skills gap is for those aged 65-74, 81% of whom have no Internet skills. Next are the retired and inactive (72% unskilled); those with a low level of education (62%) and those aged 55 to 64 (60%).

- Within each of the groups shown in chart 7, the distribution of skills by Member State tends to follow the pattern of overall Internet penetration, i.e. much higher rates in the Nordic countries and the Mediterranean and Eastern Member States lagging behind. For example, 86% of the unemployed are non-users in Bulgaria but only 9% in Norway; for the retired/inactive 98% of Bulgarians and 97% of Greeks do not use the Internet, compared to 52% of Danes and 51% of Norwegians.

Chart 7



Source: Eurostat: Community Survey on ICT usage in households and by individuals, 2007

- There are examples of great successes in increasing skills in certain groups over a short period. In Norway, for example, Internet use in the 65-74 age group increased by 20% in one year and use by those with a low level of education increased by 21%.

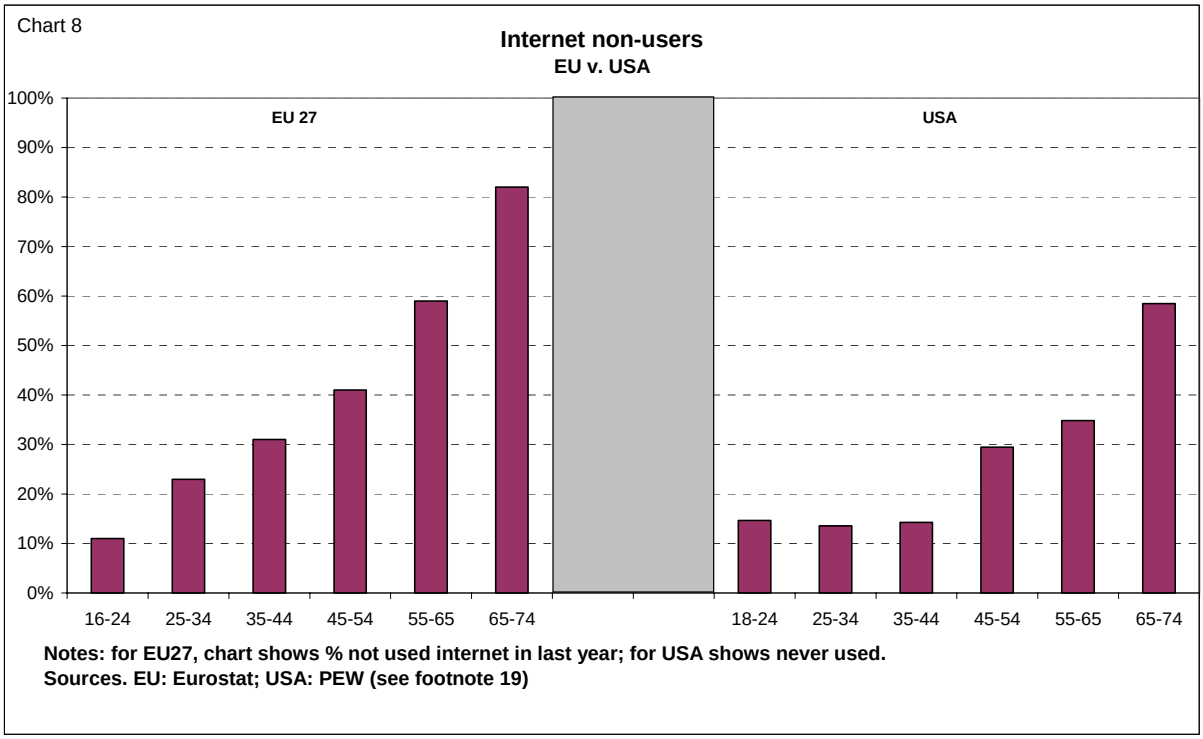
- In relation to education levels, improvements at EU level have been the greatest for those with a medium level of education[18] (the proportion with no skills falling by 5% to 34%). The proportion with 'no-skills' amongst those with a low level of education fell by only 2%.

- The relatively small difference in 'no-skills' by gender in chart 7 is magnified when this gender is cross-tabulated with age: for the 16-24 age band, there is no gender difference - 12% of males and 12% of females have no skills; for the 25-54 age group, 30% of men but 35% of women have no skills; for the 55-74 age group, it is 65% of men but 76% of women.

- Finally, there is evidence that some gaps have completely closed up. For those with a low level of education in the 16 to 24 age band, on average 16% have no Internet skills but for the same group in Finland and Iceland the figure is 0.

Chart 8 compares with the USA the distribution of 'no-skills' by age[19]. For those between 16 and 24 (although the age band is 18-24 for the USA), Europe has fewer non Internet users, which perhaps reflects the success in meeting the Lisbon targets for basic computer and Internet access and use in formal education for the youngest generation. However, for all other age groups, Europe is behind the USA with higher proportions of non regular users in all other age groups and with particularly large differences (over 20%) for the elderly.

Chart 8



Notes: for EU27, chart shows % not used internet in last year; for USA shows never used.
Sources. EU: Eurostat; USA: PEW (see footnote 19)

The chart above points to one of the key conclusions of the Review. Much has been achieved in improving access and use and European formal education has produced a generation of young people with Internet and computer skills who are now more intensive users of the Internet than their peers in the USA. However, all other age groups lag behind the USA and more efforts need to be directed towards older citizens. The elderly are far behind the USA in usage, there are

18 Medium educational level of education refers to people who completed secondary school.

19 The chart actually shows non-users and this may include those with skills but who choose not to use it but the proportion of these is likely to be small. The USA source PEW refers to *the PEW Internet & American Life Project* (2007), http://www.pewinternet.org/PPF/r/64/dataset_display.asp.

wide disparities in usage rates between Member States.

In a bid to better understand this distribution, the *Community Survey on ICT usage in Households and by Individuals* asked why respondents had not taken a computer course. The most common reason given by, on average, 46% of EU27, was '*skills are sufficient*'. This declined with age and was given less frequently by women than men (43% v. 52%); it increased with educational level and with an area's population density and level of economic activity. The next most common reasons for not taking courses were '*rarely use computers*' (21%) and '*lack of time*' (13%).

A positive result for digital literacy policies was that only a few responded that '*courses were too expensive*' (6%), '*no suitable offer was available*' (3%) or that '*courses were too difficult*' (1%).

Another question asking workers if they judged their computer skills sufficient if they were to look for a job or to change jobs within a year found a sharp contrast between manual and non-manual workers in their perception of the adequacy of their skills. For those in non-manual jobs, 55% consider their computer skills to be sufficient and 29% do not; for those in manual jobs, 25% consider their computer skills as sufficient and 42% do not.

2.3. Stage 3: Improving quality of use and participation in the Information Society

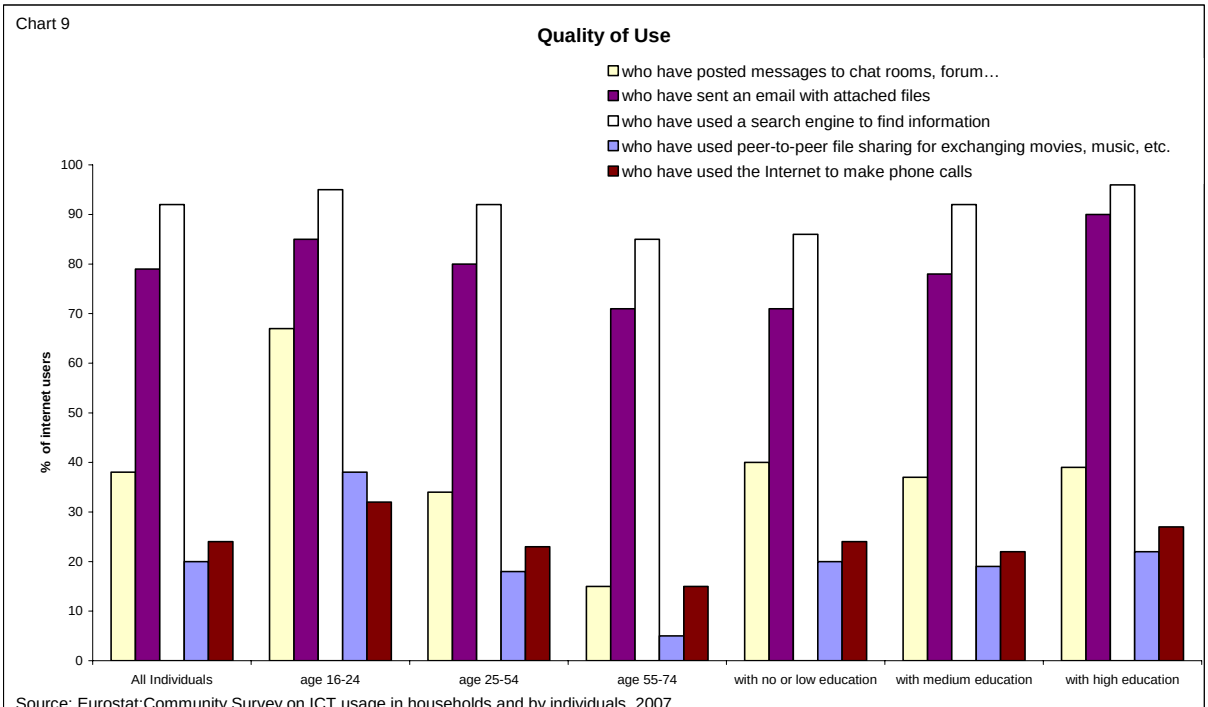
In the third stage of digital literacy initiatives, the focus moved to user perspective, improving quality of use and reinforcing trust and confidence to encourage users to make use of advanced services, carry out online transactions, improve critical thinking of digital technologies (in a broad convergent sense) and increase their awareness of security issues.

The need for stage 3 initiatives is underlined by the *Community Survey on ICT usage in Households and by Individuals*, which shows how users with higher educational levels use the Internet more intensively, in particular for online transactions and electronic public services.

Statistical analysis: improving quality of use

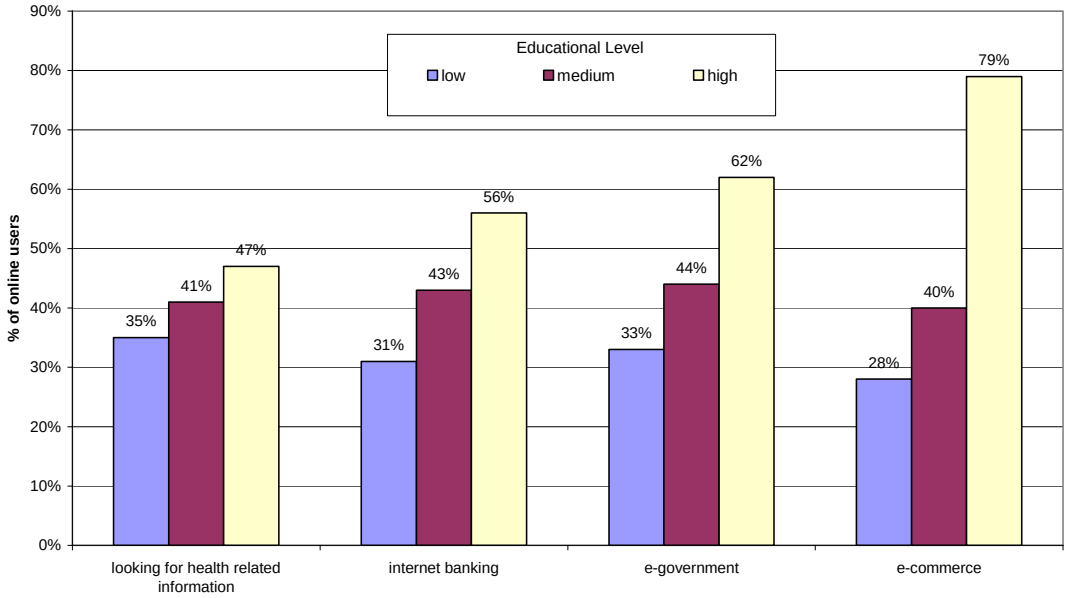
The initial focus on inclusion was to give access to all, and this was very successful. However, as illustrated in chart 9, it is now becoming clear that some people are missing

Chart 9



Source: Eurostat:Community Survey on ICT usage in households and by individuals, 2007

Chart 10

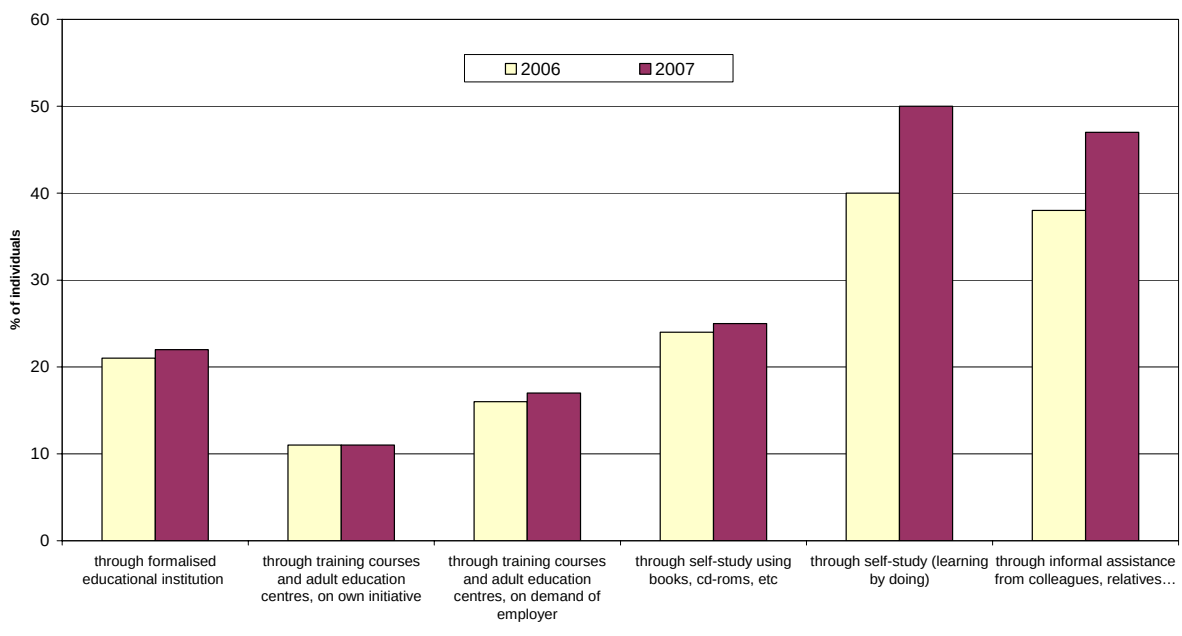


Source: Eurostat: Community Survey on ICT usage in households and by individuals, 2007

out on the benefits of Internet-based services by not taking up the more advanced services such as using P2P or telephony. These results suggest that all Internet users, regardless of age or education, use the Internet for communication and for access to information but for the more advanced services there are sharp differences, particularly by age.

However, education does matter when it comes to online transactions and public services (chart 10). Not only do those with higher education use these services more, they also use them to a higher level. This is shown, for example, in the use of eGovernment services where those with tertiary education are far more likely to go beyond basic information and use the Internet to submit forms and carry out

Chart 11



Source: Eurostat: Community Survey on ICT usage in households and by individuals

transactions.

The Eurostat data also revealed trends in how users acquire and upgrade their computer and Internet skills (chart 11). There is a move towards informal learning with the main and fastest growing modes being '*assistance by other people*', and '*learning by doing*'. Younger and better educated people are more inclined to use both formal and informal methods of learning but those with more basic Internet and computer skills tend to favour informal methods.

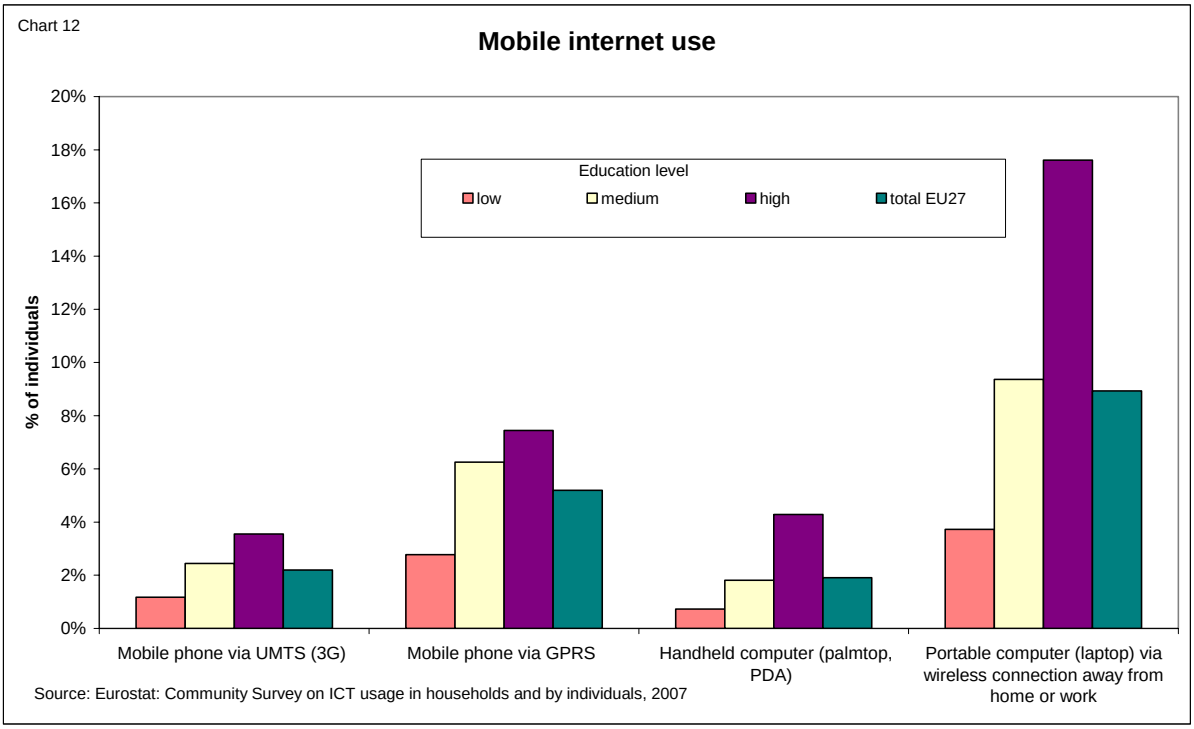
Stage 3 digital literacy initiatives are also going beyond the computer with some countries now looking at multi-platform digital literacy initiatives. Evidence from the digital literacy module shows that disparities are emerging: those with higher levels of education use more platforms and mobile Internet than less well educated people (chart 12).

sophisticated and sustainable digital skills. Most initiatives belong to the first and second stages and the third stage, which focuses on promoting critical thinking, trust, confidence and multiplatform use, is only now starting to develop in most countries.

As a result of the first and second generation programmes, regular use of the Internet has risen quickly, supported by increased computer and Internet skills levels, but a lot still needs to be done to improve the position of some disadvantaged groups. In particular, for those older than 50 years of age, a comparison with the USA indicates that much progress can be still expected in the next years.

There is also a need to look at emerging secondary digital divides in the quality of use: there is evidence that people in disadvantaged groups use the Internet less intensively than other groups. A prerequisite

Chart 12



Source: Eurostat: Community Survey on ICT usage in households and by individuals, 2007

2.4. Digital Literacy in Europe: Conclusions

This section has presented three generations of digital literacy programmes. A first stage focused on extending access, followed by a second stage of promoting basic Internet use and a third stage looking into more

is to increase confidence and trust in the use of technologies, particularly for people with a low level of education, those outside the labour force and older users, to allow them to transact online and use public electronic services in full confidence. Similarly, it is important to broaden the operational skills for critical thinking to all age groups,

including media literacy for younger groups. This matters from a policy perspective to promote the use of online public services such as eGovernment, eHealth and the use of formal and informal networks to upgrade skills.

3. GOOD PRACTICES: SUCCESSFUL IMPLEMENTATION OF INITIATIVES

As noted in the introduction, one of the main inputs to this paper is a review of 470 digital literacy initiatives, from which 30 were selected as good practices.[20] These 30 initiatives were successful in reaching disadvantaged groups and bringing them online. Moreover, they illustrate the new trends in the field of digital literacy. This section presents the key features of these initiatives, which have been grouped around four themes:

- motivation
- affordability and sustainability
- content and delivery mode
- accessibility and usability

3.1. Motivation

Why is it important?

Motivation to learn how to use ICT has become the main focus of many digital literacy initiatives now that PIAPs and Internet cafes have given most people access to the Internet. The Community ICT Survey found that the most frequently cited reason for not having the Internet at home is '*no perceived need* or '*lack of interest*' in using it (see chart 2). Boosting motivation and raising awareness is thus central to many initiatives.

What lessons have been learned?

Projects have identified **a wide range of areas to get people motivated**. These include: saving time in daily activities; saving money; access to greater resources and flexibility for both formal and informal learning; better contacts with family and friends (particularly valued by immigrants and the elderly for communication between children/grandchildren); access to information on family history, business, entertainment or social activities; activities meaningful for everyday life; more flexibility in the use of public services. The overall aim of many initiatives addressing the needs of the elderly is to improve the quality of life of participants.

One essential element identified by the Review is that these benefits are best transferred through **intermediaries** who are well acquainted with the target group and know how best to motivate them. Many initiatives reported that the first contact was often the most important and the hardest challenge was to convince people to try technology for the first time. The most effective intermediaries were people connected to the target community, for example elderly groups being coached by retired ex-employees of technology firms or young people from disadvantaged regions being helped by adults from those same areas. Another effective means is to use existing networks, for example using a club for elderly people as a centre for training and then benefiting from 'word-of-mouth' proliferation through the club network.

Increasing awareness of the benefits of the Internet through offline media is a tool used by many successful schemes. TV broadcasters are an important medium of publicity and also training. Good public relations and press coverage are cited as providing a major boost to participation.

The previous section highlighted the fact that the **elderly** were furthest behind in terms of Internet usage and skills. It is useful therefore to illustrate the above lessons learned in initiatives with elderly people. Their motivation can be sharply different from younger Internet users in that they tend not to be short of time. Public service applications that save time or avoid

20 See *Public policies and stakeholders initiatives in support of Digital Literacy, Topic Report 3*, European Commission, 2008.

travel to the town hall or doctor's surgery are not motivators. Motivation is more likely to come from contacts with extended families, with social groups and relevant health information. Family contacts (particularly children and grandchildren) have been found to be good intermediaries. The elderly often have broad experience to draw on, and this too has been used to establish groups led by retirees from the local community with technology skills. Informal learning has proved to be important in helping older people get over an initial fear of seemingly complex equipment and techniques.

3.2. Affordability and Sustainability

Why is it important?

After '*no need/interest*', the next most important reason given for not having the Internet at home were costs of equipment and access (see chart 3). These reasons were even more important for households of single parents and those in objective 1/convergence regions. The Internet is still perceived as being expensive and it is commonplace for participants to overestimate hardware and software costs. Obviously, the issue of costs is particularly important for groups on lower incomes. Several projects have promoted and motivated stakeholders by making them aware of the social and economic benefits.

What lessons have been learned?

The Review identified the following elements which contributed to overcoming negative perceptions of costs:

The use of free software: open source software has been found to be beneficial in reducing entry costs and running initiatives and in developing more personalised content and localised community networks and some countries (like the Netherlands and Norway) are intensifying their use of it. In particular, there has been a proliferation of open source initiatives in PIAPs.

Launch of free online resources: a number of such initiatives have been launched by public administrations and private companies. For example, the UK Online centres have developed a suite of very short online modules called "Myguide", which provide practical examples using a simple language.

Low cost computers: schemes have included: acquiring refurbished/new computer equipment from sponsors and providing equipment tailored to the needs of disabled participants, like in the Latvian "Open Door" project; provision of computers on loan terms for short periods to allow people to practice at home, like in the Flemish initiative "Aangename Kennismaking met de computer".

Estimate the **costs and user need for certification** before implementing the initiative: certification may not be useful for many learners and initiatives would benefit from a cost-benefit approach.

Sustainability: many initiatives only run for the duration of the programme periods and rely on funding. In order to make initiatives sustainable, it is best to combine many stakeholders (e.g. public authorities, industry players, associations and NGOs). A broad partnership is important not only to ensure financial support, but also reach the target groups of the initiatives. However, according to the Review, the involvement of stakeholders has varied widely between different programmes and those involving industry have proved to be more sustainable.

Interestingly, some initiatives have proved less resource intensive than others, such as those introducing a new organisational model based on intergenerational learning. For example, the European initiative "Grand parents and Grandchildren" funded by the Grundtvig programme involves national partners that organise networks of grand children who recruit and train their own grandparents.

Intermediaries: many initiatives make use of intermediaries and find their contribution is comparable to that one of paid staff, if they are given the right technical training beforehand.

Launching economic incentives for online users: the Review found that many initiatives provided tax incentives for online training and lower charges for online users (already offered by e-banking, e-tickets, etc.).

Consumer information on affordability choices according to user needs: like in Norway, for instance, through a website benchmarking prices and showing tests for beginners' products, so that new users can obtain comprehensive and independent assistance when comparing different products on the market.

3.3. Content and Delivery Mode

Why is it important?

Content has grown in importance as digital literacy initiatives have evolved. Course content has changed from an initial focus on operational skills using Windows and Office applications towards a greater inclusion of Internet activities, starting with email and searches and moving to more sophisticated activities such as social software or transaction services. Content has become critical and there has been a growth of more contextualised learner-oriented approaches which originated in Finland but are now found all across Europe.

What lessons have been learned?

Adapt content to personal interests: link content to everyday, local life or to the use of public services. Examples relate to online radio, local newspaper, genealogy and local history for seniors, home decorating and child care for women, job opportunities for the unemployed, news and entertainment from home for migrants, communication for everybody. This can be done by creating local interest web pages, using Web 2.0 tools to involve users in content creation or providing less academic and more informal material. Good practice can be found in "Digital Communities" in Ireland and initiatives such as the "SWICN Computer Clubhouse for youngsters" (also in Ireland) and the Spanish "See You in the Virtual Square for migrants".

Include training in online activities to improve trust and confidence in the online environment: many countries have already launched charts and initiatives on digital rights and on increasing confidence. This can be also integrated into digital literacy curricula like the Danish "Netsikker NU Campaign" (Netsecure NOW) which provided promotional material but also courses in using the "digital signature". Similarly Nordea (a financial services group based in the Nordic and Baltic region) has assisted its clients with training in eCommerce to increase trust in carrying out online transactions.

Help non-users to overcome their fears: programmes address fear of the technology and lack of self-confidence in the ability to understand and handle the technology. Many initiatives focus on this aspect, such as the Finnish "Mukanetti", initiative for elderly people and the British initiative "IT for the Terrified".

Rely on instructors or intermediaries who are close to the disadvantaged groups: this has proved to be particularly useful to encourage the enrolment of immigrants, ethnic and cultural minorities and the elderly as illustrated by initiatives like "Senioren: Medien – Migration — Integration – Participation" in Germany and "Click on Granny!" in Hungary. Often the best trainers either have similar challenges or have in-depth knowledge of the limitations of the disadvantaged group: in the Latvian "Open Door" project, disabled trainers train disabled participants.

Use new pedagogies and informal learning: a general finding is that most participants (especially the elderly) prefer not only practical, but personal face-to-face instruction. Learning by doing is also an approach used in a lot of initiatives targeting content creation, such as the Spanish scheme "See you in the virtual square". Evaluating people skills, assessing their interests, grouping people with equal skill levels and interests is widely implemented in the Irish "New Knowledge" centres. Informal learning

is also important for updating and upgrading skills: users can have access to online tutors, online support and also learning by doing online content.

Helping people progress from informal to more formal programmes: several digital literacy initiatives not only help develop basic digital literacy skills, they also help target groups with low education levels begin formal education. For instance, the "Digital Communities" (Ireland) has involved academia and other formal learning actors.

However very few of the initiatives focused on improving critical thinking on the information provided in the Internet and the digital media productions as illustrated by the following quote from UK online centres: "We need a much broader approach to literacy in the digital age, one that helps users of social network sites take good care of their personal information and avoid scams or snares, one that encourages e-mail users to use available tools for encrypting messages or adding digital signatures. As computers and the Internet become more and more important in our daily lives it is vital that we know how they work and understand the risks we take when we surf websites, chat to colleagues or send e-mails off into the uncharted wastes of the network. Extending current thinking about media literacy to cover the wider area of digital literacy would be one way forward, and there is already a lot of work being done to refine and clarify what it would mean to be a well-rounded citizen of a networked society".

3.4. Accessibility and Usability

Why is it important?

Accessibility is essential to disabled and elderly people and a precondition for their participation on equal terms in society including in the Information Society. Accessibility measures not only help persons with disabilities but benefit the whole population. Accessibility is about removing and preventing barriers that hinder the use of products and services by persons with disabilities. Given the correlation between disability and ageing, accessibility contributes to overcome the functional limitations that increase with age.

Usability is about increasing the ease of use of products and services. It is relevant to everybody and is a critical parameter for participation in the information society. Usability and accessibility are strongly interrelated and should be considered together.

What lessons have been learned?

The initiatives identified in the Review contained elements to improve usability features including:

Highlighting the economic potential for vendors to address and mainstream accessibility features.

Increasing access e.g. mobility actions making use of buses, laptops, kiosks, other platforms.

Improving usability of public services and promoting inclusive eGovernment, under which specific measures are developed to deliver public services to and connect vulnerable groups at risk of exclusion, has been recognised as a priority from Member States and has been reflected in various initiatives on digital literacy.

Developing guidelines for design professionals and getting the industry to reflect on the users' requirements.

Developing specific interfaces to deliver training in a very easy, friendly way e.g. "Myguide.uk", a free package already used by 50000 users, the new 'users package' in Norway which includes a broadband connection, standard 'desktop' installation, and set-up with a 'beginner's portal'.

New devices such as OLPCs (*One Laptop Per Child*) have looked at greater affordability and usability. In other platforms, new generations in mobile devices include easy-to-use functionalities.

4. CONCLUSIONS

The Digital Literacy Review has shown that countries have invested heavily in providing access and promoting basic Internet use. These measures have increased the density of public computer networks and infrastructures and contributed to the overall increase in regular use of the Internet. It also identified good practices to bring disadvantaged groups online. Successful digital literacy programmes are those which have been effective at:

- motivating non-users or users with fewer skills,
- making the technology cheaper, more user-friendly and accessible,
- adjusting to user's preferences for informal learning, peer learning, learning by doing and online activities which reflect everyday activities or personal interests.

But more of these policies are needed to reach the 40% who do not use the Internet. Moreover, policies must adjust to new needs and emerging digital divides in the quality of use. These points were highlighted by the Digital Literacy High-Level Expert Group, which was established as part of the i2010 eInclusion 2008 initiative and which put forward a set of recommendations for digital literacy policies.

Digital Literacy: High-Level Expert Group Recommendations

A. Context

B. Motivation and Awareness Raising

C. Teaching and Learning

D. Content, Services and Usability

E. Critical Skills

F. Evaluation, Research and Benchmarking

G. Funding and institutional setting

The Digital Literacy High-Level Expert Group put forward the following Recommendations:

A. Context

Digital media and tools, facilities and usages are profoundly interconnected to national and local economic, social and cultural structures. Digital literacy is thus a key element of citizenship, social inclusion and public services policies.

Unless digital literacy actions are grounded in the social, cultural and economic realities of the locality, delivery of basic digital literacy skills cannot be translated into success at the level of relevant and effective usage and innovation, which can make an impact on the root causes of exclusion or marginalisation.

An example might be targeting an ethnic or cultural minority population in community-based public Internet access points, where training in digital skills runs alongside and is articulated with other training (e.g. local language and cultural issues), allowing digital usage to be practised in meaningful contexts which encourage integration into society.

Social and economic exclusion is a multifaceted problem that requires accurate analysis and diversity and flexibility in terms of proposed solutions. In developing and delivering digital literacy initiatives, government agencies, business, and civil society must adapt to context and join with organisations that are close to the target groups and can articulate their requirements and aspirations. Furthermore, they must enable initiatives that are meaningful and relevant in social, cultural and economic terms. The role of 'social gatekeepers' and intermediaries, individuals who can identify the needs of the excluded and make digital initiatives socially relevant, should be recognised.

The increased dependence on online public and commercial services and consequent scaling down or phasing out of traditional offline services can at the same time be a benefit for some and a disadvantage for others. There is a risk that new forms of exclusion and newly excluded groups may emerge. These risks need to be identified and addressed as a key element in digital literacy policy. This development may also present opportunities to create incentives for the take-up of digital literacy actions.

Recommendations

- **Embed digital literacy initiatives within local socio-economic contexts, adapting them to the specific needs and context of the targeted population;**

- **Use existing local social structures, organisations and people to develop and deliver digital literacy actions and to make them sustainable;**

- **Encourage synergies with other public policy initiatives, in particular those concerned with online public, e-Government and commercial services;**

- **Pay attention so that new marginalised groups are not created as an unintended consequence of 'scaling down' traditional/off-line services.**

B. Motivation and Awareness Raising

It is vitally important that new media are meaningfully connected to people's individual and social needs and purposes and to their everyday lives. In the last two decades, member states and stakeholders have placed emphasis on providing access to digital technologies and the Internet as well as bridging the digital literacy gap. Although the question of access remains relevant, it is now increasingly important to consider motivation as a key driver to engage individuals in the use of technology and to keep their digital literacy skills up-to-date.

Awareness raising campaigns, particularly for groups at risk of exclusion such as older persons, migrants, minority groups and any other group in society that is at risk of marginalisation, should aim to increase motivation by demonstrating and making evident the benefits of using digital technologies in their personal and professional lives; and by demonstrating the value of new media for learning, cultural development, access to services, entertainment, communication, creative expression, etc.

However, enthusiasm in using digital technologies also raises issues of risk and safe usage; and awareness-raising should therefore complement positive attitudes with sensitivity to safe and sensible usage.

Recommendations

- **Raise awareness of the positive potential and value of new media;**

- **Raise awareness of the benefits of using digital technologies in people's personal and professional lives;**

- **Raise awareness about the various risks associated with using digital technologies and promote safe use guidelines.**

C. Teaching and Learning

Learning and teaching approaches can have a major impact on the success of digital literacy initiatives and should be carefully considered, and be relevant to the context and nature of each initiative.

Research shows informal learning to be an important means of acquiring digital skills. Providing opportunities for increased informal learning within digital literacy initiatives should therefore increase their effectiveness (for instance, developing networks and communities of common interest, which can become loci of informal learning to acquire and upgrade digital literacy).

Another important element in accessing and motivating excluded or marginalized groups is the role played by 'intermediary deliverers', mostly volunteers but some paid workers, who work directly with and alongside the target groups as a bridge between 'technology' and 'society'. Intermediaries need to be specifically trained to work with disadvantaged groups, but should also be seen as a source of knowledge regarding the target group and the content and methods of approach that would be efficient, recognised and valued and that would also be an important source of evaluation feedback.

Encouraging individuals to share internet connectivity, develop software and online content, or establish virtual communities, can enable informal learning as well as practical and community-related activity. Home networks may stimulate learning (including intergenerational), while collaborative environments can support self-learning and informal peer-learning. Developing online content is a particularly productive learning activity, encouraging motivation and participation, promoting informal learning, and enabling situating of learning within relevant social and cultural topics. In this context it will be important to build and sustain networks of tutors.

Formal educational structures should not be ignored, as these run alongside and articulate with informal structures. Formal structures may be directly used in an initiative, or there can be valuable exchange of information and experience. Awareness of digital literacy initiatives and their value should be incorporated in teacher education programmes. Other formal structures such as public libraries, museums, cultural or community centres should also be considered as valuable resources.

Recommendations

- **Teaching and learning strategy should be a key element of proposed programmes, and should be relevant to the context and nature of the activity and the groups involved;**

- **Make full use of informal as well as formal learning within digital literacy programmes;**

- **Make full use of intermediaries in motivating target groups and delivering initiatives;**

- **Make full use of e-learning and online platforms in delivering initiatives, balanced appropriately with face-to-face/offline engagement;**

- **Enable target groups and individuals to generate content, create online communities and improve participation;**

- **Interact with relevant formal educational and related structures.**

D. Content, Services and usability

Once connected to the digital world, each individual user must be empowered to source and interact with content, services and websites of choice. As the digital world becomes more diverse and wireless enabled, users will be connected through different devices and platforms. Productive, inclusive engagement is crucially dependent on content and services that are suitable for purpose and that can be readily accessed by the target user group and where usability is a core design value. It is important that the capabilities and prior experience of users are taken into account, and also the particular difficulties particular groups may have in using content and services. Varying degrees of difficulty should be addressed, including the needs of those requiring assistive technology.

Recommendations

- **Support the development of content and services for users, paying particular attention to those who are marginalised or under-represented, and monitor effectiveness in terms of uptake;**

- **Support multi-platform modes of access and participation;**

- **Improve information and visual design standards for content and services to take account of expected capabilities and prior experience of the target user group;**

- **Pay particular regard to the inclusion of persons requiring assistive technologies.**

E. Critical Skills

In recent years, much emphasis has been placed on widening access to the Internet and on identifying and addressing gaps, whether brought about by a lack of physical access to an Internet point of connection, lack of motivation to use the Internet or by a deficiency in basic skills and confidence required to use the Internet. While continuing to monitor and address gaps until they have been eliminated, it is now a priority to turn attention to the question of participation and to focus on the extent and quality of the user's engagement with content and services. The agenda is moving from: 'who is connected' to 'what are they doing' and 'for what purpose'.

The key concepts of media literacy – representation, language, production and audience – provide a comprehensive framework that can easily be applied to

digital media. For example, in relation to the internet, this approach raises questions about representation – about bias, authority and ideology – that are typically neglected in accounts of information technology. It calls for a systematic analysis of the language (the grammar or rhetoric) of new media – for example, in relation to links, visual design, mode of address, and so on. It includes an analysis of production, of the commercial and institutional interests at stake, of how web texts are produced, and of how they relate to other media. And it looks at how this impacts on the audience or the user, how users are targeted and invited to participate, and what they actually do, what they find meaningful and pleasurable. Such an approach takes us beyond questions about whether or not the information on the web is true, or whether it can be trusted. Much work has already been done at the European level on media literacy, e.g., the European Commission Media Literacy Framework and the Euro Media Literacy Charter (see www.euromedialiteracy.eu).

Such an approach implies the promotion of critical and creative thinking in users, a focus on quality of usage, and a consequently broader and more critical approach to the measurement and evaluation of digital literacy achievements.

Recommendations

- **Broaden the understanding of 'digital literacy' and align it with an existing framework for 'media literacy';**

- **Focus on the development of users' critical thinking, cultural and creative skills;**

- **Develop strategies to promote appropriateness and quality of use;**

- **Broaden the measurements and evaluation of digital literacy beyond operational skills to awareness, critical thinking and problem solving.**

F. Evaluation, Research and Benchmarking

Connectedness in the digital world is increasingly becoming integrated with other forms of social and societal interaction. Questions of digital and media literacy and e-inclusion can no longer be artificially separated from wider questions of social inclusion or engaged citizenship. As 'quality of use' becomes a dominant theme, it will be necessary to develop appropriate criteria, evaluation methodologies and benchmarks that can be used effectively to target resources to areas of need and to measure impact and value for money.

Recommendations

- **Develop and use appropriate evaluation and impact assessment frameworks including more socio-economic background variables and more indicators related to motivation, critical thinking and quality of use;**

- **Support research leading to the development of more sophisticated evaluation and benchmarking tools for digital and media literacy programmes;**

- **Support critical academic research.**

G. Funding and institutional setting

The intrinsic complexity of the digital divide requires the mobilisation of civic society and industry in order to effectively deal with the problem. However, policy does not always

accommodate the involvement of the private sector in a broader eInclusion strategy. Then again, evidence in the Review indicates that the initiatives depend mainly on public funding, which begs the question on how to attract private funding for digital literacy projects.

Recommendations

- **Configure institutional settings and devise digital literacy strategies that will encourage synergies and partnerships amongst public authorities, civic society, media and industry;**

- **Engage the private sector by adopting win-win strategies which will ensure sustainability and longevity of digital literacy initiatives;**

- **Adopt flexible funding intervention approaches that focus on continuous and sustainable community e-learning growth, supported by the development of local leadership and capacity.**