

# Engaging Diversity

## Report on ICT skills and e-learning

(part 1 of 2)

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19 January 2007



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## Table of Contents

Table of Contents.....	2
Executive Summary.....	1
Introduction.....	2
ICT Skills in the England and Wales.....	3
General Population.....	3
Local Government Employees.....	4
ICT Skills in the Partner Organisation.....	5
Attitudes towards ICT.....	7
The attitudes towards ICT in the UK.....	7
Attitudes towards ICT in the Partner Organisations.....	8
Barriers to Use of ICT and E-Learning.....	10
Existing Barriers.....	10
Breaking down Barriers.....	11
Conclusion.....	13
Reference.....	14

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## Executive Summary

“Information technology skills and e-learning” is the first of a two-part report on the effect of ICT skill levels on the outcomes of staff participating in the Engaging Diversity project. This project provides on-line delivery of multimedia learning materials and learning communities in the area of diversity awareness for the use of medium and large organisations across Wales.

For e-learning to be successful, prerequisites of ICT skills and access to ICT need to be met. This report looks at existing research and the findings from interviews with the diversity training coordinators. The areas examined are the levels of ICT skills and their distribution, the attitudes towards ICT and the barriers to the use of ICT. The findings show that a clear 'digital divide' exists in the general population and in the partner organisations. The divide is between skilled regular ICT users and between unskilled or low skilled non-regular ICT users.

The aim of the e-learning program is to reach the broadest possible audience; in order to achieve this, barriers blocking the use of ICT have to be broken down. Some of the barriers are linked to the attitude towards ICT. Older people and people with lower educational attainment show less interest and greater apprehension for the use of ICT according to recent research. These attitudes are reflected in the partner organisations. The greatest barrier according to research is the lack of access to ICT or the cost of accessing ICT. The best solution for breaking down barriers seem to be the provision of free access to computing and free introductory training especially aimed at the older employees and at employees with lower educational attainment. These measures would require strong marketing or incentives so that these reluctant sectors would participate. These measures would not only enable e-learning but also serve as a means of preparing for an expected rise in the demand for ICT skills in the workplace.

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## Introduction

The Equal Project aims at delivering effective diversity training in Wales to a large number of people in a short period of time. E-learning has been chosen as the methodology for achieving these goals. The task of the University of Wales (UWB) research team is to evaluate the effectiveness of this methodology, with particular consideration for the effects on the affective domain of the participants.

The availability of adequate ICT facilities, the ability to use ICT and the attitude towards computers and the use of ICT are expected to influence the effectiveness of the e-learning program. The Learning and Skills Council (2002) confirms this in the Report of their Distributed and Electronic Learning Group. It states that a set of conditions and circumstances need to be considered to facilitate effective e-learning. Among the requirements cited are familiarisation with ICT, the place and availability of ICT/PC connectivity; and the speed of connectivity or access to broadband.

Existing research in this area was explored and Training Coordinators from organisations participating in the project were interviewed to provide the relevant background information about ICT in their organisation.

Eleven Training Coordinators from nine project partners have been interviewed. Their organisations are seven county councils, and two non profit organisations. The information that has been obtained in this way is based on the opinions of the interviewees if there are no factual data available. But because of the nature of their work these opinions should provide a fair representation of the facts. The interview questions were made available to the interviewees before the interviews. This gave them the opportunity to obtain further information from within their organisations if necessary.

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## ICT Skills in the England and Wales

### General Population

Department for Education and Skills has undertaken a large scale survey in 2003 which has not only questioned the participant about their ICT awareness but also tested them on practical tasks on the computer. Their skills were rated on three levels: Entry level, level 1, and level 2.

The result suggests that awareness of ICT and its use are high. However practical skills do not necessary correspond to the awareness. Nearly 15% had never used a computer and just under half achieved Level 1. The report estimates that only about 10% of adults have level 2 or above skills. These levels of skills seem to be relatively low considering that "Half of all respondents (52 per cent) had received some kind of formalised training or education with computers".

The report also suggests that ICT skills depend on the job of the participants and on the frequency of computer use:

Those employed in routine or semi-routine occupations were much more likely to have Entry or lower level ICT skills than those employed as managers or professionals. The connection between frequency of use and ability was weakest among those employed in more routine occupations. The majority of frequent users in these occupations had Entry or lower level practical skills, suggesting that they either: use the computer for a very limited range of tasks, or make a lot of mistakes when they use computers. The highest levels of ICT skill were achieved by those working in the finance and newer' business sectors.

Respondents who performed at the highest levels on the two ICT assessments were likely to: use a computer most days of the week, either at home or at work; use a computer for a variety of applications; and be confident in their abilities.

This skills gap seems to continue according to Future Skills Wales (2005). They claim that "generic ICT skills were lacking for over a third of establishments (40%) reporting skill gaps".

The research cited by e-skills UK (2005) claims that skills gaps for ICT users in their current jobs are reported by 25% of companies and that 9 out of 10 jobs demand increasingly

sophisticated user skills. They also claim that about two thirds of the Welsh workforce is using ICT and that just over half of those users need to up-skill, some of them to a high level.

The research shows that a clear divide exists between ICT users and non-users. This divide between the adopters of new digital technologies and non-adopters is usually referred to as the 'digital divide'. The published research also shows that there is a continuous demand for ICT skills in the UK which cannot be met yet.

## Local Government Employees

Since the majority of the partners are County Councils, the level of ICT skills within local government are of particular interest. Due to the nature of their responsibilities, only parts of the workforce of County Councils are regular ICT users. A large proportion of the workforce is involved in manual labour without use of ICT.

Worral, Greenwood, & Madgwick (2002) describe the profile of the typical ICT user in local government as :

The "average" user from their 26,855 interviews has been using ICT for 10.2 years, has had 1.5 days of training in the last year and uses ICT for 19.8 hours per week.

23% rated their skills as poor with only 8% rating their ICT skills as very good.

60% saw ICT as integral to their jobs (i.e. they scored themselves at 6 or 7 on a 7 point scale).

42% felt they had been inadequately trained to use ICT. Almost 50% of users had received no training in the year prior to the survey; of those that had, 25% considered the training to have been ineffective.

Although the majority of regular users saw ICT as integral part of their work, a large proportion felt that their skills were poor and that their training was inadequate. A large ICT skills gap in local government continues to exist according to Socitm (2007):

The survey reveals that 35% of authorities are reporting various ICT skill shortages this year, a considerable increase on 2005. This supports the findings of our salary survey conducted earlier in the year; which put the percentage of councils reporting shortage as high as 50%.

This continuing gap might be caused by a buoyant private job market drawing skilled staff from the public sector (Socitm, 2007) or by the increasing complexity of ICT.

The digital divide also exists in the local government sector as does the skills gap which might even be worse than in the private sector.

## ICT Skills in the Partner Organisation

On the whole the distribution of it skills in the partnering organisation is similar to the national distribution for the general public and for the local government sector. The training coordinators believe the distribution of ICT skills to be as follows

- 67% of the training coordinators believe that up to 25% of their employees have no ICT skills, and 9% believe that might apply for to up to 50% of their employees.
- 28% of the training coordinators believe that up to 25% of their employees have basic ICT skills, and 36% believe that might apply for to up to 50% of their employees.
- 28% of the training coordinators believe that up to 25% of their employees have good ICT skills, and 73% believe that might apply for to up to 50% of their employees.
- 64% of the training coordinators believe that up to 25% of their employees have excellent ICT skills, and 9% believe that might apply for to up to 50% of their employees.

The same data in tabular form:

	Up to 25%		Up to 50%		Up to 75%		Up to 100%	
	TC's	%	TC's	%	TC's	%	TC's	%
<b>No it skills</b>	7	63.64	1	9.09	0	0	0	0
<b>Basic ITC skills</b>	3	27.27	4	36.36	0	0	0	0
<b>Good ICT Skills</b>	3	27.27	8	72.73	0	0	0	0
<b>Excellent IT C skills</b>	7	63.64	1	9.09	0	0	0	0

Based on these data the digital divide exists in the partner organisations. This is confirmed by the data and by the interview statements for all but one of the participating organisations.

The county councils have all a divide between office staff and between the front-line staff which equals the digital divide, the office staff are regular ICT users with good to excellent ICT skills while the front line staff do not use com-

puters for work regularly and have no It skill or only basic ICT skills. In one organisation a similar divide exists between office staff and volunteers.

One organisation was not meeting the existing trends. A high proportion of their employees are highly educated and all are using ICT for their work. But the skill levels are described as 50% having basic skills and only 25% are having good skills. This is contradictory to the expectations. Since skills levels are assigned by opinion it is possible that the standards and expectation of ICT skills are much higher in this organisation. There is a likelihood that the standard, which is perceived as basic there, would be perceived as good or excellent in some of the other organisations.

### Key points

- A clear digital divide exists between a skilled users and unskilled non-users in the UK. The skilled users are in the majority (approx 55%-70%)
- The partner organisations reflect the national trends

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## Attitudes towards ICT

The attitudes towards ICT are directly related to current or future ICT skill levels. People which are interested and positive about ICT are more likely to be willing to acquire ICT skills and are likely to achieve better results from training.

### The attitudes towards ICT in the UK

The use of ICT has been increasing steadily over the last few years. Russel, Stafford, & Sofres-Social (2002) noted a slight increase in the number of computer users and a higher frequency of use between 2001 and 2002.

Robertson & Sooppramanien (2005) found that Computer and Internet penetration in residential households has increased slightly between 2003 and 2005. They also found that there are more households that own more than one computer and that the growth of broadband was dramatic although it might have peaked by now.

Broadband has changed the way the Internet is used. ICT has enabled some technologies such as Internet telephony (VoIP) or television-on-demand which might entice some non-users of ICT to start using computers.

But according to Robertson & Sooppramanien (2005) the "Digital divide remains firmly in place". They explain that this is due to cost or household income and to individual attitudes. These attitudes towards computers and the Internet vary strongly by age and educational attainment.

Higher age of participants results in a more negative attitude towards ICT. With increasing age the perceived complexity of ICT use increases, while user confidence, user enjoyment and perceived usefulness of ICT decline. Older age as barrier to ICT use was also claimed by the Department for Education and Skills (2003) who found that practical skills were lower for older respondents. They found it to be the main barrier after cost.

Users with high educational attainment are more confident in using ICT than less educated users. They also rate the importance of computers and the Internet in their lives much higher than less qualified participants.

## Attitudes towards ICT in the Partner Organisations

All the partner organisations use ICT widely for their administrative, financial and communications. The majority maintains an intranet and e-mail is considered to be the main channel of internal and external communications by all of them.

Questioning the partners about the perceived ICT preferences in their organisation produced the following data:

- 46% of the training coordinators believe that up to 25% of their employees dislike ICT a lot.
- 36% of the training coordinators believe that up to 25% of their employees dislike ICT; 18% believe that might apply for to up to 50% of their employees and 9% think might apply for to up to 75% of their employees.
- 9% of the training coordinators believe that up to 25% of their employees like ICT, and 45% believe that might apply for to up to 50% of their employees and 18% think might apply for to up to 75% of their employees.
- 36% of the training coordinators believe that up to 25% of their employees like ICT a lot, and 9% believe that might apply for to up to 50%.

The above data in tabular form:

	Up to 25%		Up to 50%		Up to 75%		Up to 100%	
	TC's	%	TC's	%	TC's	%	TC's	%
<b>Dislike ICT a lot</b>	5	45.45	0	0	0	0	0	0
<b>Dislike ICT</b>	4	36.36	2	18.18	1	9.09	0	0
<b>Like ICT</b>	1	9.09	5	45.45	2	18.18	0	0
<b>Like ICT a lot</b>	4	36.36	1	9.09	0	0	0	0

These data correlate with the current research. A majority of the employees likes ICT or likes ICT a lot. In all organizations are some segments of the workforce who show dislike or a strong dislike for ICT. Based on the descriptions and explanations given by the training coordinators the main segments which express negative attitudes are older member of staff and staff with low educational attainment.

### Key points

- The use of ICT is becoming more and more popular in the UK. The most negative attitudes towards ICT are held by older people and by people with low educational attainment

- The partner organisations reflect the national trends

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## Barriers to Use of ICT and E-Learning

### Existing Barriers

The 'digital divide' is only partly caused by attitudes which are influenced by age or education and which result in diminished interest in the use of computers. There is a section of the population that is interested in using ICT but lacks the opportunity to do so. The main barrier for these potential users seems to be the lack of access to computers and the Internet, or the cost required to do so.

This was confirmed by Russel, Stafford, & Sofres-Social (2002):

Cost is the main barrier among interested non-users in relation to computers (41%). Lack of access to a computer is a restriction among 19% of non-users interested in using one (compared to 18% in 2000). The greatest barrier to Internet use is non-ownership of a computer (52%).

The Department for Education and Skills (2003) agrees that cost is the main barrier, followed by age. And Robertson and Sooppramanien (2005) believe that "Household income is the key driver of the residential divide; age and educational attainment also have a strong role."

Although access to ICT and the Internet is less for large organisations, which increasingly have complex technical infrastructures to support business activity, access for e-learning can be reduced weaknesses in that infrastructure, such as poor hardware or institutional limitations on Internet or broadband access. Some of the partner organisations had to overcome barriers such as lack of sound cards, fire wall problems or problems with network settings.

Lack of time can be the main barrier to the greater use of ITC for people who are current users (Russel, Stafford, & Sofres-Social, 2002). If lack of time is a deterrent for using ICT, it can be assumed that it is a deterrent for learning ICT skills.

The Department for Education and Skills (2003) found that "Controlling for frequency and variety of computer use, the distribution of ICT skills followed roughly the same patterns as for literacy and numeracy." This is in concordance with some of the partners who found that low levels of literacy

with some of their staff made the use of ICT difficult, since ICT is often text based or partly text based.

Lack of training is another barrier. The Department for Education and Skills (2003) also found that recipient of formal ICT training performed better in the practical ICT assessments than respondents without training. Higher ICT qualifications and better grades correlated with better test performances.

The Department for Education and Skills (2003) found that "Men tended to perform at a higher level than women. Fifty per cent of men reached Level 1 or above in the practical assessment, compared to just 43 percent of women." According to e-skills UK (2005) only 20% of ICT professionals are women. However, the proportion of women that use ICT in clerical and professional roles is very high. Gender might be considered a small barrier, but whether it is an intrinsic factor or an increased likelihood for women to be affected by other barriers is not clear.

### Breaking down Barriers

The cost of access to ICT and therefore the lack of access to it for some segments of the population is the main barrier to the use of ITC. The cost of equipment and broadband Internet access has been falling continuously and will probably continue to do so. UK government targets are aiming at closing the skills gap and at eradicating the digital divide through making ICT accessible to all segments of the population. Therefore it can be assumed that this barrier will shrink continuously in the coming years. Providing cheap or free access to computers and the Internet will encourage especially the younger section of the population, which does not use ICT yet, to start using it (Russel, Stafford, & Sofres-Social, 2002).

Other barriers such as age, lack of training, or lack of education can be overcome by the provision of training. Many employers have recognized that the provision of training is a necessity. Future Skills Wales (2005) state:

The majority of employers (58 percent) reported providing off-the-job training to their workforce. This figure suggests that there has been a slight increase since 2003 (53 per cent) and was higher than that recorded during employer skills surveys in other UK countries (typically 46 per cent or less). The incidence of off-the-job training was related to size and sector. The industry sectors most likely to provide

this type of training were: Public Administration, Education, and Health (88 per cent).

All the partners provide work related ICT training, 45% of partners provide out-of-work basic ICT training and 10% guide their staff towards free introductory courses available externally. However uptake of training is below 25% in most organisations. Observations of most training coordinators are that the staff that needs training most shows the least interest, while well trained staff seems to be keen to receive further training. However one partner organisation finds that offering "ICT for the Terrified" courses and marketing them actively begins to break down barriers. Another option could be to make such training mandatory, which is often not possible.

Most partner organisations have to overcome infrastructure problems, particular the lack of ICT facilities for the staff that does not use ICT on a regular basis. Possible solutions are mobile ICT suites or delivering the e-learning modules in different ways.

Offering the training during working hours might be a further incentive which addresses the lack of time barrier. It should prove cost effective considering the potential long term saving.

There is a wealth of research available about the benefits of the use of ICT for overcoming illiteracy. But there seems to be very little research on illiteracy as barrier to the use of ITC. Using ITC as a means for literacy training would facilitate familiarization with the use of computers and could be a way for achieving literacy and computer literacy. ICT applications can also be designed in a way that minimise text, e.g. using spoken word, pictographs, icons etc.

#### Key points

- The main barriers are cost or lack of access, older age, and low educational standards. Other barriers are lack of time, low levels of literacy and possibly gender.
- Most barriers which are not related to the lack of access can be overcome by training.
- Training should be free, it should be aimed at the sectors most in need of it, such as older and less well qualified employees. It should be marketed actively or it should be mandatory

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## **Conclusion**

E-learning is not suitable for reaching all sectors of employees in most of the partner organisations. Lacking skills, lacking facilities and negative attitudes towards ICT such as fear, apprehension, and dislike exclude a large section from effective e-learning. These problems can possibly overcome in the short term by delivering the modules in different ways. Long term solutions should be improved facilities and successful ICT training programs.

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