Network of ICT supported Learning for Disabled People

Enable Network of ICT Supported Learning for Disabled People

Deliverable 3.6

A Comparative Evaluation of ICT to Support Lifelong Learning by Disabled People in 15 Different Countries

Workpackage 3: Data Analysis and Evaluation: Principles for the Use of ICT to Support Lifelong Learning by Disabled People and the Future Research Agenda

Workpackage leader: Dr Marion Hersh, University of Glasgow

Lead authors: Marion Hersh and Stella Mouroutsou, University of Glasgow

Other authors:
Simon Ball and Shirley Evans, JISC TechDis, England
Ülle Lepp and Erik Loid, Estonian Foundation for the Visually Impaired, Estonia
Rainer Wallbruch, FTB-ESV, Germany
Riitta Korhonen and Mika Metsärinne, University of Turku, Finland
Eleni Efthimiou, ILSP/ATHENA RC, Greece
Barbara Leporini, ISTI, Italy
Julija Astrauskiene, Radviliskis Technology and Business Teaching Center, Lithuania;
Hanna Pasterny, Aleksander Hulist, Aleksandra Słapik and Piotr Masłowski, Centrum Rozwoju Inicjatyw Społecznych CRIS, Poland
Alena Galajdova and Dušan Šimšik, Technical University of Košice, Slovakia
Maja Lebenicnik and Andreja Istenic Starčič, University of Primorska, Slovenia
Helene Mountford, MacQuarie University, Australia
Lisa Lee, Sogang University, Korea
Vera Rajovic, University of Belgrade, Serbia

Contact: marion.hersh@glasgow.ac.uk

Project web-site: http://i-enable.eu

Glasgow Enable web-site: http://web.eng.gla.ac.uk/assistive/pages/inclusive-learning-conference.php

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1. Introduction

This deliverable uses information provided by the network partners to carry out a comparative evaluation of the use of ICT to support lifelong learning of disabled people in 15 of the partner countries, namely Australia, Estonia, Finland, Germany, Greece, Indonesia, Ireland, Italy, Korea, Lithuania, Poland, Serbia, Slovakia, Slovenia and UK. The aims of this comparative evaluation include the identification of good practice and its results have been input into deliverable D4.5 on recommendations for the future research agenda.

1.1 Methodology

This deliverable is based on information provided by the network partners. Initially a questionnaire (see appendix A) was sent out to all project partners. A shorter version (A1, see appendices) of the first section was then circulated, to ensure and at least a preliminary version of the deliverable to discuss at a forthcoming partner meeting, as the more detailed information in the full questionnaire was proving difficult and time consuming to obtain.

Evaluation of comments from the partner meeting and the deliverable was used to identify updated information requirements (see appendix B), some of which had already been provided by some partners. This information was then used to update the deliverable. It should be noted that data collection was complicated by the facts that much of the data was not (easily) available in some of the partner countries and, where data was available, it was not necessarily available in easily comparable formats.

1.2 Brief Overview of the Partner Countries

As shown in the fifteen partner countries for which data is available are very variable with regards to population, land surface and income, as well as some variation in income distribution. Although the majority of countries have fairly high computer and internet access, they also include countries with low and nearly universal access. The figures for the percentages of disabled people in the different countries show very great variation and could be grouped as follows:

- About 18%: Australia and UK
- 8-13/14%: Estonia, Finland, Germany, Greece, Indonesia (estimate), Ireland, Lithuania, Poland, Serbia (possibly), Slovakia
- About 5%: Italy, Korea, Serbia (possibly)

Thus most of the countries have percentages of disabled people in the 8-13/14% range, though this in itself is a considerable variation. The two countries with the highest percentage of disabled people, Australia and UK, are both countries with high average incomes and relatively low income inequality. This is counter to evidence that the incidence of at least some types of impairments increases with poverty (Beresford, 2010). In addition, countries such as Finland, Germany and Ireland, with comparable incomes to the UK, have considerably lower rates incidence of disability. Korea and Italy with the lowest incidence of disability are both medium income countries, but very diverse with regards to culture and other factors.

Notes:

1. (RN) where N is an integer will be used to number the references in tables 1-5. These references are listed before the other references in the text.

2. A asterisk (*) is used to indicate very approximate data in tables 2-5 and '~' to indicate rounding in table 1.

Country	Surface area	Population	% of disabled people	Average gross monthly income	ratio of highest 10% to lowest 10% income	% of population with computer & internet access
Estonia	45,227 km²	~1.3 million (R1)	10.7% (R2)	€1065 gross, 2014 (R1)	28.5, 2012 (R1)	Households 82.9% (R1)
Finland	338,142 km²	~5.5 million, 2014	10-12%	€2517, 2013	2.3, 2012	80 - 90%
Germany	357.168 km² (R3)	~80.2 million, 2011 (R4)	9.1%, 2011	€2517, 2013 (R5)	6.9, 2000 (R6)	households 88% (R7)
Greece	131.944 km²	~11 million	Estimate 9.1% (R8)	€912 (R9)	10.2, 2000 (R6)	households 88%
Ireland	70,273 km²	~4.6 million, 2014 (R10)	13% (R10)	€2982 (R10)	7.5	73.1% (R10)
Italy	301.338 km²	~60.9 million, 2014	5%	€1923, (R9)	5.6	58.5%
Lithuania	65,200 km²	~2.9 million	11.5%	€667,57, (R11)	5.6 (R12)	64.7% (R13)
Poland	312,000 km²	~38.5 million (R14)	10.0%	€927 (R14)	8.8, 2009 (R6)	Computer 72%, internet 67% (R15)
Slovakia	49 036 km²	~5.4 million, 2013	8.5% of 15-64 year olds with disability pension, 2014	€887 (R9)	3.7	Households 70% with Computer & Internet (R16)
Slovenia	20,273 km²	~2.1 million, 2014	8% (R17)	€824	5.9, 2004 (R6)	Households. 76% (R18)
UK	243,610 km²	~64.1million 2013, (R19)	18% (R20)	€2835 (R21)	5.14 (R22)	Computer – 88% (R23). Internet 83% (R24)
Australia	7,692,024 km²	~23.3 million, 2013.	18.5%, 2012	€4311, 2013	4.2 (2010).	83% of households, 2013
Indonesia	1,919,569 km²	246.9 million (2012).	1.4% (2009) officially (R25) 14.1% estimated (R26)	€518, 2012/13.	7.3 (2011).	computer, 33%, internet 26%.
Korea	100,210 km²	~50 million	4.9%	€1500	6.3	97%
Serbia	88,361 km²	~7.1 million	5-10%	€586, 2014	7-8	Computer 59.9%, internet 55.8%

Table 1, Country overview information

Therefore it seems likely that at least some of the considerable variation between is due to differences in definitions and data collection methods, as well as in diagnosis rates. This is supported by the differences in the two values for Indonesia, with a particularly low official estimate. Where there are relatively low diagnosis rates, as is the case with autism spectrum conditions, diagnosis rates are likely to be higher in countries with a well-developed health system and with a higher average income. There is also some evidence that the incidence of some types of impairments increases with poverty. On this basis of income Finland, Germany, Ireland and the UK would be expected to have the lowest rates of disability and Serbia and Indonesia the highest, followed by Estonia, Poland and Slovakia. However, this is not borne out by the data, indicating that other factors are (more) important. .

2. The Education System in the Different Countries

This section provides a brief comparative overview of the educational system in the 15 partner countries. Information on the main stages of education, the associated ages and whether they are free of charge or fee paying and compulsory or optional is presented in table 2. Table 3 provides information on the different types of post-school education.

All the countries have a period of free compulsory education, with the period of free education generally longer than that of compulsory education and opportunities to continue at school for one to two years after the end of compulsory education. However, the compulsory school starting age varies from five to seven, compulsory leaving age from 14 to 18/19 and the length of compulsory education from seven to 12 years. Most of the countries provide a school graduation/qualification certificate, which possibly together with an entrance examination is required for admission to university, between the ages of 17 and 19. Some countries also provide a qualification at an earlier age as well and students in Poland receive a certificate for completing each school year. There is also some variation in whether or not free education includes the cost of textbooks. In several partner countries, including Australia, Estonia, Indonesia, Ireland, Slovakia and UK, there are private fee paying schools, as well as free public schools. This raises the issue of the extent to which the existence of private fee paying schools threatens free publicly funded education or diverts resources from it. There are also issues of quality and equity. On the one hand the setting up of un- or poorly regulated private schools can reduce the quality of education and, on the other, elite private schools for the children of the rich and influential further ingrain their privileges. There are pressures for the increasing marketisation and privatisation of public services in many of the partner countries.

Most of the partner countries also provide pre-school education which is generally not compulsory and only free of charge in some countries. Starting ages vary from one to three and, particularly for younger children, it has an element of childcare.

Only some of the partner countries, including Lithuania, Poland, Scotland, Slovakia and Slovenia, provide free university level education. Where it is available, this may just cover bachelor level education, but free masters and doctors education is also available in Slovakia. Some countries such as England, Wales and N. Ireland, have previously provided free university level education, but no longer do so. In Italy some universities provide free education for disabled students. A number of countries have private fee-paying universities in addition to public universities, which are free in most countries, but not for instance, in England, Wales and N. Ireland. There are again issues of the threat by private universities to public universities and whether increasing numbers of private universities will start to counter moves in many of the partner countries to extend access to university education to groups of students who have previously been underrepresented, due to factors such as income, socio-economic status, disability and race.

Country	Compulsory Education	Free Education	Preschool	Primary or Basic	(Lower) Secondary	Upper Secondary	School Graduation Certs
Estonia	7-17	Primary, secondary university: free	Crèche: 0-3; preschool 3-7	7-16	n/a	16-19	Basic & upper secondary 16 & 19
Finland	7-16	All	6, voluntary	7-16	13-16	16-19	16 & 19
Germany	5/7 – 17/19	All	1 – 5/7	5/7 – 9/11	9/11 – 14/16	14/16 – 17/19	14/16 , 17/19
Greece	6-15	All	2.5-5	6-12	12-15	15-18	
Ireland	6-16	6-16	1 year free	5-12	12-15/16	15/16-17/18	16, 18
Italy	6-16	Primary & secondary; disabled students free in some universities	3-6	6-10	11-13	14-18	14/15, 18/19
Lithuania	7 – 16	school, vocational school & university	1-5	6/7-11	11–17	17-19	11, 17, 19 (R27)
Poland	6/7-18	All	3-6/7	6/7-13	13-16	16-19	13, 16, 19
Slovakia	6-16	Primary, secondary & university all degrees	3-6 preschool, optional, fee paying	6-14/15 compulsory, free	In same school as primary	15-18/19, Some people leave 16/17 optional, free	15/17 18/19
Slovenia	6-15	6-23 primary - university (except doctorate) for full-time students	1-6	6-15	n/a	15 - 17 or 18/19	15,17 or 18/19
UK	5-17 (will increase to 18 in 2015).	Scotland 3-21, RUK Full time – 5-18	3-5 free Scotland; RUK 3-4 funding for part-time attendance	4-11	11-16	16-17/18	16, 17 (&18) Scotland; 16 & 18 RUK
Australia	5-17/18	Primary and secondary	3-4	4-11	11-14	15-17/18	16,18
Indonesia	7-14	7-15	3-5	6-11	12-14	15-17/18	
Korea	5-14	6-14	5-6 not free, compulsory fee depends on school type & parents' income	6-11. compulsory & free; textbooks not free	12-14. compulsory and free; textbooks not free	15-17, not compulsory & not free	
Serbia	6/7-14/15	6/7-18/19	1-6	6/7-14/15	n/a	14/15-17-19	14/15, 17-19

Table 2: The main stages of education

RUK = rest of the UK (England, N. Ireland, Wales)

It is more difficult to summarise the situation in non-university tertiary education due to the great diversity of provision (see table 3 and discussion between tables 2 and 3). Vocational education is free in Lithuania and Poland. In some cases, such as apprenticeships in Australia and the UK, the cost of college attendance is covered by the employer. There are also various other possibilities for obtaining funding for fees.

There seem to be three main patterns of school education after preschool:

- Compulsory basic or standard education in a single school followed by non-compulsory upper secondary or vocational education: Estonia, Indonesia, Serbia, Slovakia, Slovenia.
- Compulsory primary education followed by secondary education, with compulsory and non-compulsory education taking place in the same school: Italy, Poland, Korea.
- Compulsory primary education followed by compulsory lower secondary education, and then by upper secondary education, at least part of which is generally non-compulsory: Greece, Ireland, Lithuania, UK, Australia.

It should be noted that the four countries of the UK have significant differences in their education systems, which are not fully covered in the table.

All the countries provide a range of different options for tertiary (post-school education), including (i) bachelor, masters and doctorate degrees at university and other institutions; (ii) vocational qualifications at colleges, vocational schools and training centres; and (iii) adult and continuing education courses of various durations, some of which lead to qualifications. Most of the partner countries have some form of open university involving distance learning. Comparisons are made more difficult by the use of different names for some types of education and training and/or the institutions in which they take place in the different countries.

Admission to university and some other courses requires completion of school education and obtaining appropriate school leaving qualifications. However, many of the partner countries also provide routes into university education for people who want to study later in life and have not completed secondary school. The normal starting age for a first (bachelor) degree in the partner countries varies from 17 to 20 and most first degree courses last three or four years, though some take as long as five. Masters degrees require one to two years after a first degree and four to five years as a first degree. Doctorates take anything from two to seven years, with some variation within as well as between countries. Vocational courses last between one and 4.5 years, with variation within as well as between countries. The UK and Australia also offer the option for vocational training through apprenticeships.

Funding mechanisms for tertiary education vary depending on both the country and type of course. However, in many countries there has been a tendency for the costs to be transferred from public to private provision by individual students. Countries which provide free university education at bachelor degree level include Poland, Scotland and Slovakia, whereas Australia and the other countries of the UK have tuition fees. However, even where there are no tuition fees living expenses and the costs of books (and other equipment) can act as a barrier, since these are rarely funded.

This brief overview has looked at the basic structure of the education systems in the partner countries and not their underlying philosophies or the details. For instance, the Scottish education system is more broadly based than the English system, which focuses on studying a smaller number of subjects in greater depth. While, as indicated in the tables, there are some similarities in the overall structures of the education systems, there are also significant differences in the details and the apparent similarities should not be allowed to mask these differences.

Country	Vocational	Bachelor Degree	Masters	Doctorate	Adult and Continuing Education
Estonia	2-4.5 years at vocational (higher) educational institution	3-4 years at university or university college	1-2 years at university or university college	3-4 years at university	Diverse courses in workplace, school, training institute, NGO etc, duration from several hours to several months, various funding schemes (R12).
Finland	2-4 years	3-4 years	4-5 years (about 2 years after bachelor degree)	4-6 years	Vocational education, various programs and courses in adult education institutes e.g. open universities
Germany	2 - 3 years at vocational school	3-4 years at university or university college	1-2 years at university or university college (after bachelor, master or diploma degree)	2 - 5 years at university	various courses in workplace, school, training institute, NGO, duration from several hours to several months, various funding schemes
Greece	2-3 years at technical vocational school or vocational training institute	at university or technical education institute	2 years at university (after bachelor degree)	3-5 years at university	Various programmes depending on available funding
Ireland	Vocational training centres,	3-4 years	1-2 years	3-4 years at university	Various subjects at various levels, mainly privately funded
Italy	3 or 4 years, some cases 1 or 2 years	3 or 5 years at University	1- 2 years at university	3 years at university	Short updating courses on specific topics
Lithuania	1; 1,5; 2; 3 years	3 years – college, 4 years at university-bachelor degree	2 years at university	4 – 6 years at university	Rehabilitation programmes lasting 6 or 9 month; 3rd age Universities
Poland	4 years at technical school, 2 at vocational school	3 years at university	2-3 years	Usually 4	Varying duration up to several months, depending on type and school
Slovakia	2-4 years	3-4 years at university	2-3 years at university	3-4 years at institution, 5 years outside	Variety of courses at different types of organisation

Country	Vocational	Bachelor Degree	Masters	Doctorate	Adult and Continuing Education
Slovenia	2-3 years in vocational schools (upper secondary)	3-4 years	1-2 years	3 years	Various non-formal and formal qualification-based programmes.
UK	Offered through apprenticeships or vocational training at college	3-4 years at university or college offering HE	1-2 years at university	3-4 years at university	Variety of courses available at different types of organisation. Usually privately funded.
Australia	2-4 year apprenticeships which combine work experience and mandatory TAFE courses	3-4 years at university or university college	1-2 years at university	3-4 years at university	Various program and institutions, generally privately funded
Indonesia	Vocational schools within secondary system	4 years at university or university college	1-2 years at university	5-7 years at university	Various programs and institutions, generally privately funded
Korea	2-4 years at college level	4 years	2years	5 years on average	Various programmes and institutions at local or national level
Serbia	3 years	4-5 years	1-2 years	3 years	Schools for adult basic education (free). Various continuing education programmes and institutions

Table 3: Tertiary (post-school) education

3. Education of Disabled People in the Partner Countries: Special/Segregated and Mainstream Education

Table 4 below provides an overview of the distribution of disabled people in the population and in different types of educational provision. Unfortunately data was not available in many of the countries and the definitions of disability used are not necessarily comparable, as already indicated in the discussion of the percentage of disabled people in the different countries. This complicates comparisons. For instance, where different definitions are used a higher percentage of disabled people in different levels of education and obtaining qualifications could be due to the inclusion of disabled people who experience fewer barriers and consequently have lower support needs in the country with the higher representation of disabled people rather than successful measures to support disabled people in and into education and overcome the barriers they might otherwise experience.

As expected, for instance due to the increase in sensory, physical and cognitive impairments with age, the percentage of disabled people in the population increases with age in most of the countries for which this data is given. In particular, in Estonia, Finland, Germany, Italy, UK and Korea the percentage of disabled people in the over 60 age group is significantly greater than those in the under 15/16 and 16-59 age groups. It should be noted that some or all of the difference in Germany is due to the use of a stricter definition for the younger age groups. However, in Ireland, Poland and Australia, though the percentage of disabled people in the 16-59 age group is greater than amongst the under 15/16 year olds, the figure for the over 60s is less than that for the 16-59 age group, which is contrary to general demographic trends of increasing disability with age. There are two countries with nearly one in two of the over 60s disabled, the UK and Korea. They are very diverse on indicators such as average income, culture and language, though comparable on income inequality. They also have very different average incidences of disability. This discussion and that in section 1.2 indicate the need for a definition of disability which is more widely accepted and standardised data collection methods. However, it is important that any wider or more 'universal' definition of disability is inclusive so that people who are currently covered by legislation, for instance in Australia and the UK, continue to be covered and do not lose existing rights to financial, personal, technological or other support.

3.1 Pre-School, Primary and Secondary (School) Education

There are three main models for the education of disabled people.

1. Segregation, in which disabled students attend 'special' schools for disabled students. These may be either for disabled students with particular impairments, for all disabled students or for disabled students with one of a small number of different impairments.
2. Integration, in which disabled students attend regular classes in mainstream schools, often with the support of assistive technology and additional support teachers or teaching assistants. It "involves the school in a process of assimilation where the onus is on the assimilating individual (whether a pupil with SEN or a pupil with a different cultural and linguistic background) to make changes so that they can 'fit in'" (Fredrickson and Cline 2002, p65).
3. Inclusion, in which disabled students attend special classes or units in mainstream schools. As distinct from integration, inclusion "involves the school in a process of accommodation where the onus is on the school to change, adapting curricula, methods and procedures so that it becomes more responsive"(Fredrickson and Cline 2002, p65).

Unfortunately, this use of terminology is not standard across the partner countries. Thus, for instance, in Poland the term integration is used for schools which have some classes (which are smaller than normal with a maximum 20 students) with a few (maximum five) non-disabled students and an additional teacher and inclusion for schools in which disabled students can attend any class, but unfortunately without additional teaching support.

In most countries disabled people have full citizenship, at least in theory, and the associated right to education. However, this does not necessarily mean that disabled children and (young) people are able to access education. For instance a UNICEF study in 2001 estimated that nearly 85% of disabled children in Serbia had no education of any type. Historically education of disabled people was originally in special/segregated schools. However, there has been a tendency in many countries to move from special/segregated educational provision for disabled students to inclusion in mainstream settings. The limited availability of data in many of the partner countries makes it difficult to evaluate the extent to which this has occurred across the partner countries.

However, the data in table 4 shows that in the partner countries for which data is available, this has only occurred to a limited extent and that there are still significantly more disabled students in special than mainstream schools. For instance, while the underlying philosophy of the education system in Estonia is inclusion with disabled students generally entitled to attend a local school

(Ministry of Education and Research, 2014), in practice over 80% of disabled students go to special schools.

Country	Disabled people 0-15/16 (%)	Disabled people 16-59 (%)	Disabled people over 60	% of disabled at school	% of mainstream class which is disabled	% of disabled in mainstream school	% in special schools	% in special class
Estonia (R2)	4.3% 2013	5.6% 2013	27.4% 2013		1.2% 2012-3	18.7% 2012-3	81.3% 2012-3	
Finland	4% receive disability benefit	~5.3%(2011-2012)	~20% (2011-2012)		~5% (2011-2012)	~20% (2011-2012)	~23.5% (2011-2012)	~8.5% (2011-2012)
Germany	1.2% 'severely' disabled	4.5% 'severely' disabled	28.9%			34.1% (R28)	65.9% (R28)	
Greece								
Ireland (R10)	1.2%	6.3%	5.5%					
Italy (R29-31)	2.66% (2009/10)	1%	17%	2.2%, (2009/10)				
Lithuania	4%, 2012	9%, 2012		11.5%, 2011/2				
Poland	0.5%, 2002	6.8%, 2002	6.7%, 2002	70%*	2.4%, 2012	21.4%*	76.5%*	2.1%*
Slovakia	9,6 % (0-19)				7.1% in primary education, 3.1% in secondary	43.0%	56.9%	
Slovenia	8.2%		16.0%			80%	20%	
UK	6.0%	16.0%	45.0%	99%*		54.3%	44.9%	
Australia	8% (0-14), 2003	13%, 2005	11.0%					
Indonesia								
Korea	3.6% (0-19)	32.6% (20-59)	49.8%			17.8%	29.9%	52.3%
Serbia				9.4%		64.9%		9.6%

Table 4, Statistical data on disabled people in the population and in education

The partner countries for which data is provided can be divided into the following groups based on percentages in mainstream and special schools and in special classes in mainstream schools:

- Majority in special education: Estonia (81%), Germany (66%), Poland (76%)
- Approximately equal numbers in mainstream and special education: UK (just over half in mainstream) and Slovakia (just under half in mainstream)
- Majority in mainstream: Serbia (65%), Slovenia (80%)
- Over half in special classes: Korea (52%)

While disabled people are generally legally entitled to an education, there is still variation between countries as to their right to study in a local mainstream school. There are also variations in the mechanisms involved in decision making and the rights of the parents (and young disabled person) to choose what type of school the young disabled person will attend.

Organisations of disabled people in many countries support integration in mainstream schools for a number of reasons. These include the importance of interaction between disabled and non-disabled people, so disabled people learn the skills required for success in a non-disabled world, are not isolated and ghettoised and non-disabled people become accustomed to seeing and interacting with disabled people, leading to a reduction in stereotypes and prejudice. In addition, education may be at a lower level in special schools, with lower expectations of students, leading to them obtaining fewer qualifications. There is also likely to be a narrower range of subjects on offer. There are fewer special than mainstream schools, so the former are often residential and at a distance from the student's home. This can lead to students feeling cut off from their family and make it difficult for them to make friends in the local area.

On the other hand special schools generally have considerably smaller classes, which can be advantageous for many disabled young people, Deaf people value the transmission of Deaf culture through residential schools for deaf people and special schools are generally better equipped to teach subjects required by specific groups of disabled students, such as Braille and use of a long cane. There are also issues of teachers' expectations of disabled students, which may be lower than those of non-disabled students. In some of the partner countries, such as Poland, teachers in mainstream schools lack the training and experience to work with disabled students. Where disabled students are not entitled to additional teaching support and disabled students have different or additional requirements to the non-disabled majority of the class, teachers in mainstream schools may lack the time to teach both the disabled and non-disabled students effectively.

However, smaller classes generally benefit all children and young people, not just disabled ones and all students would benefit from a reduction in the size of classes in mainstream schools. There would be value in all school students learning to sign, Braille and the use of a long cane. This would both facilitate the integration of students with sensory impairments and make later age related sensory impairments much easier to deal with rather than coming as an unpleasant shock. It would also be possible to organise regular get-togethers, including summer camps for disabled students, either in generally or for particular impairment groups. Meetings of Deaf students could include older Deaf people to facilitate the transmission of Deaf culture.

It is also important that integration is real rather than token and covers social as well as academic aspects, so that disabled students are not socially isolated, and is properly resourced, for instance through the provision of additional teachers. Disabled students in many countries have entitlements to support, but there is considerable variation, both with regards to the entitlements and how they are implemented in practice.

The partner countries can be divided into the following groups, based on their underlying philosophy and approach to mainstream or special education, though it should be noted that there are also differences between the countries in the same group:

- Philosophy or predominance of inclusion in mainstream schools with some special schools: Australia, Estonia (19%), Finland (20%), Ireland, Italy, UK (54%).
- Preference, though no entitlement to mainstream over segregated education, with parental involvement in the choice of school: Germany (34%), Greece, Poland (21%), Serbia (65%), Slovakia (43%), Slovenia (80%).
- Predominant use of special schools, with some option to study in mainstream schools and/or integrated schools: Indonesia, Lithuania.

Where this is available the percentage of disabled students in mainstream classes is given after the country. This indicates some mismatch between avowed policies and the percentage of students in mainstream classes.

Education has a number of different aims. These include personal development and preparation for life, including employment. The success in meeting these aims could be used as a surrogate indicator of the appropriateness of the use of mainstream or special education. Obtaining data on the impacts of different types of education on personal development would require an indepth survey. However, the percentage of disabled people obtaining different types of qualifications could be used as a surrogate indicator of the success in preparation for employment. This type of data is presented in table 5.

A very important issue is the extend of participation of disabled people in education. Despite having full civil rights including access to education in all the partner countries, not all disabled young people are receiving an education. In the UK just over 99% of disabled children are in school, whereas is Poland only 70% are in school, though both figures are very approximate. It is likely that some of the children and young people not in school are being educated at home or in other settings, such as hospitals. As already indicated, the situation is particularly worrying in Serbia, where less than 10% of disabled children and young people are attending school.

Disabled students in Estonia generally study in their local school, either in an integrated class or in a special class for students with a particular type of impairment. They may also attend a special school for students with vision, hearing or speech impairments. Parents are entitled to choose the type of education for their child. Inclusion was introduced fairly early to the education system in Finland and there is no streaming. Vocational education for disabled people generally also takes place in mainstream institutions. In Ireland the majority of disabled school students study in mainstream schools. However, there are also a few, mainly primary, special schools, run by the Catholic church or charitable organisations with state funding or subsidies. While parents are entitled to choose between mainstream and special schools, choice is limited in some areas and there is an at home tuition service which can be used when no suitable school is available. All public and private education providers at all levels in Italy are required to accept all disabled students regardless of the nature and seriousness of the barriers they experience. Most disabled school students are educated in mainstream schools, but there are also a number of special schools, generally for students with particular impairments. Many of them are private and fee paying. It is the local education authority that chooses schools for disabled students, with some parental input. Australia has been working toward the full integration of disabled students since 1992, but special schools are still available for students with high or specialised needs, though there is an increasing trend for students who experience significant barriers and consequently have very high support needs to attend mainstream schools (AIHW Bulletin 61, June 2008) . The number of disabled students attending mainstream schools increased by 93% between 1981 and 2003, with an even greater increase of 260% for students who experience the greatest barriers. There has also been an increase from 72 to 81% in school attendance by 5-20 year old disabled people and a nearly four fold increase in the number of disabled people experiencing the greatest barriers over the same period.

Germany has a preference for mainstream over segregated education, but no entitlement to it, and some differences between the different federal states. Parents have a choice, limited by the capacity of schools, and can appeal recommendations to send their child to a special school. Greece has a combination of mainstream and special schools to which disabled students are assigned by the regional state diagnostic, evaluation and support centre in consultation with their parents. This centre also evaluates their progress. Parents in Poland choose whether their children attend the local or another mainstream school, an integrated class in a mainstream school or a special school. Integrated classes are smaller than other classes, with a maximum of 20 students of which at most five are disabled, generally with different impairments, in each class. Each disabled student in Poland is required to have an individual education plan. Additional

funding to support this and other requirements is received from the Ministry of Education for each disabled student Education in Slovakia, is based on principles of equal access while taking into account individual educational needs and the individual's co-responsibility for their own learning. Parents have some entitlement to choice of school, but acceptance of disabled children and young people into a mainstream school requires agreement by the school headmaster or mistress. The headmaster/mistress can also suggest removal of a child or young person from a mainstream to a special school if they believe it to be in the best interests of the disabled student or their class mates. Consultation with the educational authority is required and parents can challenge the decision, with the relevant court the final arbiter. However, there seems to be some potential for decisions to be inappropriately affected by pressure from the parents of non-disabled students who do not want their child to have a disabled student in their class. Disabled (and other) children are entitled to one year free pre-school before the start of compulsory education. Most disabled primary and secondary school students in Slovenia study in mainstream schools, either in special units or in ordinary classes, but there are also some special schools and the option to study at home. Disabled pre-schoolers can attend mainstream preschools, with or without adapted programmes. Initial decisions about which school a disabled child attends are made by the guidance committee of the National Educational Institute of the Republic of Slovenia, but they can be challenged by parents or the school and the child or young person redirected to a mainstream or segregated school. Disabled people with significant cognitive or developmental impairments participate in a special segregated programme until the age of 26. Since this often combines day care with educational activities, it raises the question of whether these young people are receiving a sufficient and appropriate education.

The choice of school for disabled students in Lithuania is determined at least in part by the nature of their impairment, which is assessed by a pedagogical psychological centre for disabled students. There are a number of special schools for students with hearing, visual and cognitive impairments respectively, though disabled students, other than those with significant cognitive impairments, can also attend mainstream schools if their parents choose this. Students with cognitive impairments previously attended special residential schools. A 2001 UNICEF study found that 90% of the only 15% of disabled children in Serbia in education attended special schools or special classes. There were specific schools or classes for children with hearing, visual and cognitive impairments, whereas children with other impairments attended mainstream school, more due to the lack of special schools than because this was considered most appropriate for them. Most of the special schools in Serbia were located in large cities, making them not very accessible for many disabled students and leading to them being educated away from family and their local peer group. The situation changed in 2009 with the introduction of legislation requiring all schools to enrol all children and parents to have the right to their choice of mainstream or special school regardless of the level or type of support required. Special schools in Serbia are now enrolling students with high and complex needs who previously were considered 'uneducable', and acting as a resource for mainstream schools and teachers. In Indonesia many disabled children do not have access to education. The Ministry of Education and Culture was reported in 2013 as saying that only 31% of disabled and other children with 'special needs' were attending school (Jakarta Post, 2013). This is however an increase on the approximately 4.3% of school age disabled children found to be attending school in 2005 (Wahab, 2005). About 73% of disabled children are attending special schools, which cover pre-school, primary and secondary school (Jakarta Post, 2013). In 2005 only about 20% of special schools were publicly run, with the remainder set up by foundations or parents and other individuals. There is a lack of teachers trained in working with disabled children (Jakarta Post, 2013). In Korea teachers and parents decide together whether special or integrated education is the most appropriate. Disabled students in mainstream schools divide their time between mainstream classes and special education classes, with the majority of time spent in mainstream classes. Special schools are available for the whole of pre-school, primary and secondary education. The traditional separation of students with different types of impairment in different special schools was legally abolished in about 2005, but still remains in practice.

3.2 Support for Disabled Students in Pre-School, Primary and Secondary Education

It has been recognised in most of the partner countries that many disabled students require additional support in order to study most effectively. This has three main components: (i) personnel, including additional teachers, tutors, interpreters and assistants; (ii) learning technologies, including assistive technology and educational technology accessible to and possible designed specifically for disabled people; (iii) modifications of the learning and assessment process, including additional time in examinations. This subsection will consider the use of personnel, particularly additional teaching support. The use of ICT based learning technology in the different countries will be discussed in detail in section 5. Modifications to the learning and teaching process will not be considered here.

The aim of each of these types of support is to remove the disadvantage and barriers that disabled learners would otherwise face and enable them to study on the same terms as their peers. However, each of these approaches raises pedagogical issues. Particular care is required when the learning and assessment process is modified. Some modifications, such as additional time for examinations, are relatively unproblematical, as they purely remove barriers and disadvantage, such as the additional time taken by some disabled students to answer examination questions, for instance due to the use of technology, delayed mental processing or writing more slowly on account of their impairments. Other modifications, such as changing the course requirements or not requiring disabled students to go on a field trip, because it is not considered accessible, are more problematical and may lead to a less good learning experience. In the case of the field trip a more appropriate solution would be to choose a trip which is accessible to all students or have a choice of field trips, at least some of which are accessible to different groups of disabled students. In changing requirements it is important to consider what their educational justification is, whether they are being replaced by something equivalent and whether particular requirements should be removed for all students.

The use of technology can change the way people learn, as well as what they learn. As a simple example the use of calculators (of increasing complexity) has led to a reduction in the ability to do mental arithmetic. While the ability to do mental arithmetic is probably not essential, this raises the question of whether the reduction in this ability has impacted on understanding of number and the ability to do quick very approximate calculations, which could be more problematical.

The use of additional teachers to reduce class sizes or sign language interpreters is unproblematic, as they remove barriers and, in the first case, can provide benefits for all students. However, the provision of individual teaching assistants may raise issues of whether the assistant is solely providing appropriate support to overcome the barriers the student would otherwise face or whether they are occasionally assisting the student and thereby possibly advantaging them. While many challenges to assistance of this type are motivated by misunderstanding of the support disabled students required, it is important that the provision of personal assistance does not affect assessment. It may also be necessary to challenge misconceptions to prevent the qualifications obtained by disabled students being undervalued. In some cases it may be possible to use either personal assistance or technology. For instance, spoken material can be made accessible to Deaf signers by a sign language interpreter or a captioning system. While the two approaches potentially fulfil the same function, individual Deaf people will generally have preferences. However, in the case of Deaf people with poor literacy the sign language approach is likely to be more effective.

A number of different approaches have been taken to the provision of personal support in the different partner countries. It should also be noted that for a variety of reasons disabled students do not always receive the support that they are legally entitled to and there are often (considerable) differences between different parts of the same country, so the situation in practice in at least some parts of the partner countries may be different from what is described here.

The main approaches taken to the provision of personal support include the following:

- One (or more) additional teachers or tutors in a class, generally of both disabled and non-disabled students.
- A teacher or other support person for a group of disabled students
- Entitlement by each disabled student to a certain number of hours (possibly zero) of support (in class) from an individual support person, teacher or tutor.

Information is provided below on the provision of personal support for the partner countries which supplied it. Finland uses an individual approach which aims to match the support provided to the particular student's needs with the aim of enabling all disabled people to successfully complete secondary school. The support provided is determined by the identified barriers and difficulties, as well as the requirements of primary education and the specific local secondary school curriculum. Since the curriculum reorganisation in 2010 the aim has been to provide support as early as possible in order to prevent problems. There are three categories of support: general, intensified and special. All students are entitled to general support, which forms part of normal teaching, whereas intensified and special support require pedagogical assessment and the production of an individual education plan. In Greece the provision of additional teachers (as well as assistive technology) is the responsibility of the Directorate of Special Education of the Ministry of Education. It Italy all disabled students are entitled to a professional support worker (and an individual educational plan). However, there is at least anecdotal evidence that not all disabled students receive the personal support that they require and are frequently also legally entitled to. In Poland, rather than individual disabled students having a support worker, integrated classes with up to five disabled students have an additional teacher. Additional funding to support this and other requirements is received from the Ministry of Education for each disabled student. Disabled students at pre-school and primary and secondary schools in Slovenia generally received additional professional assistance.

In Australia there are significant differences in the support disabled students receive between institutions, classes and even support workers. Dyslexia and other specific learning difficulties have only been generally recognised in the last ten years and support is not yet available to students with specific learning difficulties in all schools. Both the Australian government and the government of several states have set up 'early intervention' initiatives and other support programmes for disabled children and young people. This includes early intervention plans for autistic children in several states and support packages for disabled children and young people and their families.

3.3 Tertiary Education – University, Vocational, Further Education and Adult and Continuing Education

There is considerable variation between countries at the tertiary education level and this complicates comparisons. All the countries provide bachelor, masters and doctorate degrees, mainly in universities and research institutes, but also in some countries in other educational organisations, including in some further education colleges in the UK and Australia. Degree education of disabled students is generally integrated into the mainstream. This is possibly because, at least historically, degree/university education has been considered an elite activity, though the participation of previously underrepresented and largely excluded groups has increased in recent years in many countries. Globally there are a few universities that focus on degree education for particular groups of disabled students, such as Gallaudet University in the USA for deaf and hard of hearing students. However, they are not really analogous to special or segregated schools.

Participation of disabled students in university/degree education is low or very low in most of the partner countries. There are also issues of disabled students with hidden impairments not

disclosing them, thereby complicating data collection. Disabled students in are generally entitled to full integration with non-disabled students at the degree/higher education level in all the partner countries. Higher education institutions in all these countries are legally required to make their facilities accessible to disabled students, preferably without requiring assistance, and to ensure that examination regulations consider the particular requirements of disabled students to avoid disadvantaging them. However, in Serbia only a limited number of subjects at university level, such as law, humanities as social studies, are considered appropriate for disabled students. While some affirmative action measures have been introduced there, implementation is voluntary and left to the individual institution. In practice, the types of measures available to disabled students to support full integration vary between the partner countries.

In Ireland most universities have a support service for disabled students and there are several access programmes for 'non-traditional' students, including disabled students. While applications are generally accepted on merit, some disabled students may be refused a place and offered an alternative if the particular course or components of it is considered unsuitable for students with the particular impairment. However, this could lead to discrimination based on stereotypical perceptions of what particular disabled students cannot do, and reduces the requirement to make courses accessible. In the UK most universities have a support service for disabled students which provides assessments of their support needs, with regards to equipment, personal support and any modifications of the assessment process and communicates them to the disabled students' schools or departments. The Disabled Students' Allowance is available to disabled university students to cover the costs of assistive technology and certain types of personal support, such as interpreters. In Serbia the University of Belgrade has had a centre for disabled students since 2008, which provides support with reading, scanning and converting materials to audio and electronic format, and support for sign language interpretation (CSH).

The situation is more complex at the non-university level, with a variety of different types of courses available, only some of which lead to qualifications, and with very varying durations from a few hours to several years. There are also both full time and part time courses, with some part time courses involving studying the full time course over a longer period of time and others one day or a few hours a week. Since students on these courses include people in employment, at least some of them take place in the evening and/or at weekends. They include vocational, adult and continuing education and continuing professional development (CPD) courses, as well as trade union and other specific types of learning. In some countries, such as the UK, the term further education is used to distinguish this type of education from higher (degree) education, but the distinctions are not absolute, since some degree (higher education) courses are taught in further education colleges. Adult and continuing education is often seen as distinct from further education and takes place in a variety of different locations, including the workplace, further education colleges and training centres of different types. Many universities in several of the partner countries include centres for adult and continuing education.

In Finland disabled students in vocational education generally study in mainstream vocational education and training institutions together with non-disabled students. There are also seven vocational special schools for students with very high support needs or chronic illnesses. Students requiring additional support have an individual educational plan, detailing the qualification, the individual curriculum and the support requirements. In Lithuania students from special schools for students with visual or hearing impairments frequently choose one of a limited number of vocational schools for students with visual or hearing impairments. In some cases the whole or a large part of a graduating class chooses the same vocational school in order to continue to study together. This clearly limits the options open to blind and deaf students. The solution may be to set up links and activities for students with hearing and visual impairments involving different vocational schools, as well as universities. This might enable disabled students in these groups to make wider choices while retaining contact with school class mates and other students with hearing or visual impairments. Another useful tactic could be to use information about the interests of blind and deaf students in different secondary schools to encourage small groups of these

students from different schools to attend the same vocational school, even if there are not already any blind or deaf students there. This would avoid the total isolation of being the only visually or hearing impaired students in an institution. However, in line with work on the critical mass of minority groups in an organisation (Etzkowitz et al., 1994), these students might feel isolated unless there are a reasonably significant number of them, which will generally mean attending only a small number of vocational schools i.e. their current practice.

In Australia the majority of disabled children and young people are educated in government schools and universities but limited national data is available. The Federal Disability Standards for Education (2005) under the Disability Discrimination Act (1992) states the obligations of education and training providers and the rights of disabled people to education and training. The primary purpose of the legislation is to ensure all educational content is accessible for disabled students. Education policy in Australia has shifted over the past two decades away from segregated settings for all disabled students and students with 'special needs' to a more integrated model of education with the majority of disabled students attending regular classes and schools. Most universities have disabled access and provide assistive learning equipment and software and special arrangements for assignments and examinations to fit the need of the disabled individual.

In Korea physically disabled university students with significant support needs are assigned an assistant, generally a student volunteer, to assist them with communication, moving between classes, notetaking and other tasks required for learning. On the one hand the use of professional, trained teaching assistants has advantages and they may carry out tasks, such as notetaking, more effectively. On the other student volunteers are probably much better at encouraging and supporting the social integration of disabled students. This type of involvement between disabled and non-disabled students can also contribute to overcoming some of the prejudices and misconceptions non-disabled people have about disabled people.

	School Leaving Qualification (%)		Further Education or Vocational (%)		Degree (%)		Postgraduate (%)	
Country	Disabled	Non-Disabled	Disabled	Non-Disabled	Disabled	Non-Disabled	Disabled	Non-Disabled
Estonia								
Finland	~60%	~85%	~20%	~50%	~12%	~50%	~8%	~35%
Germany								
Greece								
Ireland (R10)	41.7	46.6	10.4	10.6	13.5	22.1	5.4	11.4
Italy (R32)	37			53.2		46.8		22.4
Lithuania		8.6%		6.7%		42.7%		0.8%
Poland	35.5%	54.2%	20.3%	23.5%	7.7% (R33)	14.8%	7.7%	22.2%
Slovakia								
Slovenia								
UK	84.1	88.9	23.0	62.0	14.9	28.1		
Australia	56.3	80	10	49	25 including postgrad	37 including postgrad		
Indonesia								
Korea	25	98	46.5		12	70		
Serbia								

Table 5 Percentage of disabled and non-disabled people obtaining different qualifications

Table 5 shows the percentages of disabled and non-disabled students obtaining different qualifications. Data is unfortunately only available for a few of the partner countries. However, the limited available data indicates both that there is a gap in qualifications between disabled and non-disabled people and that this gap increases with the level of qualification. In addition, the size of the gap varies considerably between the different countries and there are significant differences between countries in the percentages of population obtaining qualifications at different levels. Thus, it seems likely that the factors which affect the percentage of disabled people obtaining qualifications at a particular level in one of the partner countries include the following: (i) cultural and other factors which affect involvement in education and obtaining qualifications; (ii) the overall quality of the education system; (iii) the specific measures taken to overcome the barriers and disadvantage that disabled students would otherwise face; and (iv) financial factors, including whether education is free and there are bursaries to cover living expenses. However, further research would be required to investigate this.

The UK is the most successful country with regards to the percentage of both disabled and non-disabled students (over 80% in both cases) obtaining a school leaving certificate and the gap between the two groups of students is small at only a few percent. Australia is the most successful country with regards to the percentage of disabled students obtaining first and post-graduate degrees (25%) and has a smaller gap than the other countries for which this data is given. Nearly half (47%) of disabled people have further education or vocational qualification in Korea, but the

comparable figure for non-disabled students is not available. Of the countries providing data on postgraduate qualifications about 8% of disabled people in both Finland and Poland have postgraduate qualifications, but this is only a fraction (less than a quarter and greater than a third respectively) of the percentages of disabled people in these countries with postgraduate qualifications. As already indicated the gaps between disabled and non-disabled students obtaining tertiary level qualifications are much higher than those at secondary level and in many cases a multiplying factor of between two and five. The highest gaps at degree and postgraduate levels are non-disabled people in Finland being more than four times as likely to have these qualifications as disabled-people. In vocational education non-disabled people in Australia are nearly five times as likely to have a qualification as disabled people.

The limited availability of data makes it difficult to evaluate the impact of preferences for mainstream or special education for disabled students on their likelihood of obtaining qualifications. Data on both the percentages of disabled students in mainstream and special education and the percentages of disabled and non-disabled students obtaining qualifications is only available for Korea, Poland and the UK. Of these countries the UK has both the highest percentage of students in mainstream education and the highest percentages of disabled students obtaining qualifications at the different levels. However, while this gives an indication that mainstream education may increase the chances of disabled students obtaining qualifications, this is by no means conclusive and further research will be required to obtain data on additional countries, including separate qualification data for students from mainstream and special schools and investigate the influence of other factors.

4. Legislation on the Rights of Disabled People and their Access to Learning Technologies in the Different Countries

All the 15 countries have equality and anti-discrimination legislation. There are various different approaches, with the differences due to a number of factors, probably including the underlying differences in the legal systems and the way legislation has developed in the different countries. In addition, all the partner countries have signed the UN Convention on the Rights of People with Disabilities (2006) and all of them other than Finland and Ireland have ratified it. The Convention is based on principles of dignity autonomy, including the freedom to make one's own choice, non-discrimination and full inclusion in society and recognised the double discrimination experienced by disabled women. It includes the right to inclusive education for disabled people, including adult and lifelong learning, as well as articles about participation and removal of discrimination in various other domains. The Convention also has an optional Protocol allowing action. Several of the partner countries, including Lithuania and Poland, have incorporated the Convention into national legislation. The Convention was adopted by the European Union in 2011.

There are four main approaches to disability legislation which are based on the following two factors:

1. Disability specific legislation or wider anti-discrimination legislation which includes disability.
2. Separate legislation for different domains, such as education and employment, and legislation which covers a number of different domains, including education and employment as well as other areas.

The approaches used in the different partner countries are summarised in table 6. All the different approaches have advantages and disadvantages. It may be easier to tailor disability-specific legislation to be appropriate to and fully meet the needs of disabled people, but general equality legislation can be more resource efficient and may be more likely to consider multiple discrimination, for instance against black and ethnic minority disabled people or disabled women, though this does not automatically happen. Analogous arguments can be made for the separate treatment of education and other domains and a single law which covers all domains.

Another distinction that could be used in classifying legislation is the approach to defining disability. There are two main approaches, the social and medical models of disability. While both models recognise the existence of physical, mental and sensory impairments, the medical model (WHO, 1980) considers disability to be an individual problem resulting from the disabled person's impairments, whereas the social model (Barnes, 1994; Johnstone, 2001; Swain et al, 2003 UPIAS, 1976) sees disability in a collective context as resulting from the social, infrastructural and attitudinal barriers. The updated version of the medical model (WHO, 2001) the International Classification of Functioning Disability and Health (ICF) has drawn on the social model to some extent to take account of contextual factors, but the main driver of the classification is still the individual's condition rather than external factors. With regards to legislation the approach to disability used can affect the measures proposed as well as the definition of disability.

In addition to equality and anti-discrimination legislation most countries have legislation on access to education, which may include sections on the rights of disabled people. Another important aspect of legislation on equal rights and the removal of discrimination against disabled people is the measures supported to achieve this. In particular, as discussed in section 3.2 in the context of education, disabled people may require access to personal assistance, assistive and other technologies and changes to processes. Incorporating these rights in legislation can increase the likelihood, though does not guarantee, disabled people receiving them. Where they are included in legislation these rights may be stated in (i) disability or general equality/anti-discrimination legislation; (ii) general rights to access assistive technology and/or personal assistance.

Equally important to the legislation itself are the mechanisms for its implementation, including the bodies responsible, sanctions for non-compliance and monitoring implementation, compliance and the resulting changes with regards to the reduction of discrimination and disadvantage. As will be discussed later in this section, many of the partner countries have good legislation, but the implementation stage is generally weak, making the legislation much less effective in practice than it could be. Although legislation is only one of a number of approaches to improving the position of disabled people, their continuing high levels of discrimination, poverty, un- and underemployment and low levels of education and qualifications indicate that existing legislation has not to date been particularly successful in bringing about positive change.

Country	Dis Leg	Gen Eq	Sep Ed	GenDom	UN Dis				**Names of the Main Legislation**
					1	2	3	4	
Estonia	√		√		√		√	√	Social Benefits for Disabled Persons Act (2000); sections of disabled people of Basic Schools and Upper Secondary Schools Act (2010) and articles of Labour Market Services and Benefits Act (2006)
Finland		√		√	√	√			Act of special (inclusion) education, addition (2011 to School law 1998).Social Benefits for disabled persons (Act). Social integration and the Rights of disabled people. National special education strategy 2007and law 2010.
Germany	√	√	√	√	√	√	√	√	Behindertengleichstellungsgesetz (Equal Opportunities for Disabled People) (Federal Law Gazette, 2002a); Book IX of the Social Code – Rehabilitation and Participation of Disabled Persons(Federal Law Gazette, 2001); General Equal Treatment Act (Federal Law Gazette, 2006).
Greece		√			√	√	√	√	Special Education for People with Disability or Special Needs 2008; Education of people
Ireland	√				√				National Disability Act (adults); EPSEN act (pre and school age children); National Disability Strategy 2004
Italy	√	√			√	√	√	√	Framework Law for the Assistance, Social Integration and the Rights of Disabled Persons
Lithuania	√	√	√	√	√	√	√	√	Act of Special Education
Poland	√	√		√	√	√			Constitution of the Republic of Poland art. 30, 32, 68, 69; Antidiscrimination Act 2010; Act about Social and Professional Rehabilitation and Employment of Disabled People 1997; Sign Language Act 2011; Education Act 1991
Slovakia	√				√	√	√	√	Law 365/2004 on Equal Treatment in Several Domains and Protection against Discrimination and the Modification and Implementation of Several Laws, Law on ICT Accessibility, The Education Ministry's Regulations for Special Schools,
Slovenia	√	√	√		√	√	√	√	Equalisation of Opportunities Act ZIMI, 2010, Slovenian Sign Language Act (ZUSUJ, 2002); Act on the Placement of SEN Children (ZUOPP-1, 2011), Accessible Slovenia Strategy, Implementation of the Principle of Equal Treatment Act (ZUNEO-2007)
UK		√	√	√	√	√	√	√	Equality Act 2010 (Legislation.gov.uk, 2010; Special Educational Needs and Disability Act 2001 (Legislation.gov.uk, 2001); The Education (Additional Support for Learning) Scotland Act 2009
Australia	√	√	√	√	√		√	√	Disability Discrimination Act (1992); Disability Standards for Education Act (2005)
Indonesia	√	√			√		√		
Korea	√				√		√		Act on Special Education for the Disabled 2008; Fundamental Law on National Informatization (2008)
Serbia		√			√	√	√	√	Law on Prohibition of Discrimination; Law on Prohibition of Discrimination of Persons with Disabilities (2006)

Table 6 Summary of anti-discrimination and rights of disabled people legislation

SepEd = separate (equality) legislation on education
GenDom = equality or disability legislation covers all/a range of domains.
DisLeg = separate legislation on disability equality, anti-discrimination and/or the rights of disabled people
GenEq = general equality, rights and/or anti-discrimination legislation
UN Dis = UN Convention on the Rights of People with Disabilities (2006)
1= signed Convention, 2 = signed Protocol, 3= ratified Convention, 4 = ratified Protocol

The main types of measures included in legislation against discrimination and for the rights of disabled people and the countries implementing these measures are listed below:

General anti-discrimination
- Removal of disability discrimination: Australia, Germany, Italy, Poland (though weaker than e.g. anti-race discrimination), Serbia, Slovakia, Slovenia, UK
- Meeting the needs of disabled women: Germany
- Promotion of self-determination and equal participation: Germany

Accessibility issues:
- Barrier-free buildings (and urban environments): Australia, Germany, Greece, Italy, Lithuania, Slovenia
- Accessible documents and other forms of information: Germany, Greece, Ireland, Korea, Lithuania, Poland, Slovakia

Removal of discrimination in particular domains:
- Equal access without discrimination to goods and services: Ireland, Slovenia, UK
- Right of access to and equal treatment in education: Australia, Estonia, Greece (though weakened by education cuts), Ireland, Korea, Lithuania, Poland, Serbia, Slovenia, UK
- Right to equal treatment and removal of discrimination in employment: Australia, Indonesia (quota system, which has been unsuccessful elsewhere), Germany, Ireland, Italy, Korea, Serbia, Slovenia, UK
- Equal access without discrimination to the legal system and government: Korea, UK
- Equal access without discrimination to the health system: Lithuania, Slovenia, UK
- Right of access to mainstream education and training: Italy

Measures to support education:
- Right to free educational materials and technologies: Italy
- Right to use assistive technology in education: Australia (including standards to make materials accessible using AT, but very limited adoption in practice), Italy
- Right to an individual education plan: Estonia, Lithuania, Poland, Slovenia, UK
- Right to adapted teaching methods: Lithuania, Poland

Support in other domains:
- Right to personal assistance and other support measures: Estonia, Germany, Ireland, Serbia (in education), Slovenia, UK
- Financial support to cover part of the additional costs resulting from being disabled/overcoming the barriers experienced by disabled people: Estonia
- Right to use ICT in the workplace and public services: Poland
- The right to sign language interpreters: Estonia, Greece (but too few interpreters for a good service), Lithuania, Poland, Slovenia
- The right to support for participation in employment and social life: Germany

Other policy measures
- Equality impact assessments: UK (weak form)

- The responsibility of public bodies to take measures to promote equality and remove discrimination for disabled people: Ireland, UK
- Recognition and use of the national sign language: Estonia, Germany, Greece, Lithuania, Poland, Slovenia, UK

The strength of this legislation and the measures covered vary considerably. The factors included in general anti-discrimination legislation include gender, race or ethnicity, language, marital status, age, disability, gender reassignment, homosexuality and bisexuality, religion or belief, including political opinions, parentage and country of origin, though the legislation in the different countries does not necessarily include all these factors. Working proactively to remove disability in general has potential advantages. However, a number of countries, such as Australia, generally treat cases of disability discrimination on an individual basis. The UK Equality Act 2010 currently includes provisions for employment tribunals who lose cases involving discrimination on the grounds of disability or other 'protected characteristics' to implement measures to remove discrimination. However, the current UK government is aiming to repeal this provision.

Much of the legislation looks good in theory. However, in practice, disabled people still experience discrimination. For instance, table 5 illustrates the 'disability gap' in qualifications in the partner countries for which this data was available. While legislation is by no means the whole solution to improving the situation of disabled people, including in education and employment, the current situation of continued disadvantage indicates that the legislation has not been particularly effective. Particular barriers to effectiveness include lack of financial and other resources, in part as a result of not being prioritised and lack of monitoring and enforcement measures. In Greece the legislation is frequently violated, due to lack of monitoring, as well as a lack of assistive technologies. In Korea much of the legislation is symbolic and lacks enforcement measures. It also does not cover upgrading inaccessible buildings and systems which predate the legislation in order to make them accessible. It is left to the individual who has experienced discrimination to file a petition with the National Human Rights Commission of Korea rather than the legislation being enforced proactively. The Commission will carry out an investigation and can stipulate measures to be implemented. In the case of non-compliance with these measures, the Ministry of Law can impose a significant fine. In Australia there has generally been poor compliance with the legislation, possibly due to poor enforcement measures by the government. In Greece there has been significant progress, but budget cuts and low priority limit the effectiveness of legislation on disability discrimination and access to education. The Disability Discrimination 1995 and subsequent Equality Act 2010 in the UK both lack (strong) enforcement measures. The Equality and Human Rights Commission has a considerably smaller budget and staff than the three predecessor organisations it replaced. Its budget has subsequently been further cut. To date no penalties have been imposed for violation of the Law on ICT Accessibility in Slovakia. It is possible that good relationships have enabled ministries and town councils breaking the law to resolve the problem in response to phone or written notification. However, it seems more probable that in many cases non-compliance has been ignored and persists without penalties, leading to continuing ICT inaccessibility and resulting disadvantage for disabled people.

As indicated in previous sections, there is a need for further research to investigate what types of approaches to legislation are most effective in improving the position of disabled people.

5. Availability of ICT Learning Technologies in the Different Countries

Classification of learning technologies was considered in deliverable D3.2. The distinction was made between educational and learning technologies. Learning technologies were defined to include assistive technologies, whereas educational technologies were defined to exclude them and support learning in a much narrower sense. Assistive technology includes technology and devices used by disabled and/or elderly people to overcome the social, infrastructural and other barriers to independence, full participation in society and carrying out activities safely and easily.

(Hersh and Johnson, 2008). In the context of learning assistive technology is used both to overcome barriers in accessing content, such as the use of screenreaders by blind people to access computers, and barriers in carrying out particular activities, such as the use of spell check and writing programs by dyslexic people.

As discussed in deliverable 3.2 learning technologies can be classified and distinguished from each other using a number of different factors. In an international context, the languages in which assistive and other learning technologies are available will have a significant impact on where these technologies can be used. Barriers to the greater use of learning technologies, for instance in Slovakia, include the lack of more than a few technologies in the local language, cost, lack of information as to what is available and complicated procedures for obtaining funding.

Most learning technologies are available in English, followed by the languages of the larger European countries, such as France, Germany, Italy and Spain, particularly if these languages are spoken outside the country. An analysis of the Enable database showed that 80 of the 150 items are available in English in the UK. Half of these 80 tools are free, 18 cost more than €100, four less and information could not be obtained about the remainder. Speakers of 'minority' European or non-European languages are generally disadvantaged with regards to the availability of learning technologies. Thus there are several hundred learning technologies available in the UK, but only a small number in Estonian in Estonia, though some English-language technologies are also available there. However, the existence of a well-developed IT industry in many of the Asian countries may counter this tendency and lead to reasonably good availability of learning technologies in Asian languages. This seems to the case for Korea where a number of different types of assistive technologies are available.

The situation in Ireland is similar to that in the UK with access to the large number of learning technologies available in English. As discussed below there is good availability of learning technologies in Australia for English speakers, but not for speakers of indigenous languages. A wide range of different types of learning technologies are available in Germany, including both technologies just available in German and those in a number of other languages, which is probably useful for speakers of other languages living in Germany. As might be expected, Serbia and Indonesia, the two partner countries with the lowest average incomes, are at the other end of the availability continuum for learning technologies for disabled people. In both countries JAWS is available, in Bhasa Indonesian in Indonesia and combined with AnReader in Serbia, with additionally the Plextalk player and recorder for conversion of files to Daisy format in Serbia. The National Library in Serbia is also looking at ways of making the digital content deposited with it more widely available, presumably including to disabled people.

As well as differences in access to learning technologies between countries there are also differences between countries, particularly between urban and rural areas and between speakers of the majority and minority (indigenous) languages. These differences are particularly stark in the case of Australia, which has a surface area greater than that of Europe, but a population about a third that of the UK or twice that of Greece, but also occur elsewhere. There are a large number of assistive and other learning technologies available in English, the main language of the European population, but none in any of the languages of the indigenous/aboriginal people, for whom English is a second or third language. In addition, low rates of diagnosis in rural and remote areas acts as a further barrier to obtaining the assistive technologies available and this may also be a barrier in other countries, even if to a lesser extent. It should also be noted that significant differences in income are another factor affecting the differential access to learning technologies between European origin students in urban areas of Australia and indigenous students in rural areas.

Income and the cost of learning technologies also affect access to them in other countries such as Serbia, where the high cost of learning technologies and the lack of financial support mean that they are only available to the richer sections of the population. This generally excludes disabled people, who are one of the groups at the greatest risk of poverty in Serbia. The low availability of

Serbian language assistive and other learning technologies, also restrict them to the sections of the population with greater access to education, which on average are likely to have higher incomes and include few disabled people. Therefore in practice, disabled people in Serbia are unlikely to have access to appropriate assistive technology and consequently experience many serious and easily avoidable barriers to carrying out every day, learning and other activities.

Greater availability of technology of all types generally also leads to greater availability of open source (free) and low cost technologies. This may also lead to reductions in unit cost, as more units are sold. Thus, for instance, in Poland, English language talking calculators for blind people are more popular than Polish ones, as they are considerably cheaper. Using a foreign language talking item will be feasible for many people for appliances such as talking calculators or scales, with a limited vocabulary, with the cost saving motivating people to learn this vocabulary if they do not know it already. However, screen readers in the local language are clearly essential and not everyone is able to learn even a small foreign language vocabulary. Using a foreign language version of any talking appliance for which appropriate procedures to avoid injury are important or even critical could lead to increased risk. This is probably the case for many talking tools. In some cases where both the local and English language versions of a particular (assistive) technology are available, there are significant differences in the available features, as well as differences in cost. Thus, for instance, the Polish Braille notetaker Kajetek is considerably cheaper than Polish versions of imported Braille notetakers, but the difference in price is largely accounted for by the lack of a Braille display.

Cost is likely to be a greater barrier in the lower than the higher income countries for several reasons. The differences in costs between similar technologies in different countries is generally proportionately considerably less than the difference in income, making the technologies relatively speaking more expensive in the lower income countries. In addition, higher income countries are more likely to be in a position to provide financial support for the purchase of learning technologies by disabled people, whether by the state or non governmental organisations.

Another important issue is the availability of information about accessible learning technologies. This also varies greatly between countries and the lack of or very limited information acts as a significant barrier. In general, more information is available in English than other languages and there are strong links between the language information is required in and the extent of information available, with some languages more privileged than others. Even where there are local technology distributors (and online discussion lists), potential end-users may still find it difficult to find out what is available. In addition, less privileged individuals on the various social indicators will generally have less access to information than more privileged individuals. However, even technologies with similar functions are not identical to each other and may vary considerably in how well they perform and the particular features they provide. Even where there is information about what technologies are available, this does not necessarily include end-user evaluations of the technologies or details of all the features they provide.

The existing situation acts as a vicious circle which serves to reinforce the particularly serious disadvantage experienced by disabled people in small low income countries. Solutions include the greater availability of open source software and the development of local ICT industries to produce technologies in local languages, as well as the greater availability of funding and simplification of conditions and application procedures. Convincing developers of assistive and other learning technologies to produce software in minority languages at a reasonable cost will not be easy, as profit is always an important motive. It is not clear whether European regulations on this would be helpful or leave at least some developers to exit from European markets. Another approach would involve local software developers adapting open source software to the local language.

The main categories of specific learning technologies suitable for disabled people and available in at least some of the countries are listed below. The countries in which at least some examples of the particular type of technology are available are listed in brackets. It has been assumed that at

least some and frequently many different examples of all the types of technology are available in Australia, Germany, Ireland and the UK and these countries have therefore not been included in the lists. Screenreaders seem to be one of the few technologies available in all the partner countries. In many cases local language version of JAWS are used. Both Window-Eyes and JAWS are used in Poland and Estonia has the free Estonian language text-to-speech conversion and screenreader Thunder, which is also available in the following partner languages German, Greek Italian, English, Polish and Slovak.

The types of technology are as follows:
General

1. Internet based learning management system and multi-media learning environments: Estonia, Finland, Korea, Lithuania
2. Mainstream learning technologies which can be used by disabled people.
3. Apps for mobile phones and other mobile devices, including speech to text conversion, screen readers and screen magnifiers and AT equipped MP3 players to read audio books and other documents: Australia, Estonia, Italy, Lithuania, Poland
4. Online reference works, such as dictionaries: Estonia, Lithuania, Poland

Subject specific

5. Subject specific materials (for particular groups of disabled students): Greece, Italy, Korea, Lithuania, Poland
6. Subject specific learning materials in national sign languages: Greece, Lithuania
7. Vocational training materials (for particular groups of disabled students): Lithuania

Communication support

8. Tools for learning national sign languages
9. Alternative and augmentative communication systems: Poland, Slovenia

Access devices

10. Screenreaders, including JAWS and its local language versions, screen magnifiers and text to speech conversion programs: all the partner countries
11. Braille notetakers, Braille display and embossers for blind people: Estonia, Lithuania, Poland, Slovakia, Slovenia
12. Access devices for physically disabled people, including on-screen and large keyboards and a variety of mouse emulators and pointers: Korea, Lithuania, Poland, Slovakia, Slovenia
13. Speech to text conversion, notetaking and subtitling software for hearing impaired people: Greece**,** Poland

5.1 Provision of ICT Learning Technologies in Primary and Secondary Schools, Colleges and Universities in the Different Countries

Both computers and mobile devices are increasingly being used to support learning. Overall this is positive for large numbers of disabled people and can remove the barriers they would otherwise face in accessing learning, as long as the assistive technology and other adaptations they require to use these technologies are available. This is unfortunately not always the case.

The availability of both computers and assistive access technology varies greatly between the partner countries and, in many cases between institutions within countries. In some places 'bring your own device' is becoming increasingly common. On the positive side this ensures that each disabled learner has all the assistive technology required already installed and can use a device they are familiar with. Educational institutions are not necessarily always very flexible with regards to the available technology provision. PCs were the first devices introduced into educational institutions on a large scale and remain the standard in many places. Some institutions are also making laptops available to students and others have moved to tablets. However, there is rarely a choice and students may have preferences based on their ways of working, accessibility issues or

other factors. On the negative side, unless funding is available, this shifts the costs from the institution to individual students. Where funding is not available or limited students may not have access to a device or may have an old one which is not particularly suited to them. While mobile devices and tablets are relatively small and light, this is not necessarily the case for laptops and students may not want to have to carry them around in addition to course materials and other requirements. In addition, to the potential inconvenience there is also the risk of loss or theft.

In some of the partner countries, such as Australia and the UK, computers are available free of charge to all students at all levels of education, with generally a greater availability at university than school level. In the UK in most colleges and universities the standard software available on all machines includes screenreaders and possibly some additional assistive technology. A number of universities and colleges in Australia and the UK have an assistive technology centre in the library, which provides a range of assistive technologies, ergonomic furniture and private study rooms. Most universities in Australia make free short or long term loans to students of equipment, including notebook computers, digital voice recorders, spell checkers, phonic ear FM kits, MP3 players, Pearl cameras, DAISY readers and talking calculators, and allow upload of WYNN screenreader and Dragon speech to text software to students' computers. Some primary schools in Australia provide lap top computers, whereas most secondary and tertiary students are expected to provide their own. Inexpensive literacy apps for iPads, such as Evernote, ClaroPDF, 7notes HD, iReadWrite, ClaroSpeak, Co:Writer and WriteOnline, are popular.

Some of the partner countries, such as Finland, have a strategy for promoting the use of ICT in education. Secondary school students and teachers in Finland are expected to use ICT in all subjects, but there are no recommendations for the use of ICT in assessment. However, in Finland this strategy is not fully funded through the education ministry or other national public body and the development of private-public partnerships to fund the provision and hardware and software in schools and training for teachers and students in its use is encouraged (Ministry of Education and Culture, 2013). However, this is likely to lead to better provision in some areas than others and may well increase disadvantages for schools in low income areas. It also moves away from the principle of education as a public good to be provided by the state through taxation. All Finnish schools are required to provide a high speed wireless network on the school premises and make available smart devices to students who do not have their own. Tablets are being used in teaching in several cities and positive experiences with piloting them have encouraged city councils to provide all lower secondary school students with an ipad (National Board of Education 2014).

Primary and secondary schools in Italy are required to provide computers equipped with assistive technology for disabled students, though there does not seem to be a standard setup. Some universities also provide computers equipped with assistive technology for disabled students.

In Korea modified keyboards, mouse emulators, screen magnifiers, screen readers are readily available in special education schools, whereas they are only supplied in mainstream schools if required by a particular student. Teachers in both special and mainstream schools need to submit a request to the local centre supporting special education for assistive devices required by a particular student and not already available in the school.

Consideration of the different types of provision in the different countries can be used to suggest recommendations for good practice. Implementing these suggestions is likely to be beneficial and have a range positive impacts, but further research would be required to investigate this in practice. As always, there are also cost implications, making the suggestions easier to implement in the higher income countries. These recommendations will be presented in the conclusions section.

6. Funding for ICT Learning Technologies for Disabled Learners and any other funding available to disabled learners.

As already indicated, access to assistive and other learning technologies by disabled people is often dependent on the availability of funding. There is considerable variability between partner countries in the extent to which funding is available and the mechanisms used to provide it.

Funding may be made available to institutions for the provision of assistive technology and other forms of support and/or to individual students. In some cases there may be several different funding sources or mechanisms. In addition, the funding mechanisms are frequently different for students at different levels of education. In general it is much easier for students in formal full time education leading to qualifications to obtain funding for ICT or other support than students learning informally or on part time or adult and continuing education courses. Australia has a complex system involving co-operation between the education departments of the Australian Government and the States and Territories and a plethora of allocations, grants and supplements, as well as specific state funding for disabled people. Few of the partner countries have a system which is really simple. In several of the partner countries, including Australia, Korea and the UK, most universities and larger colleges have a support centre for disabled students, which is responsible for providing assessments and ensuring that disabled students have the support they require, including by helping them to apply for the relevant funding for equipment or personal assistance.

In Australia, Germany, Ireland, Italy, Slovakia and the UK the full costs of equipment for disabled students can be covered, whereas in Estonia students are required to pay 10% of the costs of assistive technology and in Poland the funding provided depends on the type of equipment and family income. Available funding does not always meet the need. For instance, disabled people in Slovenia are asking for additional funding for ICT (Univerzitetni rehabilitacijski inštitut RS, 2010). The Student II programme of the National Rehabilitation Fund in Poland has funding to support 14 thousand disabled students, raising the issue of what happens if a greater number apply to the fund. In Serbia very limited public funding is available for the assistive technology and other support needs of disabled students. Educational institutions in Serbia are largely dependent on support from non-governmental organisations through projects to provide additional equipment for disabled students and individual students are dependent on a combination of their own resources and those of such organisations.

The types of support which are funded for individual disabled students include the following, with some of the partners countries which provide this type of support listed after the item:

Assistance provided by a person:
- Sign language interpreters: Estonia, Lithuania, Poland (in universities)
- Personal assistance: Australia (in schools), Estonia, Germany, Slovenia, UK
- Additional teaching assistance or teachers: Ireland, Poland, Slovenia

Technology and materials
- Assistive technology: Australia, Estonia (90% of costs), Germany, Poland, Slovakia, Slovenia, UK
- Other adaptations to support the use of learning technologies: Germany
- PCs, other computing devices and learning technologies: Australia, Slovakia, Slovenia
- Teaching materials, including accessible electronic books: Australia, Italy
- Production of digital or other accessible versions of learning materials: Australia, Estonia, Poland, Slovenia

Other:
- Travel to educational institution: Estonia, Lithuania, Poland, Slovenia
- Accommodation: Lithuania, Poland
- Fees for weekend courses: Poland
- Rehabilitation: Lithuania, Poland
- Adaptation to premises to remove access barriers: Lithuania, Slovakia, UK

There are two main approaches to providing and funding the provision of learning technologies and other support:

- Direct provision of specific technologies and support to individual students. In some countries the available funding is able to cover the full costs, whereas in others students (or their families) are expected to make a contribution. Where an individual contribution is required the amount may be assessed from either the student's or their family's income, though it should not be assumed that families will necessarily pay their contribution.
- Provision of assistive and other learning technologies and other forms of support by educational and training institutions. In some cases educational institutions receive a specific funding allocation for support for disabled students, whereas in others it is part of their general funding.

In several countries both types of provision are available. In addition, a number of different types of bodies are involved in funding assistive and other learning technologies, as well as other types of support for disabled students. In many countries different types of organisation provide funding at different levels of education. The organisations include health services and health insurance providers and social work departments, as well as education departments. This may indicate that in many countries disabled people have been or are still considered to be dependent patients rather than independent actors who require some support to overcome barriers.

The types of bodies include the following:

Government at different levels:
- Central/national and/or state governments: Australia (direct funding to schools and universities for support for disabled students), Estonia (purchase or rental of assistive technology), Slovenia: (additional funding to upper secondary and tertiary education disabled students who receive a government scholarship, 85-100% funding of ICT for students with sensory impairments, direct funding of education of disabled students in public schools and universities).
- Local government: Estonia (travel and personal assistance)
- City councils: Korea (assistive technology for special schools and special classes in mainstream schools), Lithuania (travel to school)

Ministries
- Ministry of education: Lithuania (vocational training), Poland (additional teachers in integrated classes) Slovakia (payments to educational institution for assistive technology, building adaptations and appropriate furniture and to individual students for equipment, with the student's family making a contribution determined by their income)

National and local services:
- Federal employment agency: Germany (devices and teaching material for use in further education institutions)
- The national health service: Italy (assistive technology and teaching materials), Northern Ireland
- National organisation for special education: Ireland (disabled students up to age 18, National Council for Special Education)
- Social care, social services or social work departments: England, Lithuania, Poland, Scotland, Wales
- Local authority children's services: UK (equipment and support for disabled school students)
- Local education authority: Germany (devices and teaching materials for use at school by diverse students), Ireland (support for disabled students in tertiary education institutions)

Insurance:
- Health insurance providers: Germany (technical aids for individual use)
- Accident insurance: Germany (technical aids for individual use in the case of impairments caused by an accident)

Other

- Special programmes and rehabilitation funds, some of which are supported by the European Social Fund: Disability Support Pension and Mobility Allowance (Australia, for those aged 16 years or above), Estonia (PRIMUS Programme), Poland (Student II programme of the National Rehabilitation Fund, assistive technology and other equipment, accommodation, travel to university, rehabilitation and fees for weekend courses for university students), Disabled Students' Allowance (UK, support for university students)
- Direct payment to the student: Slovakia (assistive technology which is used for social inclusion for disabled people who experience significant barriers as well as for education).
- Non-governmental organisations: Serbia (main source of funding for assistive technology through projects), Slovenia (disability and student organisations, additional funding for equipment in schools)
- Assistive technology support centres: Korea (direct provision of assistive technology rather than funding to tertiary education institutions)

The ability to access appropriate assistive and other learning technologies, as well as other forms of support is crucial for the participation of many disabled people in education. Since disabled people generally have lower than average incomes the availability of funding for this is essential. In addition, it prevents disadvantage resulting from disabled learners having additional costs which Provision of funding from, for instance, local or national government or education ministries also supports the value of education, including of disabled people, as a public good from which society benefits and which should therefore be funded by society. It also gives the message that disabled learners are primarily learners. While it is clearly preferable that funding is available, whatever its source, funding through health or social services may give the message that disabled people are patients or dependants rather than learners who require support to overcome the barriers in education systems designed largely for non-disabled people.

In general, funding is required for both; (i) educational and training institutions and other organisations that provide education and training to provide a basic level of assistive and learning technologies and other support for disabled learners; (ii) individual disabled learners to meet their specific needs, since it is rarely feasible or necessarily appropriate to provide everything at the institutional level. The application processes for disabled learners should be made as simple as possible or they will act as barriers which a number of disabled learners will not be able to overcome. Support should also be provided by both learning and training institutions and funding providers to help disabled learners to complete the application forms. Financial support should be provided equally to disabled learners involved in informal learning outside an organisation.

The availability of finance for the additional requirements of disabled learners (as well as for education more generally) depends largely on two factors: (i) the priority given to education of disabled people; (ii) the wealth or poverty of the country. In the case of some of the partner countries, such as Serbia, there may be a genuine need for financial support from outside the country. However, many of the partner countries are in a position to finance considerably better educational provision for disabled learners, but do not prioritise this.

7. Conclusions

This deliverable has provided a comparative evaluation of the use of ICT in learning in 15 partner countries. This evaluation was introduced by a brief overview of basic data on the different countries and the main features of their education systems. It includes data for the 15 countries on the percentages of disabled people in different parts of the education system and comparisons of the percentages of disabled and non-disabled people obtaining qualifications, as well as brief overviews of the different legislative approaches to the rights of disabled people, including to

access learning technologies, and the funding mechanisms used to provide different types of support.

The partner countries are diverse in their geographical size, populations and average incomes. There are both some underlying similarities and significant differences in the structures of the education systems in the different countries. All the partner countries have tertiary (post-secondary school) education. There is a great diversity of types of education, providers, duration and funding mechanisms.

As discussed in section 3.1 the main aims of education include personal development and preparation for life, including employment. Data on the percentage of disabled people percentage of them with different types of qualifications, either in absolute or in comparison with the analogous data for non-disabled people, could be used as one quantitative measure of the success of the education system in preparing disabled people for employment. Another important indicator is the participation rate of disabled people in different levels of education. However, further qualitative and quantitative indicators, including of personal development, will be required to fully assess the success both of particular education systems as a whole and specific measures.

Unfortunately, data on participation in the education system and qualifications is not available in many of the partner countries, which complicates evaluation and comparisons. However, the data in table 5 on the percentages of disabled and non-disabled people obtaining different qualifications indicates very clearly the presence of a 'disability gap' in qualifications. This gap holds across the four types of qualifications (school leaving certificates, further education or vocational qualifications, degrees and postgraduate qualifications) and all the countries for which data is available. There is no single case of the same or a greater percentage of disabled people than non-disabled people obtaining a particular qualification. The closest is vocational education in Ireland obtained by 10.4 and 10.6% of disabled and non-disabled people respectively followed by the school leaving certificate in the UK obtained by 84 and 89% of disabled and non-disabled people respectively. The qualification gap generally increases with the level of qualifications. In particular it is a multiplying factor between 1.06 and 1.53 for secondary education for all the partner countries providing data except Korea for which it is nearly 4. Between 1.6 and nearly five times as many non-disabled people as disabled people have degree level and postgraduate qualifications in the partner countries for which data was provided. The situation for further education and vocational qualifications varies from non-disabled people having only a slightly greater probability of obtaining them in Ireland to about two and a half times as many non-disabled as disabled people with these qualifications in Finland. While care should be taken to avoid drawing firm conclusions from insufficient data, there are some indications that increasing use of mainstream schooling may increase the chances of disabled people obtaining qualifications. However, further research will be required to confirm or disprove this.

Assistive and other learning technologies are one of three types of support available to disabled learners, the other two being assistance provided by individuals, including sign language and other interpretation, and modifications to the teaching and learning process. Both assistance by individuals and learning technologies, but not modifications to the teaching and learning process were discussed.

The availability of learning technologies in a given country was found to be affected by a number of factors, of which the two most important were language and income. Thus the greatest availability of learning technologies is in the UK and the other English speaking partner countries, Australia and Ireland, followed by the other large European countries, Germany and Italy. With the exception of Italy, which has a moderate income relative to the other partner countries, all these countries have high average incomes relative to the partner countries. Indonesia and Serbia, the two countries with the lowest average incomes and both of which are outside the European Community, had the poorest availability of learning technologies. In addition to differences in the availability of learning technologies between countries there were also significant differences within

countries, which were largely determined by the same socio-demographic factors which affect other inequalities. In particular, there was a significant technology disparity between the English speaking European population and aboriginal speakers of indigenous languages, particularly in rural areas.

A categorisation of learning technologies suitable for disabled people with the main categories of general, subject specific, communication support and access devices and 12 sub-categories was presented and indications were given of which technologies were available in which partner countries. Screenreaders were the most widely available technologies and seemed to be the main type of learning technology available in all the partner countries.

Availability of learning technologies in a country does not necessarily mean that they are available to particular learners. Barriers to availability to individuals include cost, lack of funding mechanisms and lack of information. Cost is likely to be a greater barrier in the lower than higher income countries, since the relative cost compared to income is likely to be higher. However, in most countries the average incomes of disabled people are lower than that of the general population, giving a need for funding to make technologies available to them. A variety of different sources of support are available of learning technologies and the other support required to overcome the barriers disabled learners otherwise face to participating in education. The majority of the funding is public, provided, for instance by national and local government, education and employment ministries, local education authorities and social services. However, there is also provision by health insurance providers in Germany, a variety of special programmes and rehabilitation funds, some, but not all of which were funded by governments and non governmental organisations. In Serbia non-governmental organisations were the main source of funding through specific projects for assistive technology, leading to low and uneven funding.

Although it was not easy to obtain detailed information about the availability of learning technologies in educational institutions in the different partner countries, many of them had some level of provision. However, there are increasing moves to a bring your own device approach. While having the advantages of enabling learners to use a familiar device with all their assistive and other technologies installed, this has the disadvantage of transferring costs from the institution to the learner and increasing disadvantages based on factors such as low income, unless sufficient funding is available to allow all learners to obtain the device of their choice. However, there will still be a need for educational institutions to provide access to computing, for instance to give access to a wider range of software than individuals have and higher computing power. In some, though not all, of the partner countries, such as the UK and Australia, computers are available to all students free of charge at all levels of education, though availability is much greater at university level. Colleges and universities in Australia and the UK generally have screenreaders and some other assistive technology on all computers and an assistive technology centre providing a range of assistive technologies, ergonomic furniture and private study rooms in the library. Some, but not all, of the partner countries, such as Finland, have a strategy for promoting the use of learning technologies in education. However, this raises issues of what should be in a strategy in order to make best use of learning technologies to support learning and teaching while taking account of the differences between learners. The latter will require a measure of flexibility to allow learners to use technologies in ways that support rather than disadvantage them.

This discussion here and in the earlier sections leads to the following recommendations relating to both good practice and the need for further research.

Indicators and data

1. Research to develop a set of quantitative and qualitative indicators for evaluating the success of education for disabled people, including in the areas of personal development and improving their employment and other opportunities.
2. The collection, regular updating and easy availability of data on the participation rates of disabled (and non-disabled) people in education and their qualifications.

3. The collection, regular updating and easy availability of the quantitative and qualitative information identified in point 1.

Legislation

4. More widely available information on legislation giving rights to disabled people and prohibiting discrimination.
5. More effective implementation of the legislation and monitoring of compliance, as well as significant sanctions for non-compliance and an adequately funded organisation with real powers to oversee the implementation of the legislation.
6. Research to compare the impacts of different types of legislation.

Personal assistance, including sign language interpretation

7. Research on the most effective strategies for providing personal assistance, including sign language interpretation, while keeping down costs.
8. Ensuring that all disabled students do receive their entitlements to assistance.
9. Reducing student:teacher ratios in mainstream schools. This could include a combination of the following: (i) smaller classes, (ii) additional teachers in classes; (iii) part or full time teaching assistants for individual or small groups of disabled students.

Development of assistive and other learning technologies

10. Encouragement for developers to develop minority language versions of assistive and other learning technologies
11. Encouragement for developers to produce open source and other free of charge versions of assistive and other learning technologies
12. Research, drawing on the classification and evaluation methodologies presented in deliverable 3.2, to identify gaps in the provision of assistive and other learning technologies and the need for new or modified technologies.

Provision of assistive and other learning technologies

13. Research on strategies to promote the effective use of assistive and other learning technologies, taking into account the different needs of different (disabled) learners.
14. The provision of a basic package of assistive and other learning technologies, including screen readers, on all computers and laptops in education and training organisation
15. The provision of a assistive/learning technology centre for disabled centres with a wider range of assistive and other learning technologies, ergonomic furniture and other quiet rooms that can be booked in institutional libraries.
16. The availability of laptops, tables, ipads and a range of other assistive and other learning technologies which can be booked for short to extended periods free of charge.
17. Availability of technical support for at least a 12 hour period each day from well qualified well-qualified personnel.

Funding

18. Straightforward funding mechanisms, particularly for direct support to students and the provision of support by institutions and funders to complete application forms.
19. Funding should be provided by local or national government, including education ministries rather than non-governmental organisations and there should not be an upper limit on the number of students/learners who can be supported.
20. Equal entitlement to funding for disabled students on part time courses and disabled learners learning informally with disabled students on full time courses.
21. The setting up and contribution to a fund by EU governments to support the provision of assistive and other learning technologies in lower income countries.

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Appendix A: Questionnaire

A Current Situation in your Country

Note: Question 7 deals with differences in different parts of your country, so that in questions 1-6 you should consider the situation in the largest part of your country.

1. Please list the ICT learning technologies or tools for disabled students available in your country. For each technology please:
(a) Provide a one or two sentence description
(b) Indicate whether or not the technology is available in the national language(s)
(c) Your evaluation of how easy it is to obtain this technology.
(d) If you consider it is not easy to obtain this technology, a indication of the main barriers e.g. cost, lack of information.
N.B. This should include both the tools or technologies in the data base and other tools or technologies available in your country.

2. Please provide the main national legislation for your country in the following areas affecting disabled people:
(a) Anti-discrimination
(b) Access to education
(c) Access to and/or accessibility of technology
(d) Any other legislation that could affect the use of ICT learning technologies by disabled adults.

In each area please provide the following:
(i) Name of the legislation in your language and English
(ii) Date the legislation was passed
(iii) A brief summary (one paragraph) of the main measures in the legislation.
(iv) A brief description of how the legislation is enforced.
(v) Your evaluation of how effective the legislation is.

3. Provide brief information on the education system in your country, including the following:
(a) Policies and practice with regards to 'special'/segregated and mainstream education for disabled people.
(b) The main types or levels of education available with a brief explanation.
(c) How different types of education are funded and whether or not they are free to students.
(d) Decision making on curricula at the different levels e.g. is there a national curriculum for school education.
(e) What pedagogies[1], if any, are in general use in education in your country. If appropriate indicate which levels or types of education they are used in. Are you aware of pedagogical assumptions which act as barriers to learning by disabled students?
Note: funding is considered in question 5.

4. Provide information on the types of ICT learning technologies for disabled learners available in:
(a) Universities
(b) Adult learning centres
(c) Further education and vocational education colleges or centres.
(d) School education for students over 16
(e) Training centres for adults.
(f) Workplaces, if this information is available. It may be useful to provide some examples of good practice and indicate what the general situation is.
(g) Hospitals, clinics and other therapeutic centres, if this information is available. It may be useful to provide some examples of good practice and indicate what the general situation is.
(h) Other (please specify).

5(i) Provide a brief explanation of how ICT learning technologies for individual disabled people are funded for:
(a) University students
(b) Students in further or vocational education
(c) School students over 16
(d) Learners involved in distance or adult education courses leading to qualifications.
(e) Other disabled learners over 16.

(ii) Provide details of any additional funding available specifically to disabled students in the above educational sectors.

6. Provide the following statistical data:
(a) Country population
(b) Percentage of disabled people in following age groups:
    (i) Under 16
    (ii) 16 - 60
    (ii) Over 60
(c) The percentage of disabled people in the following types of education
    (a) School, including the approximate distribution between mainstream and special/segregated education.
    (b) Further or vocational education
    (c) University
    (d) Adult and continuing education
    (e) Other
(d) If possible, please provide data under (b) and (c) for disabled people with different impairments e.g. blind people and wheelchair users.

7. If your country has any semi-autonomous regions, devolved nations or local areas with differences in legislation, education system or other factors:
(a) List these semi-autonomous areas
(b) For each area,

(i) If relevant, provide the names of any local languages spoken by a significant proportion of the population
(ii) Indicate any differences in the availability of ICT learning technologies and, if relevant, whether they are available in the local language(s).
(iii) Relevant legislation which differs from the rest of the country, with details as in question 2.
(iv) Details of the education system if it differs from that in the rest of the country, with details as in question 5
(v) Statistical data on the involvement of disabled people in education, with details as in question 6.

1 Different approaches to teaching. Examples include critical, constructivist, feminist, institutional and archetypal pedagogies and there are many others.

A1 Summary Information

1. Provide an overview of the types of learning technologies or tools for disabled students available in your country.

2. Provide brief details of the main legislation in your country on discrimination against disabled people and access of disabled people to education.

3.Provide a brief summary of the education system in your country, including the main stages, the role of special/segregated and mainstream education for disabled people. In answering this question you should note that partners in other countries do not know, for instance, the school starting and leaving ages and the number of years of compulsory education in your country.

4. Provide a brief summary of any how ICT learning technologies for disabled learners are funded and any other funding available to disabled learners.

5. Summary statistical data on the numbers or percentages of disabled people in education.

B Situation Evaluation and Recommendations

1. Provide a brief evaluation of the situation in your country with regards to:
(a) Ease of access to education for the non-disabled population.
(b) Representation of disabled people in education (compared to the non-disabled population).
(c) Any additional difficulties or barriers faced by disabled people in accessing education.
(d) Any enablers or good practice in access to education for disabled people.
(d) The availability of ICT learning technologies for disabled people
(e) Barriers, enablers and other factors that affect access to ICT learning technologies for disabled people.
(f) Any other comments

2. In the context of ICT learning technologies for disabled people, please explain what you understand by the following terms:
(a) Good practice
(b) Satisfactory practice
(c) Poor practice
(d) Bad Practice

3. Provide a number of examples of each of the following practices in the use of ICT learning technologies for disabled people in your country.
(a) Good practice. For each example, please explain what factors make the practice 'good'.

(b) Satisfactory practice. For each example, please explain what factors make the practice 'satisfactory'.
(c) Poor practice. For each example, please explain what factors make the practice 'poor'.
(d) Bad practice. For each example, please explain what factors make the practice 'bad'.

4. Provide suggestions for recommendations to improve
(a). The access of disabled people over 16 to education
(b) The availability of ICT learning technologies for disabled people

Please indicate whether these recommendations
(i) Relate specifically to the situation in your country.
(ii) Are more general.

5. Please provide any other comments or suggestions on the use of ICT learning technologies with disabled adults.

C. Sources of Information

1. Please provide:
(a) A brief of the relevant expertise of all partners involved in answering this questionnaire.
(b) Other experts, including disabled students, consulted with a brief summary of their expertise.
(c) Full citations for the literature consulted, including journal and conference papers, web sites and books.
(d) Any other sources of information used.

Appendix B: Updated Requirements

1. General Information

Surface area,
population,
percentage of disabled people,
Average income,
ratio of highest 10% to lowest 10% income
% of population with computer, internet access

2. The main stages of education
Ages for which education is compulsory
Ages for which education is free
Main stages of education e.g. pre-school, primary school, secondary school.
For each stage the ages it covers, whether is is compulsory, whether it is free of charge, whether books and teaching materials of free of charge, brief description, any other relevant information
Any other relevant comments.

3 Special/Segregated and Mainstream Education
Main type of education for disabled people
Other types of education and numbers/percentage of students in them
Compulsory age of education for disabled people
Ages of free education for disabled people
If there are several options who decides where a disabled school student studies

4 Statistics

Percentage of disabled people in population 0 – 15
Percentage of disabled people in population 16-59
Percentage of disabled people in population over 60
Percentage of disabled young people of compulsory school age who are in education
% of disabled students who study in mainstream schools;
% of disabled students who study in special school;
% of disabled students who study in special units or classes;
% of disabled students who study at home;
% of disabled students who study somewhere else
% of students of mainstream schools who are disabled
% of students in vocational/further education colleges who are disabled
% of students at university who are disabled
% of students up to 11 who are disabled
% of students 12 to 15 who are disabled
% of students 16 to 18 who are disabled
% of disabled people who complete education to 11
% of disabled people who complete education to 15
% of disabled people who complete education to 18
% of disabled people who obtain school leaving qualification
% of disabled people who obtain a vocational or further education qualification
% of disabled people who obtain a degree
% of disabled people who obtain a postgraduate qualification

% of non-disabled people who complete education to 11
% of non-disabled people who complete education to 15
% of non-disabled people who complete education to 18
% of non-disabled people who obtain school leaving qualification
% of non-disabled people who obtain a vocational or further education qualification
% of non-disabled people who obtain a degree
% of non-disabled people who obtain a postgraduate qualification

5 Legislation on the Rights of Disabled People and their Access to Learning Technologies in the Different Countries

Definition of disability in the legislation
Summary of main legislation, including the name in English and the original, date passed and a brief summary of what it covers:
The rights of disabled people
The rights of disabled people to education
The right to use technology in education
Accessibility of technology in general and learning technologies in particular
Any other relevant legislation
How strictly is this legislation implemented, what punishments are there for non-compliance?

6. Availability of ICT Learning Technologies in the Different Countries

Summary of the types of accessible learning technologies that are available in the local language
Summary of the types of learning technologies that are available in other languages that some % of the population are familiar with
Who and under what conditions receives accessible learning technologies free of charge
Which of the following are significant barriers to disabled people using accessible learning technologies:
Few technologies are available in the local language
Cost

Lack of information
Complicated procedures to obtain funding
Other barriers or factors please specify
Any additional comments on the availability of accessible learning technologies in your country.

7. Typical Provision of ICT Learning Technologies in Primary and Secondary Schools, Colleges and Universities in the Different Countries

The types of accessible learning technologies with typical examples available in schools
The types of accessible learning technologies with typical examples available in vocational colleges
The types of accessible learning technologies with typical examples available in universities

8. Funding for ICT Learning Technologies for Disabled Learners and any other funding available to disabled learners.

What funding is available to cover the costs of ICT learning technologies and other equipment for disabled students
For each type of funding indicate what students are covered, upper limit per student, what the funding can be used for, any other relevant information