



Use of Computers and the Internet in Schools in Europe 2006

Country Brief: Portugal

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Key findings

Almost all Portuguese schools now use computers for teaching (97%) and have internet access (92%). 73% use the internet via a broadband connection. With this figure Portugal ranks at number 16 of the 27 countries participating in the survey.

There is a large variation between school types: while 70% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 87%, and vocational schools which reach 91%. There is only minor variation with regard to broadband access between urban and rural areas.

Computers in school libraries seem to play an important role in Portuguese schools, especially in secondary schools, where significantly more than 90% of the schools offer computers in libraries probably as a compensation for the very poor general equipment with computers in schools which in Portugal is at only 6 computers for 100 pupils. With this figure, Portugal finds itself at the very bottom of the countries in Europe together with Poland, Latvia and Lithuania.

70% of Portuguese classroom teachers have used computers in class in the 12 months prior to the survey, with little variation across school types and between urban and rural areas. A majority (54%) of the teachers using computers use them in more than 25% of all lessons.

Teachers in vocational schools use computers in class much more frequently than their colleagues in general education with 41% using computers in more than half of their lessons compared to just 16% of teacher in primary schools.

Not surprisingly, the older the teachers (indicator used here: years of teaching experience), the less use they make of computers and the internet in schools. While 27% of the young teachers use ICT in more than half of their lessons, the corresponding figures for the older teachers is at 17%.

30% of teachers in Portugal still do not use computers in class. When asked for the most important barrier 48% state a lack of computers in their schools as an important barrier, while some 24% believe that the lack of adequate material is an important constraint.

In Portugal the percentage of schools using computers for educational purposes has risen over the past 5 years from 70% in 2001 to 97% in 2006. While in 2001 one hundred pupils had to share 4 computers the figure rose to 6 until 2006, an improvement of almost 50%; however, Portugal still stays at the very bottom of European countries, with a figure only half of the European average of 12.

Only just a majority of Portuguese teachers are more or less satisfied with the technical access means in their schools: 85% state

that their school is well equipped with computers and 69% express the opinion that their internet connection is fast enough. A substantial 75% wish there were better support and maintenance actions taken.

A very high 95% of Portuguese teachers see significant learning benefits for pupils using computers in class. Only 9% argue that the use of ICT does not reveal significant benefits for pupils. This is a top figure compared to most other European countries.

With 36% of teachers having the necessary ICT skills and motivation but lacking ICT access, the situation in Portugal is much worse than the European average (21%). The same applies to the very large group of teachers who are motivated to use ICT in class but who lack the necessary ICT access and competence. With 15% this group is three times above the EU25 average. Finally, Portugal is also faced with a group of 8% of teachers with ICT access and motivation but lack of ICT competence, a figure which is almost twice as high as the European average. As a consequence the ICT readiness of Portuguese teachers is very low with the country ranking only 22nd in Europe.

It appears as if policy actions are required in Portugal to achieve a drastic improvement of the number of computers per school and the quality of ICT equipment in schools, but also the ICT skills of the teachers.

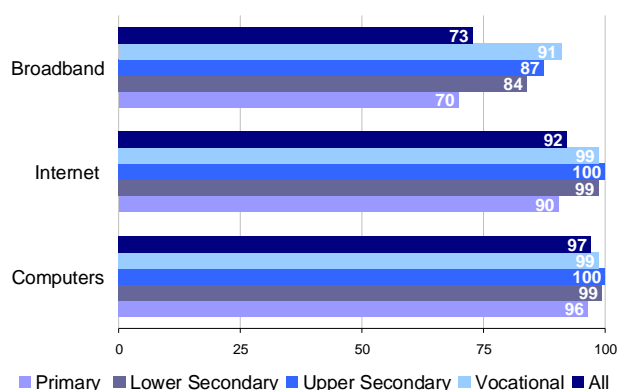
ICT Equipment and Internet in Schools

Almost all Portuguese schools now use computers for teaching (97%) and have internet access (92%). 73% use the internet via a broadband connection. With this figure Portugal ranks at number 16 of the 27 countries participating in the survey.

There is a large variation between school types: while 70% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 87%, and vocational schools which reach 91%. There is only little variation with regard to broadband access between urban and rural areas.

61% of schools have a website, just 32% offer e-mail to teachers, and only 12% do so to pupils. A high 81% of the Portuguese schools using computers for teaching, use them in classrooms, with the highest percentage being achieved in primary schools (89%).

Percentage of Schools Using Computers, Internet Connection, and Broadband Internet Access According to School Type in Portugal 2006



Source: LearnInd HTS 2006; **Base:** All schools; **Question:** Computers: Q6; Internet, Broadband: Q9. See questionnaire for exact wording.

Computers in the school library seem to play an important role in Portuguese schools, especially in secondary schools, where significantly more than 90% offer computers in libraries probably as a compensation for the very poor general equipment with computers in schools, which in Portugal is at only 6 computers for 100 pupils.

With this figure, Portugal finds itself at the very bottom of the countries in Europe together with Poland, Latvia and Lithuania.

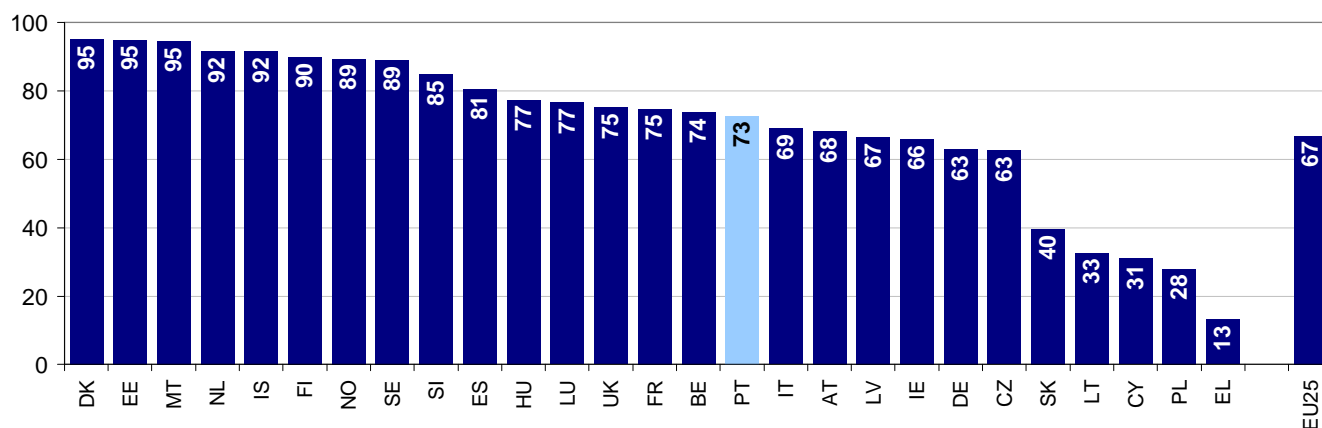
Those schools with a broadband connection to the internet are much more likely to have a more sophisticated ICT infrastructure including a school website, the use of a LAN or the availability of an intranet.

ICT equipment in Portuguese schools 2006

	Total PT	Total EU25	Educational Level (PT)				Type of locality (PT)			Internet Access (PT)	
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computers per 100 pupils ^a	6.4	11.3	5.8	5.8	7.1	15.5*	6.1	6.6	7.6	6.1	6.6
... of which internet connected	5.4	9.9	4.4	5.2	6.2	15.3*	5.3	5.4	6.0	4.4	5.8
Percentage of schools having...											
Computers for teaching ^b	97.0	98.7	96.4	99.3	100.0	98.6*	98.3	93.7	99.0	100.0	100.0
Internet access ^c	92.1	96.2	90.4	98.6	100.0	98.6*	98.3	87.5	92.2	100.0	100.0
Broadband internet access ^d	72.8	66.9	69.8	83.9	87.4	91.0*	79.8	66.2	74.1	0.0	100.0
A website ^e	61.2	63.0	56.3	74.4	85.7	75.4*	70.6	59.1	57.2	65.4	66.7
An e-mail address for the majority of teachers ^f	31.6	65.2	28.9	43.3	41.2	53.0*	37.7	34.8	25.1	36.0	33.8
An e-mail address for the majority of pupils ^g	12.1	23.5	10.3	22.1	19.5	27.3*	14.3	12.5	10.5	12.8	13.3
A LAN ^h	14.0	55.2	6.3	39.4	49.9	40.4*	30.0	9.9	7.7	7.1	17.4
An intranet ⁱ	9.4	40.8	4.7	26.3	34.1	36.6*	17.3	9.0	4.8	2.3	12.3
An external support or maintenance contract ^j	13.4	47.1	10.5	30.3	24.0	27.3*	21.9	11.1	10.0	15.2	14.3
Percentage of schools using computers for education in...											
Computer labs ^k	69.6	80.5	62.4	97.9	99.0	89.3*	86.8	71.2	57.7	70.6	68.8
Classrooms ^l	81.4	61.4	88.9	54.5	50.1	46.1*	58.6	87.1	90.9	86.9	78.7
School library ^m	61.4	33.4	53.6	95.6	92.5	55.4*	80.9	62.1	48.8	61.6	60.3
Other locations accessible for pupils ⁿ	50.8	27.0	47.7	63.7	64.6	46.9*	54.2	54.6	45.6	47.7	50.4

Source: LearnInd HTS 2006; **Base:** a: all pupils; b-j: all schools, k-n: schools using computers for educational purposes for pupils (cf. index b); **Question:** a: Q4, Q6, Q7; b: Q6; c: Q9; d: Q9; e-j: Q12; k-n: Q8. See questionnaire for exact wording.

Percentage of Schools with Broadband Internet Access in Europe 2006



Source: LearnInd HTS 2006; **Base:** All schools; **Question:** Q9. See questionnaire for exact wording.

Use of computers in class in Portugal 2006

Assessments of the head teacher		Total PT	Total EU25	Educational Level (PT)				Type of locality (PT)			Internet Access (PT)	
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computer sciences taught as separate subject	Agree	24.2	54.7	26.1	17.6	13.1	19.2*	27.2	16.7	28.4	24.1	23.1
	Disagree	73.1	43.7	71.2	79.9	83.8	72.9*	71.8	80.0	68.4	69.0	75.2
	Don't know	2.7	1.6	2.8	2.6	3.1	7.9*	1.0	3.3	3.2	6.9	1.7
Computers and the internet are												
integrated into teaching of most subjects	Agree	75.3	75.3	75.5	72.1	69.6	89.3*	68.0	78.9	76.9	76.2	76.4
	Disagree	23.3	24.1	22.9	26.5	29.3	10.7*	29.5	18.6	23.1	23.8	22.2
	Don't know	1.5	0.6	1.6	1.4	1.0	0.0*	2.5	2.5	0.0	0.0	1.4
used for teaching traditional subjects or basic skills	Agree	69.7	75.8	73.0	54.1	47.1	69.5*	61.1	75.2	70.6	68.2	70.8
	Disagree	27.4	22.8	25.6	39.6	39.9	28.4*	33.1	22.4	28.0	29.0	26.4
	Don't know	2.9	1.4	1.4	6.3	12.9	2.1*	5.8	2.5	1.4	2.8	2.9
used for teaching foreign languages	Agree	55.5	56.6	51.1	70.1	70.9	67.6*	61.3	50.6	55.8	56.7	57.0
	Disagree	36.9	40.1	40.2	25.5	24.5	29.6*	35.2	39.2	36.0	34.3	36.3
	Don't know	7.7	3.3	8.7	4.4	4.6	2.8*	3.4	10.2	8.2	9.0	6.7
used for coping with students with special needs/ handicaps	Agree	83.6	71.7	84.9	82.7	74.2	48.9*	80.5	86.0	83.5	78.9	85.6
	Disagree	10.5	23.7	8.8	14.4	20.6	25.6*	16.6	8.9	8.2	11.8	9.2
	Don't know	5.9	4.6	6.3	2.9	5.2	25.5*	2.9	5.1	8.3	9.4	5.2

Source: LearnInd HTS 2006; **Base:** All schools using computers for educational purposes for pupils; **Question:** Q13: "To what extent do you agree or disagree with the following statements regarding the educational use of computers and/or the internet in your school?" **Notes:** "xx.x*": based on at least 10 and less than 50 cases.

The use of Computers and the Internet in Schools

Computers are used for various purposes and as part of teaching different subjects in schools but also and very widely as a separate subject.

Computer sciences are taught as a separate subject in only 24% of Portuguese schools but in 75% ICT is integrated into the teaching of most subjects, which is exactly at the EU25 level.

70% of Portuguese classroom teachers have used computers in class in the 12 months prior to the survey, with little variation across school types and between urban and rural areas.

For most teachers, computer use includes not only using a computer for presentation purposes (58%) but also

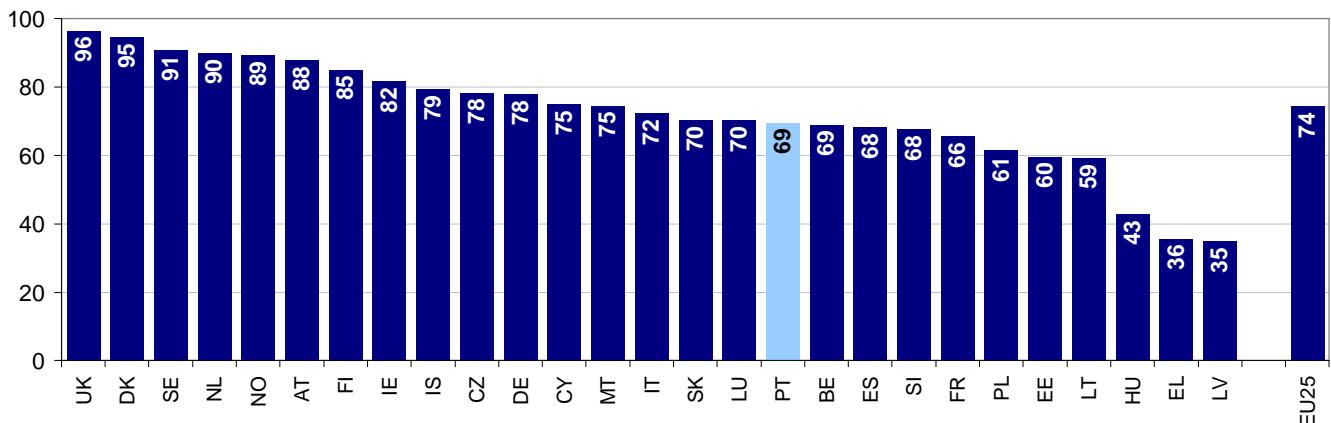
the use of computers by pupils in class (49%). Both takes place at a much lower level than in most other European countries.

A majority (54%) of the teachers using computers use them in more than 25% of all lessons.

Teachers in vocational schools use computers in class much more frequently than their colleagues in general education with 41% using computers in more than half of their lessons compared to just 16% of teachers in primary schools.

Portuguese teachers using computers do not restrict themselves to a particular source of information but use a multitude of different material from a variety of sources for teaching purposes, which in all categories is below the European average.

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



Source: LearnInd CTS 2006; **Base:** All teachers; **Question:** Q7. See questionnaire for exact wording

Teachers' use of computers in class in Portugal 2006

Percentage of teachers who ...	Total PT Total EU25		Educational Level (PT)				Type of locality (PT)			Years of teaching experience (PT)			
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	<5 y	5-9 y	10-19 y	20+ y
...have used computers in class ¹	69.5	74.3	70.0	66.2	71.7	75.2*	64.4	70.7	71.4	67.5	74.9	72.8	65.2
...use a computer in class to present or demonstrate	57.8	63.4	59.3	54.1	56.8	45.9*	49.9	57.0	63.7	60.9	61.2	58.5	55.1
...have pupils use a computer in class	49.0	66.3	48.9	44.9	55.7	69.2*	45.3	51.0	49.3	48.4	53.6	48.8	47.4

Source: LearnInd CTS 2006; **Base:** All teachers; **Question:** Q7 "How have you used computers and/or the internet for work in the last 12 months?"

Frequency of computers use in class Portugal 2006

Percentage of all teachers using computers in class who ...	Total PT Total EU25		Educational Level (PT)				Type of locality (PT)			Years of teaching experience (PT)			
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	<5 y	5-9 y	10-19 y	20+ y
...use computers in 5% and less of all lessons	11.5	18.5	11.4	12.3	10.1	0.0*	14.5	10.2	11.2	18.2	8.5	12.3	10.6
in 6 to 10% of lessons	15.1	22.5	16.8	8.6	8.6	8.2*	15.4	13.5	16.6	4.4	19.1	13.3	17.3
in 11 to 24% of lessons	19.8	22.2	19.8	23.6	17.4	15.2*	19.1	21.4	18.4	15.7	26.1	18.0	19.2
in 25 to 50% of lessons	34.5	20.2	36.3	26.1	27.6	35.3*	23.1	38.6	37.1	34.9	27.3	36.7	36.1
more than 50% of lessons	19.0	16.5	15.8	29.4	36.3	41.3*	27.9	16.2	16.7	26.8	19.1	19.6	16.7

Source: LearnInd CTS 2006; **Base:** Teachers using computers in class, "don't know" answers excluded; **Question:** Q9 "For what percentage of time have you used computers and/or the internet in class when teaching your main subject(s) in the past 12 months?" **Notes:** "xx.x*": based on at least 10 and less than 50 cases.

Not surprisingly, the older the teachers (indicator used here: years of teaching experience), the use less they make of computers and the internet in schools. While 27% of the young teachers use ICT in more than half of their lessons, the corresponding figures for the older teachers is at 17%.

30% of teachers in Portugal still do not use computers in class. When asked for the most important barrier 48% state a lack of computers in their schools as an important barrier, while some 24% believe that the lack of adequate material is an important constraint.

Only very few – 1% of all and 2% of those not using ICT – are not convinced of any benefits of using computers in class (which is one of the best figures in European countries); just 11% express the opinion that teachers lack the necessary skills to utilize computers in their teaching; and 6% state lack of interest of teachers as a problem.

In total the statement "lack of equipment in school" is expressed by a substantial 14% of all Portuguese teachers

(30% non-users multiplied with 48% of teachers agreeing to this item).

Virtually all schools are equipped with at least some computers in Portugal, although at a very low level with only 6 computers per 100 pupils in general. Only vocational schools are better equipped with 16 computers per 100 pupils. There seems to be some scope for further ICT-infrastructure improvements at Portuguese schools such as an increase of the number of computers in total and per pupil where Portugal ranks at the bottom of European countries.

Comparison of the situation in 2001 and 2006²

In Portugal the percentage of schools using computers for educational purposes has risen over the past 5 years from 70% in 2001 to 97% in 2006.

Source of educational material used in class in Portugal 2006

Percentage of all teachers using computers in class ³ who ...	Total DE	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
...use material they have searched the internet for	78.6	82.7	78.5	79.0	81.2	81.1*	76.2	77.2	81.3
...use existing online material from established educational sources	48.4	74.2	47.6	50.6	58.2	51.8*	52.0	48.8	46.0
...use material that is available on the school's computer network or database	46.3	63.1	46.4	40.3	49.7	62.2*	44.0	45.2	48.8
...use electronic offline material (such as CD ROMS)	67.6	83.0	68.2	65.6	67.6	45.1*	67.3	64.9	70.6
...use other learning material when using computers in class	3.2	8.8	2.3	10.4	4.3	10.8*	7.8	2.6	1.3

Source: LearnInd CTS 2006; **Base:** Teachers using computers in class; **Question:** Q10 "Which of the following types of materials have you used when teaching your main subject(s) with the aid of a computer and/or the internet?" **Notes:** "xx.x*": based on at least 10 and less than 50 cases.

Barriers to computer use in class in Portugal 2006

Percentage of all teachers <i>not</i> using computers in class	Total PT	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Lack of computers	48.1	48.8	46.8	54.0	49.3	35.9*	48.9	48.9	46.7
Lack of adequate content/material	23.7	20.3	26.0	17.7	10.5	20.1*	16.4	15.1	38.6
Lack of content in national language	5.6	8.6	5.2	4.6	8.9	20.1*	6.6	5.5	4.9
Lack of adequate skills of teachers	11.3	22.5	12.7	7.7	3.5	0.0*	11.3	7.6	15.3
No or unclear benefits	2.3	16.2	2.2	1.1	1.7	27.9*	3.3	3.7	0.0
Lack of interest of teachers	5.8	8.9	5.4	6.6	7.1	0.0*	6.5	4.0	7.1
Subject does not lend itself to being taught via computers	12.9	24.4	9.8	17.7	24.6	44.0*	15.8	15.9	7.3
Other	24.1	21.3	25.3	24.6	24.2	40.2*	26.6	26.5	19.7

Source: LearnInd CTS 2006; **Base:** all teachers not using computers in class; **Question:** Q12: "Why do you not use computers and/or the internet when teaching in class?" **Notes:** "xx.x*": based on at least 10 and less than 50 cases.

While in 2001 one hundred pupils had to share 4 computers the figure rose to 6 by 2006, an improvement of almost 50%, although Portugal still stays at the very bottom of European countries with a figure only half of the European average of 12.

Schools have moved over to broadband. 63% (EU25: 45%) of the schools in Portugal are connected to the internet via a DSL connection in 2006. The figure for 2001 was just 2% (EU15: 5%). The figures have strongly increased over the past 5 years.

Schools have also strongly increased the quality of ICT use: while in 2001 24% (EU15: 44%) of the schools in Portugal had their own website, the figure is now 61% (EU25: 62%).

Attitudes on the Usefulness of ICT use in Teaching

Computers and the internet have arrived in Portuguese schools and their use has improved. The share of teachers in Portugal – but also in the European Union in general – who believe that computers and the internet should not at all be used in schools, is very low and below 1%.

Portuguese teachers have a positive attitude about the different applications of ICT in teaching but achieve only figures below the European average on attitudes that ICT should be used for letting pupils do exercises and practise (65%), letting pupils retrieve information in a self-directed manner (73%) and for collaborative and productive work by pupils (73%). There are only little differences across school types.

Attitudes on the Usefulness of ICT use in Teaching in Portugal 2006

Percentage of teachers saying computers/internet should be used for ...	Total PT	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Letting pupils do exercises and practise	64.6	79.9	65.9	57.3	63.9	64.2*	62.8	63.5	66.9
Letting pupils retrieve information in a self-directed manner	72.8	85.0	72.0	71.2	82.6	82.5*	78.8	70.3	71.5
Teaching about office tools	47.6	61.3	49.1	43.4	41.4	49.0*	49.2	44.6	49.8
Collaborative and productive work by pupils	72.9	80.5	71.8	80.9	75.3	79.9*	76.9	68.7	74.7
Computer/internet should not be used for any of these in teaching	0.7	0.6	0.9	0.0	0.0	0.0*	0.7	1.3	0.0

Source: LearnInd CTS 2006; **Base:** all teachers; **Question:** Q13: "What do you think for what computers and the internet should be used for in teaching?" **Notes:** "xx.x*": based on at least 10 and less than 50 cases.

Access, Competence and Motivation for Using ICT and the Internet in Schools

Access

Only a very small majority of Portuguese teachers are more or less satisfied with the technical access means at their schools: 85% state that their school is well equipped with computers and 69% express the opinion that their internet connection is fast enough. A substantial 75% wish there were better support and maintenance actions taken.

In terms of content 38% state problems with respect to finding adequate learning materials and 28% argue that existing materials are of poor quality.

Competence in using ICT

Portuguese teachers feel most competent in using e-mail and using a text processor programme but are less confident with downloading and installing software and with using presentation software packages. But again, the Portuguese figures on these items are well below the European average figure.

Primary school teachers (38%) seem to be less ICT competent than those in upper secondary (33%) and vocational schools (22%).

Motivation for ICT use in Schools

A very high 95% of Portuguese teachers see significant learning benefits for pupils using computers in class

and say that pupils are more motivated and attentive when computers and the internet are used in class. Only 9% argue that the use of ICT does not reveal significant benefits for pupils. This is a top figure compared to most other European countries.

Teachers' access, competence and motivation for using ICT in class 2006

Percentage of teachers agreeing or strongly agreeing:			Educational Level				Subject of teaching					
	Total P1	Total EU25	Primary	Lower secondary	Upper secondary	Vocational	General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistic, crafts education	Vocational education
Access												
Our school is well equipped with computers ^a	51.0	74.2	46.3	66.4	74.2	78.2*	45.9	52.3	68.1	68.0	59.9	43.5*
The internet connection we have is sufficiently fast ^b	69.0	77.2	66.7	74.8	78.9	81.0*	66.1	72.7	86.0	83.6	58.6	52.6*
Better technical maintenance and support is required in our school ^c	74.7	64.8	77.3	66.6	64.6	36.5*	78.0	70.4	68.0	66.3	78.4	64.3*
Existing teaching materials on the Internet are of poor quality ^d	27.9	29.9	26.3	32.1	35.0	39.5*	26.5	32.2	39.1	27.3	27.9	25.4*
It is hard to find adequate learning materials for teaching ^e	38.2	38.7	37.4	41.5	42.7	39.2*	38.0	37.9	48.9	37.8	54.7	59.6*
Motivation												
Pupils are more motivated and attentive when computers and the internet are used in class ^f	95.2	86.3	95.0	95.8	96.6	88.5*	94.8	97.1	98.0	97.2	93.0	96.1*
Using computers in class does not have significant learning benefits for pupils ^g	9.3	20.7	9.4	9.5	7.7	4.1*	9.4	10.4	16.5	8.7	14.1	0.0*
Competence												
Teachers in our school do not have sufficient computer skills ^h	37.3	42.0	38.3	36.8	33.1	22.2*	38.8	37.5	40.9	31.0	28.8	46.1*
Competence / computer skills (Percentage of teachers who feel very confident at...)												
Using text processors ⁱ	56.4	65.0	53.7	70.1	65.2	72.1*	53.5	57.1	56.6	70.6	52.3	72.0*
Creating electronic presentations ^j	28.7	34.0	22.9	55.1	49.6	64.0*	21.8	25.7	42.7	56.6	29.7	63.5*
Using e-mail ^k	39.0	65.9	33.6	62.5	60.7	71.0*	32.2	35.5	40.4	62.1	36.5	74.0*
Downloading and installing software ^l	20.6	35.8	15.4	41.4	41.0	37.5*	13.4	21.7	27.3	49.2	24.4	44.2*

Source: LearnInd CTS 2006; **Base:** a-h All teachers; i-l Teachers using computers in class **Question:** a-h Q14, i-l Q11. **Notes:** "xx.x*": based on at least 10 and less than 50 cases.

ICT Readiness of Teachers – the ACM Model

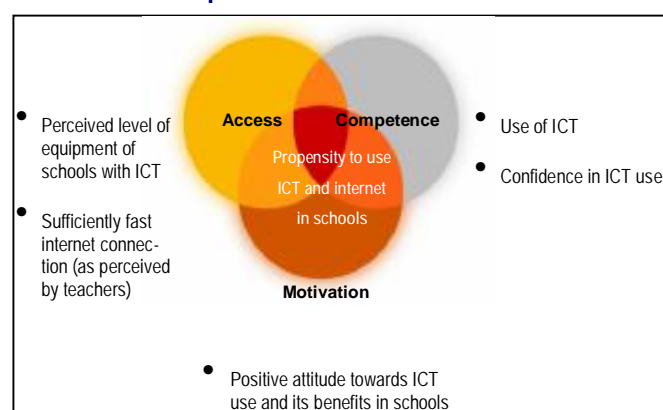
The ACM model as developed by Viherä and Nurmela (2001)⁴ was applied in LearnInd to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools".

The typology in the figure below takes account of the three main categories of preconditions which need to be given for a school to make use of computers and the internet in the teaching process in classrooms, computer labs etc.

These are: access (to computers and the internet at school), competence (in using the computer software and the internet, and applying it for teaching purposes), and motivation (gauged through the attitude that using computers in classrooms results in significant learning benefits).

Any attempt to group the classroom teachers according to their propensity to becoming users of computers and the internet in their teaching processes needs to take account of these three dimensions. In the present application of the ACM model data from the Classroom Teacher Survey (CTS) was used. Therefore "access" for instance is to be understood as a perceived level of computer equipment at schools and teachers' satisfaction therewith rather than an objective measure of equipment status.

The Access-Competence-Motivation Model



38% of European teachers dispose of sufficient access to the internet at school, the necessary competence in using ICT in class and are motivated to its use. With only 25% of the teachers belonging to this group, Portugal ranks at 23rd which places the country close to the very bottom of European countries. Overall the UK with 60% ranks top and Latvia with 15% finds itself at the very end.

The as yet insufficient internet connection in many schools and a lack of motivation of teachers for using ICT are the most critical issues for a wider uptake of computers and the internet in schools in Europe. 20% of European

teachers indicate insufficient computer equipment and the low speed of internet connection at their school as a key barrier. 14% show a lack of motivation, i.e., they are of the opinion that using computers in class does not result in significant learning benefits.

The situation in Portugal is different. With 36% of teachers having the necessary ICT skills and motivation but lacking ICT access, the situation in Portugal is much worse than the European average (21%). The same applies to the very large group of teachers which are motivated to use ICT in class but who lack the necessary ICT access and competence. With 15% this group is three times above the EU25 average. Finally, Portugal is also faced with a group of 8% of teachers with ICT access and motivation but lack of ICT competence, a figure which is almost twice as high as the European average. As a consequence the ICT readiness of Portuguese teachers is very low with the country ranking only 22nd in Europe.

It appears as if policy actions are required in Portugal to achieve a drastic improvement of the number of computers

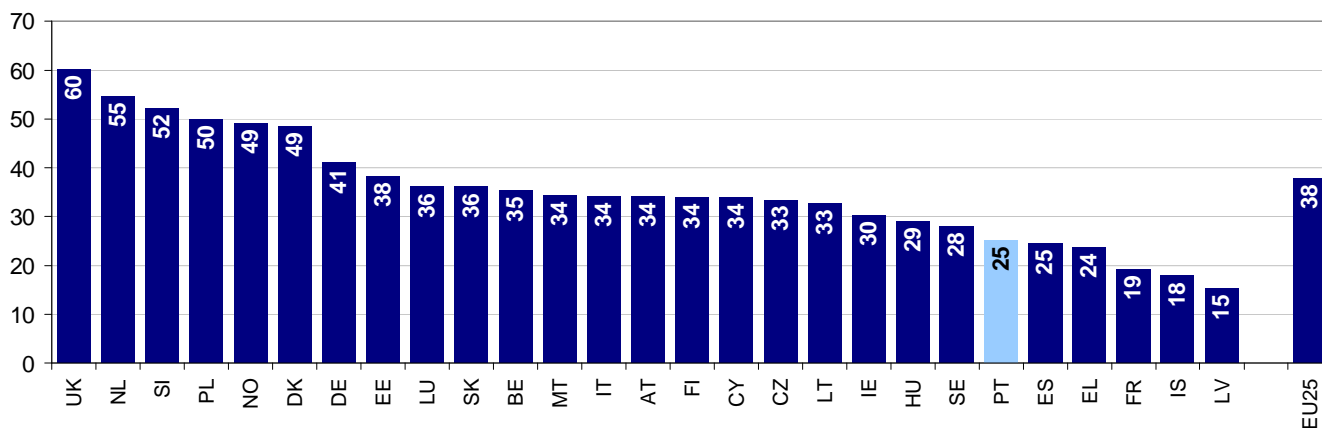
per school and the quality of ICT equipment in schools but also the ICT skills of the teachers.

Access, Motivation and Competence of Teachers for Using ICT in Schools in Portugal 2006

PT	EU25	Access	Competence	Motivation
5.6	4.3	Access	Competence	Motivation
1.8	3.9	Access	Competence	Motivation
5.0	9.7	Access	Competence	Motivation
15.0	5.0	Access	Competence	Motivation
3.6	13.7	Access	Competence	Motivation
8.0	4.8	Access	Competence	Motivation
35.9	20.7	Access	Competence	Motivation
25.1	37.9	Access	Competence	Motivation
100	100			

Percentage of teachers. **Source:** LeanInd CTS 2006; **Base:** All teachers; **Question:** See endnote 5

ICT Readiness of Teachers in Portugal: Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator) 2006



Source: LeanInd CTS 2006; **Base:** All teachers. **Question:** See endnote 5

ANNEXES

Methodology Report

Universe / Sample population

In order to assure the comparability of school levels in all countries UIS-OECD-EUROSTAT "Mapping of national education programmes to ISCED 97 for school academic/year 2002/2003"⁶ was used for composing the sample frame. Based on this, each country divided its school system into ICSED codes and made different combinations that existed in its country.

Sampling frame and method

The sample was composed using official databases, which contained contact data of schools. In the majority of countries the sample was drawn from a database received from the Ministry of Education.

For each country a separate template of sample frames was composed by TNS Emor. These templates contained data about school types across regions as well as location type. School types were defined based on the ISCED codes provided in UIS-OECD-EUROSTAT. Location type distribution was made according to the Eurostat type of locality classification which differentiates densely populated, intermediate and thinly populated municipalities⁷. Apart from that, each country was divided into 3-7 regions depending on the size of a country.

Based on the data provided by countries, TNS Emor composed quotas for each country. Two level stratification was used – quotas for first stage, random sample for second. The quotation for region by school type and location type was endorsed. Simple random selection was conducted by the local agency or the local source of the contact base. Both private and public schools were included in the sample. It was also obligatory to include schools of other teaching languages than the official language of a country in the sample.

Simple random sampling was used inside a quota cell. This means that if the quota for primary schools in region1 was 100 and the total number of primary school in this region was 800, then a random sample selection was made among those 800 schools. This covered also both private and public schools and schools of other teaching languages than the official language of a country.

No more than 50% of interviews could be made in one school level. At least 10% of respondents had to be from schools which provided professional/vocational or combined programme of vocational and upper secondary level education (in case a country did not have special quota for those schools). It did not matter whether vocational education level was coded as ISCED 3 or ISCED 4.

There were no duplications in samples of head teacher and classroom teacher surveys. This was only allowed in countries with small universe sizes (e.g. Malta, Cyprus, Iceland, Estonia, Latvia etc) and in cases where the last quota cells were very difficult to achieve or there were not enough schools of a certain type. The priority was to include as many different schools as possible. In both surveys, 5 attempts were made before giving up and only if the respondent refused was this person not contacted again.

The CATI programme generated a randomly chosen letter. The interviewer asked for the person with a surname that started on the generated letter. If there was more than one teacher whose surname started with the selected letter, the person who was first alphabetically was chosen. If the correct person was not available, an appointment was made. At least 5 attempts were made before taking another teacher.

Only in Malta, due to instructions dictated by the Education Department, would the Head Teacher randomly select a teacher that would be available for an appointment during which they would be interviewed.

Number of interviews conducted (HTS / CTS)

Country		Head Teachers	Classroom teachers
BE	Belgium	450	807
CZ	Czech Republic	500	1000
DK	Denmark	315	848
DE	Germany	450	901
EE	Estonia	400	851
EL	Greece	500	1000
ES	Spain	518	1022
FR	France	501	869
IE	Ireland	403	626
IT	Italy	500	900
CY	Cyprus	150	600
LV	Latvia	451	902
LT	Lithuania	457	908
LU	Luxembourg	82	277
HU	Hungary	500	1000
MT	Malta	100	200
NL	Netherlands	515	890
AT	Austria	320	450
PL	Poland	500	1000
PT	Portugal	450	900
SI	Slovenia	253	460
SK	Slovakia	502	1000
FI	Finland	318	601
SE	Sweden	200	450
UK	United Kingdom	450	905
IS	Iceland	177	424
NO	Norway	494	708
TOTAL		10456	20499

Fieldwork

Fieldwork was coordinated by the TNS Emor and conducted in cooperation with its local TNS offices excluding Iceland, Cyprus, Austria, Slovenia and Malta where TNS does not have offices. In these countries partners with whom TNS had previous experience were used.

Pilot interviews prior to the regular fieldwork were conducted with 20 schools in both target groups in Estonia and Greece in February 2006, in order to test the questionnaire (structure, comprehensibility of questions).

Between March and April 2006, surveys among head teachers (head teacher survey – HTS) and classroom teachers (CTS) were carried out in 27 European countries. TNS Emor was responsible for the fieldwork.

Weighting schemes

After the fieldwork, weighting coefficients were computed using region, location type and school type.

Statistical accuracy of the survey: confidence intervals

Statistics vary in their accuracy, depending on the kind of data and sources. A "confidence interval" is a measure that helps to assess the accuracy that can be expected from data. The confidence interval is the estimated range of values on a certain level of probability of error. Confidence intervals for estimates of a population fraction (percentages) depend on the sample size, the probability of error, and the survey result (value of the percentage) itself. Further to this, variance of the weighting factors has negative effects on confidence intervals.

The calculation of confidence intervals is based on the assumption of (quasi-) infinite population universes. In practice, however, in some countries and for some school levels the complete population of schools consists of only several hundred or even a few dozen of schools. In some cases, literally each and every school within a country-school type cell was contacted and asked to participate in the survey. This means that it is practically impossible to achieve a higher confidence interval through representative school surveys in which participation is not obligatory.

Country Background Data

Portugal has a below average GDP per capita and an inconsiderable GDP growth rate. In the field of education and compared to the other Member States, Portugal invests much in secondary education.

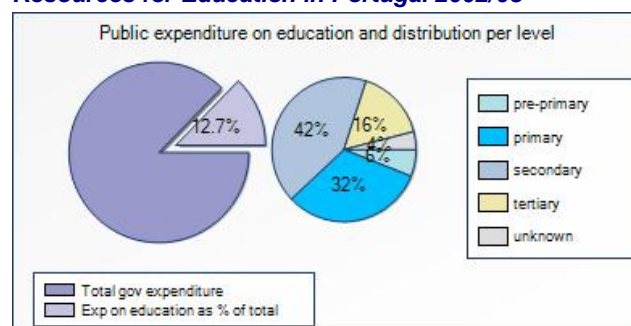
General Population Data for Portugal 2002/03⁸

Total population (000)	10,049
Annual population growth rate (%) [*]	0.7
Population 0-14 years (%)	17
Rural population (%) [*]	33
Total fertility rate (births per woman) [*]	1.4
Infant mortality rate (0/00) [*]	6
Life expectancy at birth (years) [*]	76
GDP per capita (PPP) US\$ [*]	18,154
GDP growth rate (%) [*]	0.4
[*] World Bank World Development Indicators	

Resources for Education in Portugal 2002/03

Pupil / teacher ratio (primary)	11
Public expenditure on education :	
as % of GDP	5.8
as % of total government expenditure	12.7
Distribution of public expenditure per level (%):	
pre-primary	6
primary	32
secondary	42
tertiary	16
unknown	4

Resources for Education in Portugal 2002/03



The Educational System in Portugal⁹

In 2001 the number of young people under 30 years of age accounted for 38.1% of the population (3,950,850) and 1,087,474 pupils were at compulsory school age. The language of instruction is Portuguese.

In 2003, approximately 81% of pupils attended state funded education, and 19% attended private institutions, which received 4.7% from the budget of the Ministry of Education to finance private institutions.

The Ministry of Education sets the broad education policies. A department within the Ministry is responsible for the planning and coordination of management and administration for each level of education. Five regional bodies (on the mainland) implement ministerial policies and provide guidelines, coordination and support to all non-higher education establishments. The organic law underlying the XV Constitutional Government, in office since 2002, led to the creation of the Ministry of Science and Higher Education, with the objective of reinforcing synergies between teaching and research. In cooperation with the General Directorate for Higher Education, the Ministry of Science and Higher Education, the regional bodies of the Ministry of Education coordinate and implement measures on admission to higher education. Municipal-level education centres also have a role in coordinating and assisting non-higher education.

Recently, more autonomy has been devolved to management bodies in each school or groups of schools. Higher education institutions are autonomous. In the autonomous regions of Madeira and the Azores, education administration is the responsibility of regional governments through secretariats of education. Inspection is the responsibility of the General Inspectorate of Education, which has regional delegations supervising all aspects of non-higher education. The new Ministry of Science and Higher Educa-

tion created a new General Inspectorate of Science and Higher Education supervising all aspects of higher education.

The use of ICT in Education¹⁰

The government's agenda includes the launch of a *Technological Plan* consisting of an articulated range of transversal policies and measures. The generalisation of the access to the Internet and to Information and Communication Technologies (ICT) is also a critical element of this Government's proposal towards the development of the Portuguese society. With financial support from the Operational Programmes that have existed for this area (POSI and now POS_Conhecimento), all the primary and secondary schools have been outfitted with computer equipment and Internet connections, and the same thing is happening in preschool education establishments at the moment. One of the major objectives of the National Lifelong Learning Strategy, as formulated in 2001, was "to develop a national system for training, certifying and developing competencies in the use of ICT". In this context the Internet@EB1 (Internet@BasicSchool-1st Cycle) made it possible to grant the Basic ICT Competencies Diploma to both teachers and students in the 1st Basic Education cycle.

The Network of ICT Competency Centres (RCCTIC – part of the *Nónio Programme*) has played a noteworthy part in the provision of pedagogical support for the integrated use of ICT in education. Since 2003 the teaching of ICT competencies has been compulsory in all schools that include grades 9 and 10 – a move that has simultaneously been accompanied and supported by the implementation of the 1,000.

The Study

There is a lack of information on the actual use of ICT for learning in schools and for supporting political action in potential future programmes. It is necessary to clarify matters such as the educational vision of heads of schools, the current impact of ICTs on teachers' practice, support and training and on other factors for success in e-learning.

The objective of the study is to obtain estimates for the eEurope 2005 indicator on e-learning "number of pupils per computer with Internet connection (broadband/non-broadband)" and relate it to other possible indicators of educational use of ICT in compulsory education (e-learning in schools). The study looks at how Information and Communication Technologies (ICT) are used in schools.

The study is a continuation of the earlier benchmarking exercise for eEurope 2002.

It involved two surveys. Firstly of head teachers to obtain information on the schools and then of teachers to focus on their use of ICTs in the teaching process

This exercise is part of the Information Society monitoring and benchmarking process for which the Commission in cooperation with the Council defined benchmarking indicators.

Country Briefs

This document has been prepared by **empirica** based on own desk research and the above mentioned primary data sources: Head Teacher Survey (HTS) 2006 and

Classroom Teacher Survey (CTS) 2006 in the EU25 member states, Iceland and Norway.

Altogether 27 LearnInd Country Briefs are available in a common format, one for each member of the enlarged European Union, Norway and Iceland.

A final report has also been developed. It includes approximately 100 exhibits, more than 250 data tables and a report about the key results.

You can access and download these documents in PDF format (for free) from http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm.

More information

Check our results and achievements on: http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm. If you wish to be provided with more details, or to receive news and updates, please contact us at: learnind@empirica.com or get in touch with us.



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- ¹ Note that "in class" means during lessons while teaching and does not denote a particular location such as a classroom.
- ² This section includes some comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the LearnInd surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.
- ³ Base (100%) = all teachers who have used a computer in class in the last 12 months.
- ⁴ Viherä, M-L, Nurmela, J (2001) "Communication Capability Is an Intrinsic Determinant for Information Age", in *Futures*, Volume 33, Issue 3-4:245-265.
- ⁵ Synthetic indicators: Access: Q14 (2) "Our school is well equipped with computers" and Q14 (3) "The internet connection we have is sufficiently fast".
Competence: Q11 How confident do you feel... a) using a text processor, b) creating a presentation c) using e-mail, d) downloading and installing software. Threshold: Average of 2.5 or more on a 1-4 confidence scale
Motivation: Q14 (8): disagree with "Using computers in class does not result in significant learning benefits".
For full question wordings refer to questionnaire.
- ⁶ http://forum.europa.eu.int/Public/irc/dsis/edtcslibrary?l=public/unesco_collection/programmes_isced97&vm=detailed&sb=Title
- ⁷ Densely populated area refers to a set of closely related local units, each one of which having a density greater than 500 inhabitants per km², and the total population of which being of at least 50 000 inhabitants; Intermediate area refers to a set of closely related local units that do not pertain to a densely populated area, each one of which having density greater than 100 inhabitants per km², and where the total population is at least of 50 000 inhabitants or it refers to a set that is adjacent to a highly populated area. Thinly populated area (rural): refers to a set of closely related local units that are not part of a densely populated area, or of an intermediate area. (A set of local areas totalling less than 100 km², not reaching the required density, but entirely enclosed within a densely-populated or intermediate area, is to be considered to form part of that area. If it is enclosed within a densely-populated area and an intermediate area it is considered to form part of the intermediate area).
- ⁸ Source: http://www.uis.unesco.org/profiles/selectCountry_en.aspx (visited 28 March 2006)
- ⁹ Source: http://www.eurydice.org/Documents/struct2/frameset_EN.html (visited: 28 March 2006)
- ¹⁰ Source: http://europa.eu.int/comm/education/policies/2010/nationalreport_en.html (visited: 9 May 2006)