

# Trendreport Computers and Internet: Motivation, Access, Use and Skills

A European and Dutch perspective



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## **Trendreport: Motivation, Access, Use and Skills**

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# 1 Introduction

The Digital Skills & Awareness programme is intended to promote optimum maximum use of computers and the internet by the population of the Netherlands. To achieve this result, these media need to be easily accessible to everyone. Moreover, people need to have the skills necessary to be able to use computers and the internet as they wish and in a safe and secure manner. Once this has been achieved, they will have mastered the technology. Simply having the necessary equipment or access is not sufficient to be able to participate fully in today's information society. The principle trend in the past ten years has been that while the physical access problem has gradually been resolved, the problems and the inequality of skills and use have actually increased. This report focuses on the various phases through which people need to progress in order to obtain full access to computers and the internet. Statistics have been collated at both European and national level with a view to highlighting trends that serve to furnish an accurate overall perspective of the situation with regard to computers and the internet.

The trends described in this report serve as basic data for the annual trend report. Notable changes in statistics and trends serve as input for monitoring and, where necessary, redirecting the Digital Skills & Awareness programme. Chapter 3 includes some initial data for the 2008 Access Meter, which describes the situation in the Netherlands in 2008. Since computer and internet skills are still measured in a less than objective manner both internationally and nationally – as explained in Chapter 2 - it is not possible to consider this Access Meter to be a baseline measurement. An objective baseline measurement of the situation with regard to the various skills would require a different instrument. This is also explained further in Chapter 3.

The various phases through which a person progresses on his way to gaining full access to computers and the internet are introduced in Chapter 2. Basically, these concern motivation, physical access, frequency of use, type of use and skills. The same chapter provides a summary of international and national statistics on each of these phases, and pinpoints the trends that can be discerned. An overall conclusion is given for each phase.

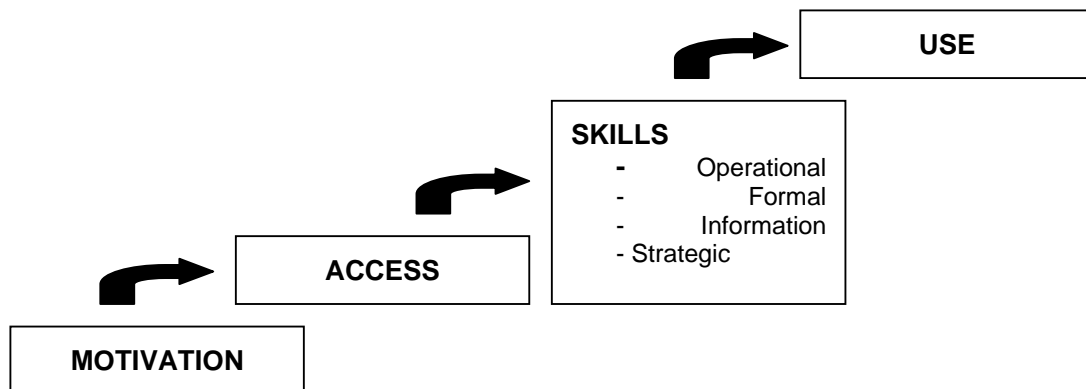
## 2 Statistics and Trends

### 2.1 Introduction

The process of gaining full access to computers or the internet can be seen as a process which includes four consecutive phases<sup>1</sup>. First of all, a person needs the motivation to actually use a computer or the internet at all. As we shall see in the following section, there are still many people who do not wish to use these media or think they have no need of them. Moreover, there is still such a thing as a fear of computers or cyberphobia. Anyone who is sufficiently motivated to step in to the digital world then needs to obtain physical access to it. Preferably, they will do this by purchasing a computer and getting an internet connection for use at home. Alternatively, many people will be able to obtain access in the workplace, at school or in some other public building.

Once a person has access, it is necessary to develop sufficient digital skills to make working with computers and the internet a worthwhile pursuit. This entails a number of skills, not all of which can be acquired by means of more traditional media: operational skills (pressing the right keys), formal skills (working with files, browsing and navigating), informational skills (searching for information in computer files and on the internet) and - finally - strategic skills. This last skill is the ability to use computers and the internet as a means to achieve a particular personal or professional objective. All these skills are necessary if a person is to make use of computers and the internet in a mature manner, and that must surely be the ultimate goal.

Actual use can be measured in various ways. We can consider the frequency and the duration of use, the number of years experience, or the type of applications (i.e. the activities performed). This entire process is set out in diagram form in Figure 1.



**Figure 1:** The process of accessing digital media (adapted from: J. van Dijk, 2005: p. 22)

<sup>1</sup> Jan A.G.M. van Dijk (2005). *The Deepening Divide, Inequality in the Information Society*. Thousand Oaks CA, London, New Delhi: Sage Publications.

## 2.2 Motivation

Motivation is the need of an individual to use digital media such as computers and the internet. This need has psychological, sociocultural and economic aspects. The psychological aspects are the need to keep abreast of technological developments, to communicate via technology instead of face to face, uncertainty about one's own capabilities with regard to use and cyberphobia. The sociocultural aspects include the image that some cultures associate with working with computers and the internet. Some male manual labourers still look upon working with the computer as women's work. In the USA, far more immigrants with an Asian background use computers and the internet than do Hispanics and Afro-Americans. From an economic viewpoint, some people maintain that these media are not necessary, either for work, study or leisure. They still find sufficient alternatives among the more traditional media.

The motivation to use computers and the internet has increased substantially in the past 25 years. In the nineteen eighties and nineties, these media were still rejected by a large proportion of the population, even in the Netherlands<sup>2</sup>. As time passes, however, many senior citizens, poorly educated people and manual labourers are becoming concerned that they are unable to keep abreast of social developments. They are also afraid of losing contact with the children and grandchildren if they are not 'on the computer'.

The only longitudinal data that is available on motivation concerns the number of people who have no internet connection, and they are often asked about their reasons. Both national and international surveys produce the following results.

### 2.2.1 International data and trends

It can be seen from Table 1 that in 2008 the costs of internet usage (25+21=46%) was still the most important reason in the EU for not using the internet; this was followed by no need for the media in question (37%) and a lack of skills (23%). Only 14% of the population of the EU explicitly rejected the media. There is little fear of the less attractive aspects of the internet, such as threats to personal privacy (5%). It must be borne in mind, however, that a lack of skills is probably much more important than the figures suggest. The recorded percentages are probably conservative, because it is considered socially undesirable to admit to a low skills level even in a survey.

In the Netherlands, the costs are of secondary importance. We shall explain below why this is the case. The lack of skills in this country is also less significant than in the EU as a whole. Notably, the Netherlands has a much higher than average percentage of non-users who explicitly reject the use of the media or think they have no need of it. Together these groups account for 67%. The most likely reason is that there are fewer non-users in the Netherlands compared with the rest of Europe. And it is in this group of non-users that we come close to finding the hard core of people who really do not want either computers or internet. Mostly these people are older or poorly educated. In the Netherlands we are getting close to the maximum number of possible voluntary users.

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<sup>2</sup> Cees Doets en T. Huisman (1997). Digital Skills. The State of Art in the Netherlands. s'Hertogenbosch: CINOP.

**Table 1**

Reasons for not having an internet connection at home (among households with no internet connection); Europe 2008

	Access elsewhere	Not wanted	Not needed	Equipment too expensive	Connection too expensive	Lack of skills	Privacy	Physical limitation
EU 27	14	14	37	25	21	23	5	2
Belgium	:	:	:	:	:	:	:	:
Bulgaria	5	5	32	26	15	34	1	5
Cyprus	14	17	52	13	12	41	7	1
Denmark	6	1	57	5	9	10	0	3
Germany	32	7	51	34	32	31	18	:
Estonia	31	46	48	58	51	62	4	:
Finland	:	:	:	:	:	:	:	:
France	20	33	45	41	37	37	13	5
Hungary	26	25	49	49	34	28	6	7
Ireland	15	15	28	15	7	20	1	0
Iceland	12	20	45	14	9	30	2	1
Italy	:	:	:	:	:	:	:	:
Latvia	33	23	49	52	43	48	4	4
Lithuania	8	1	69	18	12	7	0	2
Luxembourg	9	17	53	7	3	16	4	0
Malta	3	15	33	7	4	34	1	2
<b>Netherlands</b>	<b>12</b>	<b>27</b>	<b>40</b>	<b>10</b>	<b>8</b>	<b>17</b>	<b>2</b>	<b>1</b>
Norway	12	4	35	10	10	13	2	1
Austria	20	19	49	15	14	17	:	:
Poland	8	5	45	29	26	23	:	2
Portugal	8	45	72	51	47	62	9	3
Romania	9	11	25	35	26	20	0	1
Slovenia	13	15	61	35	32	39	10	7
Slovakia	24	6	40	18	15	19	1	0
Spain	14	20	56	20	20	26	2	1
Czech Republic	16	3	37	35	27	32	2	2
United Kingdom	13	21	30	19	13	13	4	:
Sweden	29	42	42	25	26	40	7	2

Source: Eurostat

## 2.2.2 National data and trends

Let us take a deeper look at the reasons given by non-users in the Netherlands for not using the internet, in the hope that this will expose the hard core of non-users and the usage ceiling. In Table 2 we can see that, in the Netherlands at least, non-use stems primarily from a lack of desire for or no interest in digital media; these reasons are given most often by the 65 to 75 age group and by the less well educated. We do, however, see that "not wanted" is decreasing. In the case of older people, this reason was given by 42% in 2005 and only 28% in 2008; in the case of less well educated people, this reason was given by 16% in 2005 and by 10% in 2008.

Looking at the 2008 statistics from another perspective, 28% of 65 to 75 year olds and 10% of the less well educated still explicitly have no desire for internet. We also see that a lack of skills and some form of physical limitation is the second reason for non-use; again, these reasons are given primarily by older people and the less well educated.

In 2006, the University of Twente carried out a large-scale survey (4151 respondents) into the use of electronic government services. This survey also



asked non-user respondents why they had no computer and internet connection at home. Result:

- Don't need it (37%)
- Too old (37%)
- Too difficult (13%)
- Hate computers (12%)
- Too expensive (8%)

**Table 2**

Reasons for not having no internet connection at home; the Netherlands 2008

		Total	Sex		Age				Education		
			male	female	12-25	25-45	45-65	65-75	low	medium	high
Internet elsewhere	2005	2	2	3	2	3	2	1	2	2	2
	2006	2	2	2	1	2	2	2	2	2	1
	2007	1	1	1	1	2	1	1	1	1	2
	2008	1	1	1	1	1	1	2	1	1	1
No desire, no interest	2005	9	9	10	2	4	11	42	16	6	3
	2006	9	9	10	1	4	12	38	16	6	2
	2007	8	7	8	1	3	9	36	14	4	2
	2008	5	6	5	1	2	6	28	10	4	1
Financial reasons	2005	3	2	3	1	2	3	5	4	2	1
	2006	2	1	3	1	1	2	7	3	2	1
	2007	1	1	1	1	1	2	2	3	1	0
	2008	1	1	2	0	1	1	4	2	1	0
Insufficient knowledge / physical limitation	2005	2	2	2	0	1	2	9	3	2	1
	2006	2	2	2	0	1	3	9	4	1	0
	2007	2	1	2	0	0	2	9	4	1	0
	2008	2	1	2	0	0	2	10	4	1	0
Privacy and security	2005	0	0	0	0	0	1	1	1	0	0
	2006	0	0	0	0	0	0	1	0	0	0
	2007	0	1	0	0	0	1	2	1	0	0
	2008	0	0	0	0	0	0	1	0	0	0
Other reason	2005	4	4	4	2	4	4	11	6	3	2
	2006	2	2	2	2	2	2	3	3	2	1
	2007	2	1	2	0	2	2	4	2	2	1
	2008	2	2	1	1	1	1	5	2	2	1

Source: Statistics Netherlands (CBS) Statline

### Overall conclusion regarding motivation

In comparison with other countries, the motivation to use computers and the internet is very high in the Netherlands. Nonetheless, a large minority of older and less well educated people remain insufficiently motivated to use the media. A second important reason for non-use among this group is a lack of skill or a physical limitation. Other than in most other European countries, factors such as costs are hardly mentioned as a reason.

## 2.3 Physical access

Physical access means having a computer and an internet connection. This can include owning a computer, mostly at home, or having access at work, at school or in a public building. We shall first consider the population's general preference: a connection at home.

### 2.3.1 International data and trends

The percentage of European households with internet access rose significantly between 2004 and 2008, as seen in Table 3. In the 27 EU member states, the percentage rose from 41 to 60. In 2008, 86% of Dutch households had internet access, putting the Netherlands second in the European league table, close behind Iceland - a non-EU country.

**Table 3**  
Percentage of households with internet access; Europe 2004 - 2008

	2004	2005	2006	2007	2008
EU 27	41	48	49	54	60
Iceland	81	84	83	84	88
<b>Netherlands</b>	<b>65</b>	<b>78</b>	<b>80</b>	<b>83</b>	<b>86</b>
Sweden	:	73	77	79	84
Norway	60	64	69	78	84
Denmark	69	75	79	78	82
Luxembourg	59	65	70	75	80
Germany	60	62	67	71	75
Finland	51	54	65	69	72
United Kingdom	56	60	63	67	71
Austria	45	47	52	60	69
Belgium	:	50	54	60	64
Ireland	40	47	50	57	63
France	34	:	41	49	62
Slovenia	47	48	54	58	59
Malta	:	41	53	54	59
Estonia	31	39	46	53	58
Slovakia	23	23	27	46	58
Latvia	15	31	42	51	53
Spain	34	36	39	45	51
Lithuania	12	16	35	44	51
Poland	26	30	36	41	48
Hungary	14	22	32	38	48
Italy	34	39	40	43	47
Portugal	26	31	35	40	46
Czech Republic	19	19	29	35	46
Cyprus	53	32	37	39	43
Greece	17	22	23	25	31
Romania	6	:	14	22	30
Macedonia	11	:	14	:	29
Bulgaria	10	:	17	19	25
Turkey	7	8	:	:	:
Croatia	:	:	:	:	:
Switzerland	:	:	:	:	:
United States	:	:	:	:	:
Japan	56	57	:	:	:
Canada	60	61	:	:	:

Source: Eurostat

As the second country in the world broadband league tables (after South Korea), the Netherlands has a very good internet infrastructure and one that is relatively low-priced. There are two main reasons for this:

1. There is a high level of competition in the infrastructure market: the cable and telephone companies compete to offer high-grade internet connections at national level. At more local level, strenuous efforts are being made to install fiber optic connections and upgrade phone and cable lines.
2. Many telephone and internet service providers offer keenly priced DSL connections; a large number of them are, however, owned by KPN, the formerly state-owned post, phone and telegraph provider.

There are large differences across Europe. Countries in northern and western Europe have a higher percentage of households with internet connections than do the USA, Canada and Japan. The countries in southern and eastern Europe often have half the coverage of the north; only 30 and 25% of households in Romania and Bulgaria respectively have access to the internet at home.

### 2.3.2 National data and trends

Home access to the internet stood at 86% in the Netherlands in 2008. This is only slightly lower than the number of households with access to a PC (88%). In all, 91% of all Dutch inhabitants have access to internet, if they so wish, and 92% to a computer. This is mainly because they can use a computer or the internet elsewhere. In 47% of cases this means at work; 18% do so at school, 20% can use someone else's equipment and 6% go elsewhere, as seen in Table 4.

**Table 4**

Access to computers and the internet and the location of internet use; the Netherlands 2004 - 2008

	2004	2005	2006	2007	2008
Households with PC access	80	83	84	86	88
People with PC access	85	87	88	90	92
Households with internet access	71	78	80	83	86
People with PC access	77	83	85	88	91
Place where internet is used					
Home	:	94	95	97	97
At someone else's home	:	15	13	18	20
At place of work	:	42	44	47	47
At place of study	:	15	15	18	18
Elsewhere	:	4	3	5	6

Source: Statistics Netherlands (CBS) Statline

These very high percentages still hide some significant differences, and reasonably large groups of Dutch people in certain categories who have no access at home. Only 61% of people between the ages of 65 and 75 have a PC, and 57% have access to internet. 85% of the less well educated have a PC at home, and 84% have an internet connection. In 2008, only 77% of the inactive<sup>3</sup> population had an internet connection. The level of income becomes a factor against internet access among older people and the less well educated. 82% of those in the lowest 20% of incomes have a connection, compared with 96% in the highest 20% of incomes as seen in Tables 5 and 6.

<sup>3</sup> Economically inactive: unemployed, disabled, carers, etc.

**Table 5**  
Access to the internet (personally or at home); the Netherlands 2005 - 2008

	2005	2006	2007	2008
<b>Sex</b>				
Male	84	86	89	90
Female	81	84	87	91
<b>Education</b>				
Low	73	76	79	84
Medium	88	88	92	93
High	93	95	95	97
<b>Age</b>				
15-25	94	95	98	98
25-45	89	91	93	96
45-65	81	83	86	91
65-75	41	50	54	57
<b>Income</b>				
1st 20% group (lowest)	73	76	78	82
2nd 20% group	79	81	83	88
3rd 20% group	85	86	87	93
4th 20% group	88	89	93	95
5th 20% group (highest)	90	93	96	96
<b>Work</b>				
Employed	90	91	94	95
Unemployed	66	69	71	77
Working < 12 hrs	90	97	95	97
Working > 12 hrs	90	91	94	95

Source: Statistics Netherlands (CBS) Statline

**Table 6**  
Access to a computer (personally or at home); the Netherlands 2005 - 2008

	2005	2006	2007	2008
<b>Sex</b>				
Male	89	89	91	91
Female	86	87	90	92
<b>Education</b>				
Low	78	81	83	85
Medium	92	92	95	94
High	95	96	97	98
<b>Age</b>				
15-25	97	98	99	99
25-45	93	94	95	96
45-65	86	86	89	91
65-75	50	57	59	61

Source: Statistics Netherlands (CBS) Statline

### Conclusions in relation to physical access to computers and the internet

91 percent of all Dutch inhabitants have access to the internet either at home or elsewhere. This still means that 1.49 million people do not have such access. This group includes a relatively high proportion of older people, the less well educated and the unemployed. In 2008, 43% of people in the 65 - 75 age group could not be reached via the internet. The same applied to 15% of the less well educated and 23% of economically inactive people. The internet is rapidly becoming a generally accessible channel for information and communication, but has not quite achieved that status. The internet does not yet achieved the same coverage as television and the telephone.

## 2.4 Volume of use

When considering usage, it is important to distinguish between frequency and duration of use on the one hand and the type of use (applications used) on the other hand. This section looks at the first category.

### 2.4.1 International data and trends

There is little correlation between physical access and actual use. Many have access to computers or the internet in their homes or elsewhere, but do not use it. The differences in actual usage levels are greater than the differences in physical access levels. In the 27 member states of the EU, 14.2% of the population reported using their access rarely or never. In the Netherlands, this figure was 9.8%. Here, 67.8% of people reported using their internet access at least once a day. This is the second highest level in Europe, behind only Denmark as can be seen in Table 7.

**Table 7**

Frequency of personal internet use; Europe 2008

	Hardly ever / never	Less than 1x per month	At least 1x per month	At least 1x per week	Approx. 1x per day	More than 1x per day
EU 27	14.2	1.1	2.5	12.5	20.9	30.6
Belgium	8	0.4	1.7	12.6	26.5	32.2
Bulgaria	12.9	1.3	3.4	8	12.7	23.7
Cyprus	21.9	1.7	3.6	10.2	12.9	26.7
Denmark	3.8	1	1.9	7.6	20.3	60.7
Germany	14.4	1	3.3	19.1	22.3	25.4
Estonia	9.6	1.3	3.1	14.5	25.7	30.9
Finland	7.4	0.9	3	19.1	30.6	26.4
France	6.5	0.7	1.8	8.5	19.3	43.1
Greece	32.2	1.3	3.2	13.6	14.3	18
Hungary	12	0.7	1.9	10.6	18.5	27.7
Ireland	13.8	1.7	3.7	19.1	28.5	22.9
Italy	26.1	0.9	2.8	8.3	18.3	25.6
Latvia	16.4	1.2	1.7	9.1	16.9	34.3
Lithuania	16.9	1.9	4	10.4	19.8	23.3
Luxembourg	10.1	1.2	3.7	18	28.1	29.7
Malta	16.7	0.9	1.8	9.9	13.7	34.1
<b>Netherlands</b>	<b>9.8</b>	<b>0.5</b>	<b>1.1</b>	<b>12.7</b>	<b>26.1</b>	<b>41.7</b>
Austria	13.8	0.8	3.9	18.2	21.5	26.8
Poland	9.3	1.7	2	11.9	17	36.7
Portugal	14.4	1.5	0.9	8	15.1	25.8
Romania	21.5	1.4	1	7.9	10.1	20.8
Spain	12.7	0.7	2.4	11.2	20.1	28.8
Slovenia	18.3	0.4	2	10.9	16.1	39.6
Slovakia	24.6	2.4	2.4	9.9	15.2	25.3
Czech Republic	14	1.6	2.5	9.2	20.3	37
United Kingdom	11.5	1.1	2.9	15.1	30.6	30
Sweden	9.3	1.1	2.8	15.4	24	41.3

Source: Eurobarometer Flash

Table 8 brings to light a number of important differences in actual usage depending on education and age. There is even a slight difference between the sexes: men use the internet slightly more often than women. The differences by education and age, however, are more marked. Only 35% of the less well educated in the EU 27 use the internet at least once a day, compared with 85% of the highest education

group. The same applies to 29% of people in the 55 and 74 age group, but to 83% in the youngest age group.

In the Netherlands there is only a 3% difference between the sexes. The difference between the highest and lowest educated is also smaller: 98% vs 65%. 61% of older Dutch people (55 - 74 yrs) use the internet at least once a day, compared with 97% of younger people (16 - 24 yrs).

**Table 8**

Percentage of individuals between the ages of 16 and 74 who use the internet at least once a week, classified by sex, education and age; Europe 2008

	Total	Sex		Education			Age		
		male	female	low	medium	high	16-24	25-54	55-74
EU 27	56	60	53	35	61	85	83	63	29
Belgium	66	70	61	44	71	88	88	74	37
Bulgaria	33	34	32	15	32	68	65	38	:
Cyprus	35	39	32	13	32	68	65	39	8
Denmark	80	83	78	68	84	94	97	90	57
Germany	68	73	62	59	66	82	91	78	38
Estonia	62	61	62	51	57	79	92	71	24
Finland	78	80	77	63	79	91	97	90	49
France	63	61	64	46	82	88	90	71	36
Greece	33	38	28	9	41	65	71	38	6
Hungary	56	57	55	34	68	82	87	63	26
Ireland	57	58	57	30	61	85	76	63	25
Iceland	88	89	87	78	90	99	99	93	66
Italy	37	43	32	17	55	73	64	44	13
Latvia	57	59	55	45	52	83	94	64	17
Lithuania	50	51	49	34	41	82	86	54	14
Luxembourg	77	88	66	61	85	95	97	82	53
Macedonia	39	44	33	22	43	67	75	38	:
Malta	46	50	43	29	82	93	85	50	16
<b>Netherlands</b>	<b>83</b>	<b>86</b>	<b>80</b>	<b>65</b>	<b>89</b>	<b>98</b>	<b>97</b>	<b>90</b>	<b>61</b>
Norway	86	88	83	74	83	96	98	94	62
Austria	66	73	59	43	67	92	87	74	35
Poland	44	46	43	31	39	82	84	48	14
Czech Republic	51	54	48	41	48	85	84	58	20
Portugal	38	43	34	22	82	89	84	40	11
Romania	26	28	25	14	25	77	54	27	4
Slovenia	52	53	51	28	52	86	91	60	16
Slovakia	62	65	59	41	65	87	90	70	20
Spain	49	54	45	25	66	81	82	56	15
Turkey	:	:	:	:	:	:	:	:	:
United Kingdom	70	74	66	33	74	91	90	77	44
Sweden	83	86	81	67	84	95	97	91	63

Source: Eurostat 2009

In Table 9, on the following page, we shall consider the work situation. In this case, we are looking at people who use the internet at least once a week. In the EU 27, students and employees make use of the internet considerably more frequently than the unemployed and much more frequently than do economically inactive people. These differences are smaller in the Netherlands, both between students and the employed and between inactive people and the employed. Unemployed people in the Netherlands use the internet remarkably often. Inactive people use this medium more than twice as often as the EU 27 average. The very high level of physical access in the Netherlands has therefore led to high usage among groups that would normally be considered to be disadvantaged.

**Table 9**

Percentage of individuals between the ages of 16 and 74 who use the internet at least once a week, classified by employment status; Europe 2008

	Employment status			
	Employed	Student	Inactive	Unemployed
EU 27	68	91	25	45
Belgium	78	94	34	51
Bulgaria	41	83	5	18
Cyprus	40	78	10	35
Denmark	90	97	45	:
Germany	80	97	37	57
Estonia	70	97	24	64
Finland	89	99	44	70
France	72	96	33	61
Greece	43	82	6	28
Hungary	70	94	25	40
Ireland	65	90	30	44
Iceland	91	99	60	:
Italy	50	77	10	32
Latvia	67	98	18	36
Lithuania	59	96	12	31
Luxembourg	84	98	56	48
Macedonia	47	88	6	28
Malta	:	97	18	34
<b>Netherlands</b>	<b>92</b>	<b>99</b>	<b>58</b>	<b>95</b>
Norway	94	97	57	78
Austria	77	99	34	58
Poland	54	92	13	25
Portugal	45	96	8	29
Romania	30	76	3	18
Slovenia	65	96	10	38
Slovakia	73	97	17	28
Spain	60	91	14	43
Czech Republic	59	92	16	28
Turkey	:	:	:	:
United Kingdom	81	97	39	58
Sweden	90	97	53	86

Source: Eurostat 2009

## 2.4.2 National data and trends

The statistics produced by Statistics Netherlands (CBS) for the Netherlands are comparable with the percentages reported by the Eurobarometer Flash in Table 7. The number of daily users came out 10% higher for 2008, probably because of the broadening of the category to 'almost daily'; 11% of respondents here reported never using the internet as shown in Table 10. In Tables 11 and 12, we see similar differences by sex, age, educational level and employment status; income level does not seem to make so much difference in the Netherlands.

**Table 10**

Percentage of individuals and the frequency of their internet usage; the Netherlands 2005 - 2008

	2005	2006	2007	2008
When did you last use the internet?				
< 3 months ago	80	82	85	87
3 - 12 months ago	2	2	1	1
> a year ago	1	1	1	1
Never used the internet	17	15	12	11
Frequency of internet usage (among internet users)				
Almost daily	68	75	79	77
At least 1x per week	25	19	17	19
At least 1x per month	5	4	3	3
Less than 1x per month	1	1	1	1

Source: Statistics Netherlands (CBS) Statline

**Table 11**  
Percentage of individuals and the frequency of their internet usage by sex, age and education; the Netherlands 2008

	Sex		Age				Education		
	male	female	12-25	25-45	45-65	65-75	low	medium	high
Last use of internet									
< 3 months ago	89	86	99	96	83	46	76	92	99
3 - 12 months ago	1	1	0	0	1	2	1	1	0
> a year ago	1	1	0	1	2	3	1	1	0
Never used the internet	9	12	0	3	14	49	21	6	1
Frequency of internet usage (among internet users)									
Almost daily	81	73	83	80	73	57	70	75	87
At least 1x per week	16	22	15	17	22	33	23	21	12
At least 1x per month	2	4	2	2	4	9	6	3	1
Less than 1x per month	1	1	0	1	1	2	2	1	0

Source: Statistics Netherlands (CBS) Statline

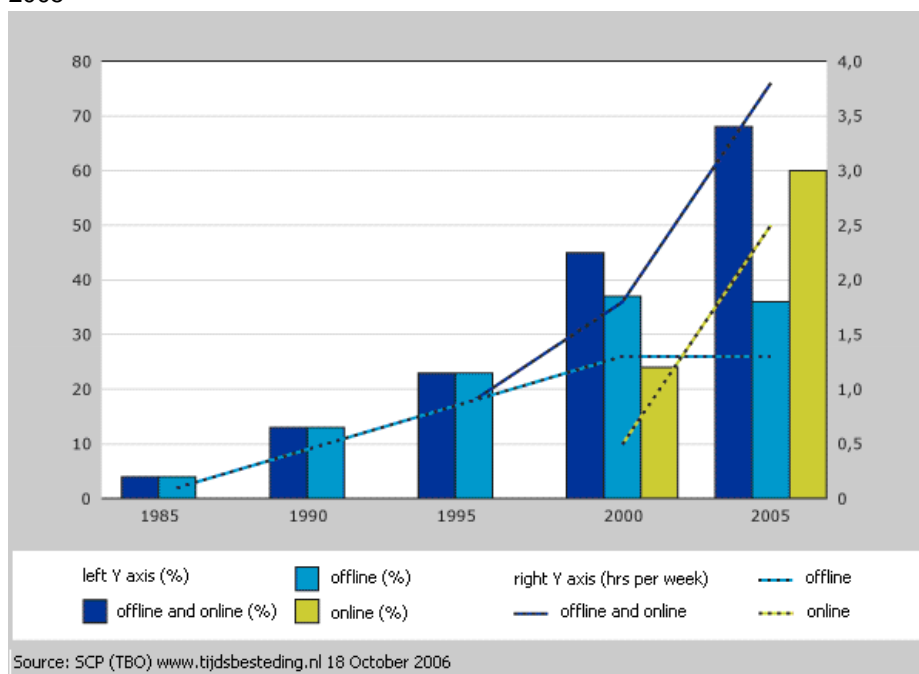
**Table 12**  
Percentage of individuals and the frequency of their internet usage, by employment status and income; the Netherlands 2008

	Employment status				Income				
	Employed	< 12 hrs	>= 12 hrs	Un-empl.	1st	2nd	3rd	4th	5th
Last use of internet									
< 3 months ago	94	94	94	67	78	85	88	92	94
3 - 12 months ago	1	0	1	2	1	1	1	1	0
> a year ago	1	0	1	2	1	1	1	1	1
Never used the internet	4	5	4	30	20	12	10	6	5
Frequency of internet usage (among internet users)									
Almost daily	80	82	79	68	76	73	76	77	82
At least 1x per week	17	16	17	25	19	21	21	20	15
At least 1x per month	2	1	2	6	4	4	3	3	2
Less than 1x per month	1	1	1	1	1	2	1	0	1

Source: Statistics Netherlands (CBS) Statline

**Figure 2:**

Offline and online computer usage: participation (in % of population) and time spent (in hours per week) of people over the age of 12, 1985 - 2005





In the years leading up to 2005, the Netherlands Institute for Social Research [*Sociaal en Cultureel Planbureau*, SCP] carried out a large-scale survey into leisure activities among the Dutch population over 12 years of age. The results of this survey up to 2005 are illustrated in Figure 2. As can be seen, only a quarter of the population was online in the course of a week in the year 2000. In 2005, this figure more than doubled to 60%. Notably, there was no further increase in offline use during that same period; both the percentage of participants and the volume of offline usage remained the same. Unfortunately, no figures are available for the years after 2005.

**Overall conclusions regarding frequency of usage**

Approximately 10% of the population of the Netherlands has access to the internet but do not use it. Despite this, the number of daily users has increased substantially in the past five years. Nonetheless, there are still significant differences on the basis of educational level and age. The better educated along with the younger age groups use the internet two or three times as often as the less well educated and the over 55's. These differences are proportionally smaller in the Netherlands than in most other countries of the EU. This means that the internet has achieved a deeper penetration in daily life in the Netherlands than in other countries.

## 2.5 Type of use of the internet

Up to now, we have summarised fairly elementary data concerning the access to computers and the internet and the frequency of use. These perspectives reflect the increased spread and usage of digital media. It seems that the digital gap of the past 25 years is slowly being bridged. But the situation is more complicated than this summary has sketched so far, and this becomes clear when we take a closer look at the type of use, and we enquire what most people are actually doing, or can do, with the aid of these new media. This is determined firstly by the matter of activities.

### 2.5.1 International data and trends

The ways in which the internet is used are set out in four tables below. In this we have distinguished the following internet activities: searching for information (Table 13), education and looking for a job (Table 14), using online mass media (Table 15) and conducting transactions (Table 16).

#### Searching for information (Table 13)

**Table 13**

Internet activities related to personal information; Europe 2005 - 2008

	Searching for information about products and services				Interaction with government agencies				Searching for health-related information			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
EU 27	39	41	47	50	23	24	30	28	16	19	24	28
Belgium	43	51	55	58	18	30	23	16	19	23	25	24
Bulgaria	:	13	17	22	:	8	6	8	:	5	5	7
Cyprus	24	27	32	32	11	13	20	16	8	11	14	12
Denmark	63	68	68	73	:	43	58	44	24	28	38	36
Germany	:	60	63	66	:	32	43	33	:	34	41	41
Estonia	41	44	48	53	31	29	30	34	16	18	26	25
EU 15	43	46	52	55	26	:	34	32	18	21	27	30
EU 25	39	43	49	52	23	26	32	29	16	20	25	29
Finland	62	67	68	73	47	47	50	53	39	44	47	51
France	:	36	55	57	:	26	41	43	:	13	29	39
Greece	17	23	28	31	7	9	12	10	2	6	8	10
Hungary	25	35	43	49	18	17	25	25	10	17	23	29
Ireland	29	42	44	46	18	26	32	27	10	8	12	19
Iceland	73	76	78	78	55	61	59	63	39	40	44	39
Italy	21	23	27	30	14	16	17	15	9	12	16	16
Latvia	27	36	39	49	13	25	18	16	7	12	11	24
Lithuania	22	30	36	37	12	13	18	20	9	15	19	21
Luxembourg	61	64	68	69	46	46	52	48	41	27	48	44
Macedonia	:	11	:	22	:	15	:	8	:	3	:	9
Malta	27	26	34	42	19	17	25	20	16	18	20	23
<b>Netherlands</b>	<b>70</b>	<b>73</b>	<b>76</b>	<b>76</b>	<b>46</b>	<b>52</b>	<b>55</b>	<b>54</b>	<b>41</b>	<b>45</b>	<b>45</b>	<b>46</b>
Norway	67	74	76	80	52	57	60	62	26	34	37	41
Austria	42	47	47	51	29	33	27	39	16	24	27	32
Poland	18	25	27	33	13	:	15	16	7	11	13	19
Portugal	26	30	33	34	14	17	19	18	10	14	18	22
Romania	:	10	12	17	:	3	5	9	:	5	6	11
Slovenia	36	42	47	48	19	30	30	31	15	22	26	27
Slovakia	30	33	39	49	27	32	24	30	9	14	16	25
Spain	33	38	42	46	:	25	26	29	13	19	21	25
Czech Republic	20	32	37	45	5	17	16	14	3	10	11	14
Turkey	6	:	:	:	6	:	:	:	3	:	:	:
United Kingdom	57	55	62	64	24	:	38	32	25	18	20	26
Sweden	70	74	70	75	52	:	53	52	23	28	25	32

Source: Eurostat

Searching for information is the oldest activity on the internet. Searching for product information and information on health-related matters in particular increased between 2005 and 2008. There has been hardly any increase in searching for government information, and interacting with government agencies. In all these activities, usage in the Netherlands is almost twice as high as the average for the 27 EU member states. This is a sign of the maturity of Dutch internet usage.

#### Education and looking for a job (Table 14)

Other than in countries such as the USA, the internet is used remarkably little in Europe for the purpose of online training and education. The same applies to looking for and applying for a job via the internet. In these respects, compared with the other activities, the Netherlands has a remarkably low score.

**Table 14**

Internet activities related to personal development and training; Europe 2005 - 2008

	Searching for information about training		Following an online course		Looking for or applying for a job online			
	2007	2008	2007	2008	2005	2006	2007	2008
EU 27	23	26	3	10	10	11	12	13
Belgium	17	20	2	8	8	9	8	8
Bulgaria	2	5	1	:	:	4	5	7
Cyprus	21	17	1	3	3	5	5	4
Denmark	53	47	4	19	19	20	26	23
Germany	27	28	2	:	:	17	17	16
Estonia	:	22	7	18	18	17	13	15
Finland	30	31	13	24	24	26	26	26
France	43	47	2	:	:	6	13	17
Greece	5	22	2	2	2	4	5	5
Hungary	19	22	2	10	10	12	13	14
Ireland	16	21	3	2	2	6	7	9
Iceland	46	52	4	16	16	17	16	14
Italy	21	24	2	5	5	6	7	7
Latvia	5	13	6	10	10	11	9	16
Lithuania	20	20	5	7	7	9	10	10
Luxembourg	47	50	3	12	12	11	14	12
Macedonia	:	14	:	:	:	2	:	7
Malta	21	23	3	5	5	8	10	10
<b>Netherlands</b>	<b>14</b>	<b>15</b>	<b>3</b>	<b>16</b>	<b>16</b>	<b>19</b>	<b>19</b>	<b>17</b>
Norway	17	20	2	18	18	22	22	22
Austria	9	12	1	6	6	9	8	9
Poland	19	28	:	5	5	7	7	8
Portugal	26	33	1	4	4	5	6	8
Romania	8	11	1	:	:	3	3	3
Slovenia	24	31	2	7	7	9	11	10
Slovakia	3	14	1	11	11	10	11	13
Spain	19	25	5	:	:	:	10	12
Czech Republic	17	10	1	2	2	4	4	5
Turkey	42	65	9	1	1	:	:	:
United Kingdom	24	25	5	16	16	16	15	20
Sweden	27	33	3	23	23	24	18	22

Source: Eurostat

#### Classic mass media (Table 15)

The internet is increasingly being used to obtain access to online versions of classic mass media. This also occurs in the Netherlands approximately twice as much as the overall average for the EU 27. The use of online newspapers, magazines, radio and television is increasing strongly.

**Table 15**  
Internet activities related to mass media; Europe 2005 - 2008

	Web radio / Web TV				Online newspapers / magazines			
	2005	2006	2007	2008	2005	2006	2007	2008
EU 27	10	11	15	20	17	18	21	25
Belgium	:	11	13	15	13	16	17	21
Bulgaria	:	11	10	13	:	11	10	15
Cyprus	9	9	13	12	15	20	22	23
Denmark	19	27	34	37	38	46	47	52
Germany	:	12	15	21	:	19	21	21
Estonia	15	17	21	19	46	50	50	54
Finland	17	20	24	33	41	46	50	57
France	:	10	17	24	:	9	18	22
Greece	4	5	8	16	9	14	16	19
Hungary	7	12	16	18	18	25	28	33
Ireland	4	9	10	13	4	8	10	17
Iceland	31	43	48	57	65	67	67	69
Italy	5	5	8	9	13	13	17	17
Latvia	11	17	20	24	24	27	18	33
Lithuania	11	17	20	19	24	30	32	43
Luxembourg	19	22	29	36	29	29	42	41
Macedonia	:	5	:	15	:	7	:	22
Malta	8	10	14	21	14	17	20	27
<b>Netherlands</b>	<b>20</b>	<b>28</b>	<b>35</b>	<b>45</b>	<b>29</b>	<b>36</b>	<b>40</b>	<b>43</b>
Norway	24	34	37	42	60	65	:	73
Austria	5	7	7	13	21	26	24	30
Poland	6	10	13	18	13	16	15	19
Portugal	9	11	14	17	16	16	15	20
Romania	:	4	6	7	:	7	9	14
Slovenia	10	15	23	26	20	24	23	34
Slovakia	6	8	11	17	23	25	25	34
Spain	24	:	17	23	:	:	24	27
Czech Republic	3	6	8	13	12	19	22	33
Turkey	4	:	:	:	8	:	:	:
United Kingdom	15	15	18	26	24	23	22	37
Sweden	21	28	33	42	39	41	43	45

Source: Eurostat

### Transactions

Use of the internet to conduct transactions with businesses and government agencies increased strongly between 2005 and 2008. Here, too, the Netherlands score is nearly twice as high as the European average. After Finland, the Netherlands has the highest percentage of users of internet banking (69%). The Netherlands also ranks highly in the case of transactions with the government. The most important success factor here is the online tax return facility: more than 82% of the people who had to file a tax return in the Netherlands in 2008 did so online. The number of people conducting online transactions with government agencies is still only about half the number conducting commercial transactions and using internet banking.

**Table 16**  
Internet activities related to personal transactions; Europe 2005 - 2008

	Selling products or services				Ordering products or services				Online banking				Sending completed forms to government agencies			
	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008	2005	2006	2007	2008
EU 27	6	9	10	10	24	26	30	32	19	21	25	29	6	9	13	12
Belgium	:	7	8	10	16	19	21	21	23	28	35	39	4	7	8	5
Bulgaria	:	1	1	1	:	2	3	3	:	1	2	2	:	2	3	3
Cyprus	0	1	1	1	5	7	10	9	6	6	12	11	2	3	10	6
Denmark	5	17	22	19	48	55	56	59	49	57	57	61	:	17	33	27
Germany	:	20	21	18	42	49	52	53	:	32	35	38	:	9	17	10
Estonia	4	3	5	5	7	7	9	10	45	48	53	55	17	17	20	24
Finland	9	14	13	14	38	44	48	51	56	63	66	72	11	15	17	18
France	:	:	7	10	:	22	35	40	:	18	32	40	:	12	18	25
Greece	1	0	:	:	2	5	8	9	1	2	4	5	3	2	5	4
Hungary	1	3	4	5	8	7	11	14	6	8	12	13	7	5	13	11
Ireland	1	4	3	3	19	28	33	36	13	21	24	28	9	14	19	18
Iceland	6	8	12	:	44	50	50	47	61	67	72	68	20	27	19	20
Italy	2	3	4	4	6	9	10	11	8	9	12	13	4	5	5	5
Latvia	1	2	2	:	5	8	11	16	16	22	28	39	5	6	6	6
Lithuania	1	2	1	1	2	4	6	6	10	15	21	27	6	6	11	13
Luxembourg	6	5	12	12	39	44	47	49	37	41	46	48	19	17	21	16
Macedonia	:	1	:	1	:	2	:	2	:	0	:	3	:	2	:	1
Malta	1	3	7	5	14	14	20	22	16	16	22	25	6	4	9	7
<b>Netherlands</b>	<b>14</b>	<b>18</b>	<b>20</b>	<b>25</b>	<b>43</b>	<b>48</b>	<b>55</b>	<b>56</b>	<b>50</b>	<b>59</b>	<b>65</b>	<b>69</b>	<b>20</b>	<b>30</b>	<b>33</b>	<b>32</b>
Norway	6	10	8	11	55	61	63	63	62	67	71	75	21	28	26	27
Austria	4	8	7	7	25	32	36	37	22	27	30	34	12	12	13	14
Poland	1	5	5	7	7	12	16	18	6	9	13	17	3	:	4	5
Portugal	1	1	:	:	6	7	9	10	8	10	12	14	9	11	13	13
Romania	:	0	1	1	:	1	3	4	:	1	2	2	:	1	2	3
Slovenia	:	8	9	17	:	13	16	18	12	16	19	21	:	6	6	7
Slovakia	0	2	2	5	9	11	16	23	10	13	15	24	7	7	8	12
Spain	2	3	3	4	12	15	18	20	14	15	16	20	6	7	8	9
Czech Republic	:	5	:	:	5	13	17	23	5	10	12	14	1	3	4	4
Turkey	0	:	:	:	1	:	:	:	2	:	:	:	1	:	:	:
United Kingdom	8	12	13	15	44	45	53	57	27	28	32	38	5	:	18	12
Sweden	10	14	13	15	50	55	53	53	51	57	57	65	21	:	24	26

Source: Eurostat

## 2.5.2 National data and trends

For the Netherlands, we have data available from Statistics Netherlands (CBS); this data collection categorizes the social background of users more distinctly than the European statistics do. In Table 17 we can see that young people and those with better education systematically engage more in all types of internet activity than older people and the less well educated. There is no difference between men and women, except in the category current affairs and news (more men) and health-related information (more women). In the case of searches for health-related information, we see that besides the better educated category there are relative more users in the higher age groups.

**Table 17**  
Personal internet activities by sex, age and educational level; the Netherlands 2008

			Total	Sex		Age				Education		
				male	female	12-25	25-45	45-65	65-75	low	med	high
Communications	Total communications	2005	93	94	93	96	95	90	87	89	94	98
		2006	94	94	94	96	96	92	90	91	95	98
		2007	95	95	96	97	96	94	92	93	95	98
		2008	96	96	96	98	96	94	90	92	97	98
	Sending / receiving email	2005	92	92	92	92	93	90	86	85	93	98
		2006	93	93	93	93	95	92	90	88	94	98
		2007	94	94	94	95	95	93	91	91	94	97
		2008	94	94	95	96	95	93	90	89	96	98
	Telephone calls	2005	6	8	5	7	8	5	3	5	8	6
		2006	12	14	10	13	13	10	10	9	13	14
		2007	26	27	24	44	25	16	10	28	26	23
		2008	21	24	17	21	22	19	13	19	21	23
	Other	2005	40	41	39	83	32	20	6	55	38	24
		2006	40	41	39	83	34	17	15	53	38	28
		2007	35	37	33	72	32	16	6	44	34	27
		2008	27	28	25	53	27	11	9	33	26	20
Information	Total information	2005	90	90	89	85	93	90	83	82	92	96
		2006	90	90	91	84	95	91	82	83	94	95
		2007	91	91	90	84	94	93	85	82	93	98
		2008	90	91	88	82	94	90	85	79	94	97
	Searching for information on goods and services	2005	87	88	86	83	91	86	77	79	90	93
		2006	88	89	88	82	93	89	74	81	92	92
		2007	89	89	88	82	92	90	79	79	92	96
		2008	86	89	83	78	91	87	75	74	89	94
	Using services in the travel sector	2005	49	49	49	36	53	54	48	34	53	62
		2006	50	48	52	33	56	54	50	37	50	64
		2007	54	52	55	37	58	61	49	41	54	69
		2008	55	55	55	41	59	59	55	41	56	69
Current affairs and news	2005	46	51	40	51	49	38	31	40	47	51	
	2006	58	63	52	64	61	50	41	52	59	63	
	2007	63	68	58	71	65	57	43	60	62	66	
	2008	68	73	63	77	71	61	54	64	67	74	
Work and vacancies	2005	19	19	19	21	26	11	0	14	21	24	
	2006	22	21	22	23	29	13	1	16	22	26	
	2007	21	21	22	24	28	13	1	16	22	26	
	2008	18	17	20	19	24	14	1	14	20	21	
Health	2005	50	45	55	40	56	49	48	41	53	55	
	2006	54	47	61	40	60	57	48	43	59	58	
	2007	52	46	58	37	56	57	53	42	55	58	
	2008	51	46	56	34	56	55	53	40	54	59	

Source: Statistics Netherlands (CBS) Statline

From Table 18 it becomes clear that the better educated make much more use, often twice as much, of commercial and financial applications and government applications than do the less well educated. The differences by age are not so great; people in the middle age groups are the greatest users of online government services.

The results for the entertainment category are very interesting. There is firstly a substantial difference between the age groups, online entertainment clearly being more attractive to young people than to older people. There are also differences between the sexes, with men making more use of such activities than women. The most interesting difference, however, is determined by educational level. In the case of entertainment in general, and games and music on the internet in particular, there are still more users among the less well educated than among the better educated.

**Table 18**  
Personal internet activities by sex, age and educational level; the Netherlands 2008

			Total	Sex		Age				Education		
				male	female	12-25	25-45	45-65	65-75	low	med	high
Commerce	Total commercial products	2005	70	73	66	54	81	68	53	51	77	82
		2006	76	79	73	61	86	77	60	57	83	88
		2007	80	82	77	65	89	81	62	65	85	90
		2008	82	84	79	66	92	82	67	65	88	93
	Banking via internet	2005	58	62	54	40	69	59	47	38	66	72
		2006	67	70	65	49	78	70	55	46	74	82
		2007	72	75	69	54	83	75	53	55	79	85
		2008	74	77	72	56	85	76	63	55	81	88
	Financial transactions	2005	5	7	2	2	5	7	4	2	4	8
		2006	8	12	4	3	9	11	7	3	8	14
		2007	7	10	4	4	8	10	7	3	7	12
		2008	8	10	6	5	8	11	9	5	7	14
Buying / selling of goods	2005	45	50	39	38	54	41	25	32	49	56	
	2006	49	55	43	38	62	45	21	33	54	62	
	2007	53	58	47	42	64	51	30	37	58	66	
	2008	52	55	49	42	66	47	24	39	54	64	
Government	Total government	2005	55	60	48	36	63	59	46	36	57	74
		2006	60	67	51	37	68	66	57	37	62	81
		2007	62	66	57	41	69	68	56	41	65	81
		2008	59	66	51	34	70	63	50	35	63	79
	Government agencies' website searches	2005	49	54	43	35	56	51	39	33	51	66
		2006	53	61	44	34	60	58	52	32	55	73
		2007	55	60	50	38	60	61	50	35	59	74
		2008	52	59	45	31	62	57	44	29	56	73
	Downloading official documents	2005	26	32	18	11	32	29	20	11	25	43
		2006	31	39	23	14	38	35	35	14	31	50
		2007	33	39	27	19	37	38	29	16	33	51
		2008	33	39	27	14	43	36	25	14	35	51
Sending filled-in documents	2005	24	28	19	8	30	28	27	11	24	39	
	2006	34	42	25	14	41	39	35	17	36	51	
	2007	36	41	30	16	41	44	33	19	37	54	
	2008	34	40	28	13	45	38	31	17	36	52	
Entertainment	Total entertainment	2005	57	64	50	83	55	43	33	65	55	52
		2006	61	67	55	85	60	47	38	66	59	59
		2007	64	68	59	88	62	52	45	70	61	61
		2008	75	81	69	91	78	64	52	74	74	77
	Games / music	2005	50	53	47	80	48	32	23	61	48	39
		2006	55	57	51	83	54	36	28	63	53	46
		2007	56	59	53	86	55	39	31	66	54	48
		2008	47	54	41	42	53	45	42	37	49	57
	Downloading software	2005	27	38	14	30	29	24	15	22	27	33
		2006	31	42	19	37	32	27	21	25	31	39
		2007	34	44	24	40	35	30	24	28	35	41
		2008	37	47	26	47	38	31	22	32	36	43

Source: Statistics Netherlands (CBS) Statline

### Overall conclusions regarding types of use

Except for email, searching for information and conducting transactions are the most important applications used on the internet. Use of such applications increased significantly during 2005 and 2006. Use in the Netherlands rose to a relatively high level, nearly twice as high as the average for the other countries of the EU in fact. Strangely, use of the internet for learning purposes in the Netherlands is below the European average. One possible interpretation of this data is that the effect of problem with skills is underestimated in the Netherlands.

The better educated use all applications, except those related to entertainment, significantly more than the less well educated. Younger people do so more than older people. The difference between the sexes is less pronounced.

## 2.6 Computer and internet skills

Both scientific literature and practice-oriented skills measurements suggest that there is little consensus as to what constitutes computer and internet skills. Varying terminology is used, and the underlying concepts are often very restricted. This is immediately clear from both international and national data: the skills themselves are not assessed, but the measurements are derived from the activities that people carry out with the aid of computers or the internet. One reason for this is that it has only recently been acknowledged how important a role skills play in the mastery of computers and the internet. For a long time, the key factor was seen as physical access. As a result, there is a lack of valid measuring instruments that can be used to assess actual ability. To obtain the required data nonetheless, we have to use information from large-scale surveys. It goes without saying that this data cannot be the basis of any definite conclusions.

As there was no clear definition of internet skills, and actual skills measurements were scarce, researchers at the University of Twente carried out two large-scale measurements of performance<sup>4</sup>. The results of this exercise are included in the overview of national data. Before the measurements could be carried out, the term 'internet skills' needed to be clearly defined. This definition distinguishes between four types of internet skills:

Operational skills, meaning that a person can...

- ...use an internet browser:
  - open websites by typing the URL into the address bar,
  - advance and retreat between internet pages using the browser buttons,
  - save files to the hard disk,
  - open and save files in various formats (e.g. PDF),
  - save website addresses in Favorites,
  - use a hyperlink.
- ...use an internet search engine:
  - enter search terms into a search field,
  - implement a search request,
  - open resulting links from the list of search results.
- ...use online forms:
  - use the various types of input fields and buttons (e.g. drop down menus),
  - send a form.

Formal skills, meaning that a person can...

- ...navigate on the internet:
  - use hyperlinks (in a menu, in text or illustrations, etc.), in varying menu and website layouts.
- ...maintain a sense of orientation while navigating on the internet:
  - not become disoriented within a website,
  - not become disoriented while surfing between websites,
  - not become disoriented while opening and surfing between search results.

Information skills, meaning that a person can...

- ...find and use information, by:
  - choosing a suitable search method (or location from which to search for information),
  - defining search terms that are appropriate to the information requirement,
  - selecting the appropriate sources of information,

<sup>4</sup> Van Deursen, A. and Van Dijk, J. (2008). *Digitale vaardigheden van Nederlandse burgers [The digital skills of Dutch people]*. Enschede: University of Twente



- evaluating the sources of information.

Strategic skills, meaning that a person can...

- ...derive advantage from using the internet by:
  - focusing on a particular goal,
  - taking the right actions to achieve that goal,
  - taking the right decisions to achieve that goal,
  - attaining the advantages of that goal.

This four-part distinction can also be applied to computer skills. Operational skills are the ability to operate a computer, formal skills are the ability to browse through disks and folders, information skills are the ability to find information in computer files or programmes and strategic skills are being able to use computers and computer programmes in such a way that a personal or professional goal can be achieved. Unfortunately, these broad definitions are not yet in common use. Both computer and internet skills are largely measured on the basis of the number of activities carried out. The more different activities a person has ever carried out, the better his skills; at least, that is the assumption.

### 2.6.1. International data and trends

Attention is paid to computer and internet skills at European level via the EU statistics portal 'Eurostat'. The EU Commission includes the data so obtained in the Flash Eurobarometer. Both benchmarks measure the skills level on the basis of surveys in which respondents are asked which of a number of possible **activities** they have ever carried out. *There is no estimation, measurement or observation of actual skills.* The data concerning both computer skills and internet skills are therefore more an indication of the type of use than of the skills that a person has (and, as such, would probably be more appropriately included in the previous section). There is a real need, at an international level, for a method by which computer skills and particularly internet skills can be measured by means of surveys. Since there is an assumed correlation between the type of use and the skills level, these indicators can actually be used to identify trends.

Eurostat uses the following activities to measure *computer* skills:

- copying or moving files or folders;
- duplicating or moving information by means of Copy and Paste;
- using arithmetic formulae in a spreadsheet;
- compressing files;
- connecting and installing new equipment/peripherals;
- writing a computer programme.

Respondents are then divided into three categories according to their skills level:

- Low skills level: the respondent has carried out one or two of the specified activities;
- Medium skills level: the respondent has carried out three or four of the specified activities;
- High skills level: the respondent has carried out five or six of the specified activities;

**Table 19**

Percentage of persons with low (1-2 activities), medium (3-4 activities) and high (5-6 activities) **computer** skills; Europe 2005 - 2007.

	2005			2006			2007		
	low	medium	high	low	medium	high	low	medium	high
EU27	15	27	22	13	23	21	13	24	23
Belgium	:	:	:	15	23	22	16	24	22
Bulgaria	:	:	:	11	13	6	10	15	7
Cyprus	9	22	15	9	18	19	10	18	19
Denmark	13	37	39	14	32	38	13	30	36
Germany	23	34	22	17	31	27	15	32	28
Estonia	16	18	29	10	18	25	11	20	24
Finland	17	37	13	15	29	29	17	26	29
France	:	:	:	10	23	21	12	27	27
Greece	12	14	9	14	14	16	11	16	15
Hungary	7	16	20	10	21	25	10	22	27
Ireland	:	:	:	13	10	19	17	19	18
Iceland	11	33	42	13	35	36	15	34	36
Italy	5	18	19	8	17	17	8	17	19
Latvia	20	24	11	16	20	12	16	23	14
Lithuania	10	19	18	11	20	16	9	21	19
Luxembourg	13	25	42	11	26	36	10	29	39
Macedonia	:	:	:	25	10	3	:	:	:
Malta	9	23	17	8	19	21	9	20	17
<b>Netherlands</b>	<b>17</b>	<b>36</b>	<b>33</b>	<b>16</b>	<b>29</b>	<b>33</b>	<b>16</b>	<b>31</b>	<b>32</b>
Norway	23	32	35	16	28	37	16	30	37
Austria	12	26	31	12	24	31	12	26	33
Poland	19	22	13	16	18	11	16	20	12
Portugal	9	16	21	8	14	21	9	16	22
Romania	:	:	:	13	10	5	14	10	5
Slovenia	12	22	27	10	20	28	12	21	28
Slovakia	17	35	19	18	30	17	18	30	18
Spain	:	:	:	10	20	23	9	20	28
Czech Republic	:	:	:	16	22	14	17	21	17
United Kingdom	16	29	31	12	27	26	15	30	26
Sweden	20	37	32	18	33	30	18	33	27

Source: Eurostat

It is immediately clear from Table 19 that the level of computer skills in the Netherlands either remained the same or in some cases declined between 2005 and 2007. In that same period, the percentage of people with a medium computer skills level fell by approximately 5%, and the percentage with a high computer skills level fell by approximately 1%. This is a trend that is only seen in a small number of countries. Notably, as we shall see further on, the number of people in the Netherlands who have ever taken a computer course has actually declined in recent years. Even so, in comparison with other countries, the Netherlands has a relatively high score as only five other countries have a larger percentage of people who are classified as having a high level of computer skills. Nonetheless, there is still a reasonably large percentage of people with a low computer skills level (people who use the computer for only one or two of the specified activities).

In order to measure **internet** skills, respondents were asked which of the following activities they had ever carried out:

- using a search engine to find information;
- sending an email with an attachment;
- posting messages in chatrooms, newsgroups or discussion forums;
- making a telephone call via the internet;
- sharing folders with other people so as to exchange music, films etc.;
- creating a web page.

**Table 20**

Percentage of persons with low (1-2 activities), medium (3-4 activities) and high (5-6 activities) *internet* skills; Europe 2005 - 2007

	2005			2006			2007		
	low	medium	high	low	medium	high	low	medium	high
EU 27	31	17	5	30	19	6	29	23	8
Belgium	:	:	:	39	19	5	40	23	5
Bulgaria	:	:	:	10	13	5	13	15	7
Cyprus	20	9	2	20	11	3	25	12	3
Denmark	47	27	7	40	33	13	37	34	12
Germany	41	20	4	41	25	5	41	27	6
Estonia	18	21	20	17	24	21	20	25	20
Finland	37	25	8	39	28	10	39	29	11
France	:	:	:	:	:	:	26	27	12
Greece	20	5	1	23	9	3	22	11	4
Hungary	19	16	3	23	19	7	22	24	8
Ireland	37	5	1	42	7	3	42	12	3
Iceland	37	32	13	35	36	16	31	37	20
Italy	14	15	6	14	16	7	15	18	9
Latvia	27	15	3	29	17	6	22	26	11
Lithuania	20	13	4	20	16	9	18	20	13
Luxembourg	34	28	9	31	31	10	28	37	14
Macedonia	:	:	:	21	8	1	:	:	:
Malta	28	12	2	22	15	4	22	19	5
<b>Netherlands</b>	<b>49</b>	<b>25</b>	<b>6</b>	<b>44</b>	<b>29</b>	<b>9</b>	<b>39</b>	<b>33</b>	<b>12</b>
Norway	39	28	9	35	30	14	38	32	14
Austria	38	16	3	36	20	7	38	23	8
Poland	22	14	4	22	17	7	24	19	7
Portugal	20	13	4	22	13	4	16	19	8
Romania	:	:	:	14	7	2	16	10	2
Slovenia	30	17	:	27	19	8	25	23	10
Slovakia	39	15	3	34	19	5	34	23	7
Spain	:	:	:	27	20	4	23	25	8
Czech Republic	:	:	:	30	14	4	25	17	11
United Kingdom	:	:	7	38	18	5	41	22	8
Sweden	52	14	1	48	26	8	45	25	8

Source: Eurostat

It is immediately clear from Table 20 that there are relatively few people with a high level of internet skills: only 12% of the respondents (at 8%, the EU 27 average is even lower). This percentage is, however, twice that reported in 2005. The Netherlands is sixth in the EU league table. It should be noted that the Netherlands also has a high ranking in terms of the number of people with low and medium level internet skills. It is clear that the vast majority of the people who have ever used internet have only low level skills (i.e. they carry out only one or two of the specified activities). It seems that only a small percentage of people use the full potential of the internet.

Notably, as can be seen from Table 21, the percentage of better educated people with a high internet skills level is low, only 13%. In this respect, the Netherlands' score is in line with the European average, although the percentage is increasing. Research carried out by the University of Twente has shown that educational level has a high level of correlation with the internet skills level. One explanation for the lower percentages in Table 21 probably lies in the fact that activities are being measured, not actual skills. Nonetheless, it is surprising that the better educated in the Netherlands should score relatively low (i.e. carry out few activities on the internet) compared with their peers in other countries.

**Table 21**  
Percentage of people with *high internet* skills, by educational level; Europe 2005 - 2007

	Lower educational level			Medium educational level			Higher educational level		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
EU 27	3	3	5	5	6	8	7	10	13
Belgium	:	3	3	:	4	5	:	8	9
Bulgaria	:	2	3	:	4	5	:	12	15
Cyprus	1	1	1	3	2	2	4	8	6
Denmark	7	12	10	6	11	11	9	15	16
Germany	5	6	7	3	5	6	4	5	7
Estonia	16	21	19	16	16	16	31	31	29
Finland	8	9	9	7	10	11	8	11	12
France	:	:	6	:	:	19	:	:	20
Greece	0	0	1	1	4	4	2	6	9
Hungary	1	3	3	5	8	10	8	13	13
Ireland	0	1	1	1	3	3	2	6	6
Iceland	12	17	18	14	13	20	15	22	23
Italy	2	3	3	9	10	15	14	17	21
Latvia	2	6	10	3	5	8	6	10	20
Lithuania	5	10	14	3	6	9	8	16	20
Luxembourg	7	9	11	8	9	14	13	14	18
Macedonia	:	:	:	:	:	:	:	:	:
Malta	1	4	3	4	6	12	8	3	11
<b>Netherlands</b>	<b>4</b>	<b>6</b>	<b>10</b>	<b>7</b>	<b>9</b>	<b>14</b>	<b>5</b>	<b>12</b>	<b>13</b>
Norway	7	10	16	9	14	9	11	17	17
Austria	2	6	6	3	6	7	4	9	13
Poland	5	7	8	4	6	6	7	14	12
Portugal	2	2	3	12	12	20	11	10	20
Romania	:	0	1	:	2	2	:	8	9
Slovenia	:	5	7	:	7	9	:	16	18
Slovakia	1	4	5	3	5	7	4	9	10
Spain	:	2	3	:	6	12	:	8	14
Czech Republic	:	3	13	:	3	9	:	10	26
Turkey	:	:	:	:	:	:	:	:	:
United Kingdom	2	:	:	8	5	8	9	10	11
Sweden	1	7	5	1	7	6	2	11	12

Source: Eurostat

Table 22 on the next page shows that the number of people with a high internet skills level is increasing in nearly all European countries, except among the 55 - 74 age group. The percentage in this group remains small. In the case of younger people, the Netherlands scores well in comparison with other countries. The Netherlands ranks as average in the 25 - 34 age group, and from 35 years on the percentage with a high internet skills level is low. The same in fact applies to all countries.

**Table 22**  
Percentage of people with *high internet* skills, by age; Europe 2005 - 2007

	16-24			25-34			35-44			45-54			55-74		
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
EU 27	14	16	23	8	10	13	4	5	7	2	2	4	0	1	1
Belgium	:	11	13	:	7	7	:	4	5	:	3	3	:	1	1
Bulgaria	:	14	19	:	7	10	:	4	5	:	2	3	:	0	:
Cyprus	7	6	7	4	8	4	1	3	2	0	0	2	0	0	0
Denmark	15	30	29	14	21	22	9	11	11	4	9	7	1	3	2
Germany	14	16	19	:	10	13	:	3	4	:	1	:	:	:	:
Estonia	34	51	44	26	29	34	25	21	18	15	11	10	:	:	:
Finland	23	23	26	15	25	26	4	8	11	3	2	3	0	1	0
France	:	:	36	:	:	15	:	:	9	:	:	7	:	:	:
Greece	3	6	10	1	5	7	0	3	3	1	2	2	0	0	0
Hungary	7	17	21	5	10	11	3	5	6	3	4	4	1	1	1
Ireland	2	5	6	1	5	6	1	3	3	0	1	1	0	0	0
Iceland	33	37	45	23	29	31	8	11	17	5	5	7	1	3	3
Italy	14	17	24	11	13	18	6	7	9	3	4	6	:	1	1
Latvia	10	21	28	4	8	15	2	4	9	1	2	4	0	0	1
Lithuania	14	29	37	5	14	20	2	5	7	1	2	4	0	0	1
Luxembourg	27	29	40	13	14	18	6	9	11	5	5	9	1	3	2
Macedonia	:	:	:	:	:	:	:	:	:	:	:	:	:	0	:
Malta	9	:	21	4	:	5	0	:	3	0	:	3	0	:	:
<b>Netherlands</b>	<b>18</b>	<b>25</b>	<b>37</b>	<b>9</b>	<b>12</b>	<b>19</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>1</b>
Norway	24	36	31	17	27	29	9	13	10	4	4	7	1	1	1
Austria	10	20	20	5	10	13	2	5	7	1	2	4	0	:	:
Poland	14	22	23	7	11	11	2	3	4	1	1	1	0	:	:
Portugal	12	14	24	8	7	14	2	:	4	:	:	2	:	:	:
Romania	:	7	7	:	3	3	:	2	2	:	1	1	:	:	:
Slovenia	:	26	28	:	14	18	:	7	8	:	1	4	0	0	1
Slovakia	7	12	18	4	7	9	2	4	4	0	2	3	0	1	0
Spain	:	11	22	:	6	13	:	3	7	:	2	3	:	0	1
Czech Republic	:	10	29	:	5	15	:	4	10	:	1	7	:	:	2
Turkey	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
United Kingdom	:	12	22	9	9	10	6	6	7	4	:	:	1	:	:
Sweden	3	19	16	3	17	15	1	7	8	1	3	3	0	1	1

Source: Eurostat

With the Flash Eurobarometer, the European Commission has used a comparable method for measuring internet skills. Here, too, it is not the skills that are being measured; the respondents are asked which of a number of specific activities they have ever carried out. The activities surveyed in the Eurobarometer are:

- sending and receiving emails or instant messages (A);
- buying products or services on the internet (B);
- internet banking (C);
- playing or downloading games, pictures, films, music or software (D);
- filling in and sending forms to government agencies (E);
- following an online course or using the internet to learn something (F);
- having a profile on or sending a message via a social networking site (G);
- using a search engine to find information (H);
- reading, listening to or watching news on the internet (I);
- uploading photos, videos or other files so that others can see them (J);
- using internet as part of everyday work (K);
- sending/transferring internet files to other equipment (L);

**Table 23**  
The internet skills (per activity) of internet users; Europe 2008

	A	B	C	D	E	F	G	H	I	J	K	L
EU 27	92.5	60.3	51.1	48.7	44.5	35.1	31.9	94.1	75.8	40.8	55.7	42.1
Belgium	94.7	45.5	66.8	48.9	40.4	35.8	33	95	68.1	48	58	40.5
Bulgaria	80.4	25	14.6	69.8	28.7	24	23.4	88.2	75.7	53.1	52.2	57.7
Cyprus	83.5	38.6	33.8	55.8	30.6	30.5	33.2	84.2	62.1	36.8	66.5	46.2
Denmark	94.5	74.7	77.6	50.5	61.3	31.2	43	94.3	84.9	38.8	62.8	41.3
Germany	94.1	67.4	46.5	37.3	38.6	37.2	26.1	96.1	77.2	30.7	54.9	32.2
Estonia	92.2	42.8	85.9	59.1	54.9	29.8	36.5	87.8	89	52.3	61.6	40
Finland	94.1	63.5	88.1	46.7	50	49.8	36.4	95.4	85.7	31.3	47.3	32.6
France	94.8	73	67.1	44.7	63.3	36.8	24	97	75.2	41.6	55.1	36.4
Greece	79.9	26.4	17.2	70.6	33.2	29.7	33.2	90.7	71.6	45.3	53.7	57.3
Hungary	94.2	40.1	29.2	66.4	51.8	30.6	45.1	95.8	88.8	45.9	48.2	38.2
Ireland	91.9	64.8	46.8	41.6	43.3	34.2	38.8	93.2	53.5	38.9	47.2	46.2
Italy	90.6	43.3	34.9	44.7	44.5	27.4	25.1	95.7	85.7	39.5	60.2	44.4
Latvia	89.7	52.1	68	66	40.2	39.8	47.7	91	90.4	65.8	60.9	46.2
Lithuania	80.9	27.2	48.6	66.3	37.5	54.7	35.6	88.9	79	44.7	47.9	45.7
Luxembourg	93.7	64	56.4	53.2	47.9	33.2	32.2	94.2	79.6	39.1	55.3	38.7
Malta	91.5	57.9	59.6	54.9	45	44	38.1	92.4	75.9	48.6	52.2	47
<b>Netherlands</b>	<b>95.5</b>	<b>57.8</b>	<b>78.1</b>	<b>49.1</b>	<b>52.1</b>	<b>26</b>	<b>32.7</b>	<b>94.9</b>	<b>56.9</b>	<b>38.5</b>	<b>53.8</b>	<b>40.1</b>
Austria	90.7	63.6	51.5	46.4	55.5	30.4	32.6	96.6	80.9	41.7	56.9	36.7
Poland	92.6	68.2	54.2	70.6	32.1	42.9	51.8	96.2	84	59.5	53.7	54.9
Portugal	90.4	33.8	37.7	46.6	43	42.2	48.1	91.1	81.4	42.8	63.1	45
Romania	82.3	25.6	12.8	65.5	15.6	39.1	26.5	75.4	65.9	50.8	55.5	43.4
Slovenia	95.5	49.4	48.4	61.6	34	37.1	17.3	94.3	89.1	41.2	77.8	52.1
Slovakia	91.2	51.1	49.3	64	44.6	41	37.7	87.1	79.7	46.3	56.8	51.7
Spain	91.2	42.5	40.5	54.7	41.4	29	24.3	93.4	79.5	37.3	55	53.7
Czech Republic	94.4	65.1	56.7	51.9	41.4	30.8	29.1	81.8	80.9	50.9	56.6	43.7
United Kingdom	93.2	77.8	55.9	41.8	45.8	37.2	38.8	93.3	62.5	40.1	55	42.6
Sweden	95.1	69.9	73	47.8	56.9	35.6	37.7	93.9	84.7	30.6	63.6	39.5

Source: Eurobarometer Flash

The above table shows that the Netherlands scores very high in terms of internet banking and very low in terms of following a course on the internet in order to learn something, and also in terms of reading, listening to or watching news via the internet. The Netherlands also scores below the European average in terms of uploading photos, videos or other files, using the internet for everyday work and sending internet files to other equipment.

## 2.6.2 National data and trends

The level of computer skills in the Netherlands is measured by Statistics Netherlands [*Centraal Bureau voor de Statistiek*, CBS]. As with other European measurements, there is no actual measurement of skills level; the CBS asks respondents which of the following activities they have ever carried out:

- copying/moving a file or folder;
- copying or pasting information;
- using a simple form within a spreadsheet;
- compressing files/folders (zipping);
- programming;
- none of the above.

While we noted under 'usage' that the frequency of using computers has increased, Table 24 shows that the skills have remained roughly the same over the past four years. In the case of two skills, compressing folders and files and writing software, the skills level among the better educated has clearly risen. There is a marked

difference between the sexes in terms of compressing files and writing software, and that difference has not become any smaller in the past four years.

**Table 24**

Computer skills of all people using a computer, by sex, age and educational level; the Netherlands 2005 - 2008

		Total	Sex		Age				Education		
			male	female	12-25	25-45	45-65	65-75	low	med.	high
Copying or pasting information	2005	83	87	78	91	86	77	56	74	84	94
	2006	73	73	73	80	77	68	54	67	74	79
	2007	85	88	82	95	89	79	58	77	86	95
	2008	83	86	79	93	88	76	54	72	84	94
Using a simple form within a spreadsheet	2005	81	84	78	93	85	73	50	71	82	93
	2006	82	86	78	95	86	73	52	73	82	93
	2007	83	85	81	96	87	75	52	73	84	95
	2008	81	83	79	96	86	73	45	70	82	93
Compressing files/folders (zipping)	2005	50	60	40	50	58	45	24	34	53	69
	2006	53	62	43	54	61	47	24	35	55	72
	2007	52	61	43	53	60	48	22	35	55	72
	2008	50	60	41	49	59	47	23	31	52	72
Programming	2005	44	57	30	45	51	40	17	31	47	59
	2006	50	62	37	52	57	44	27	36	50	66
	2007	47	59	34	50	54	42	20	33	50	62
	2008	47	59	34	46	56	42	22	30	47	65
None of the above	2005	14	20	7	16	16	10	4	9	11	24
	2006	10	15	4	12	12	7	4	6	9	15
	2007	14	21	6	17	16	11	2	9	11	22
	2008	11	17	5	15	14	8	4	7	10	18

Source: Statistics Netherlands (CBS) Statline

**Table 25**

Computer skills of all people using a computer, by employment status and income; the Netherlands 2005 - 2008

		Employment status				Income				
		Employed	< 12 hrs	>= 12 hrs	Unempl.	1st	2nd	3rd	4th	5th
Copying or pasting information	2005	87	82	88	69	78	81	84	84	86
	2006	77	79	77	63	69	73	72	75	77
	2007	90	92	89	70	82	81	86	86	88
	2008	88	88	88	66	75	81	82	86	88
Using a simple form within a spreadsheet	2005	85	83	85	67	77	78	82	81	86
	2006	87	90	86	66	77	80	82	84	87
	2007	88	90	87	66	79	77	82	85	88
	2008	86	88	86	61	72	79	79	86	88
Compressing files/folders (zipping)	2005	58	49	59	33	41	46	52	51	60
	2006	60	53	61	36	45	51	49	55	63
	2007	60	55	61	33	45	43	49	56	65
	2008	58	48	59	31	40	45	47	54	64
Programming	2005	52	43	53	28	36	43	46	45	50
	2006	56	55	57	37	47	46	46	52	58
	2007	54	49	54	30	42	40	45	52	52
	2008	54	48	55	29	41	43	44	49	54
None of the above	2005	16	17	16	9	12	11	14	13	17
	2006	11	9	11	7	8	9	10	11	11
	2007	16	13	16	7	12	10	13	14	17
	2008	13	12	13	8	8	13	10	11	15

Source: Statistics Netherlands (CBS) Statline

The same skills are compared with employment status and income in Table 25. The largest decline in computer skills is reported in the less well educated category. The unemployed or inactive group has the next lowest skills level. This is because this group also includes retired people in the highest age group. Notably,

the percentage of people who have none of the specified skills has increased in the second income group (low) during the past four years.

The CBS has surveyed how many people in the Netherlands have ever taken a training course to improve their computer skills. Table 26 shows that this percentage declines year on year. One notable phenomenon is that, according to the CBS data, the level of computer skills has declined slightly in the past four years, while the number of people who have ever taken a computer course continues to fall. This is a worrying trend.

**Table 26**

Percentage of people who have ever taken a computer training course of at least 3 hours; the Netherlands 2005 - 2008

	Total	Sex		Age				Education			Employment status			
		male	female	12-25	25-45	45-65	65-75	low	med.	high	Empl.oyed	< 12 hrs	>= 12 hrs	Un-empl.
2005	47	47	46	38	53	50	29	30	51	69	54	43	55	34
2006	45	46	45	38	50	49	31	29	49	65	51	38	52	35
2007	44	45	43	34	46	52	32	27	50	63	49	32	51	34
2008	39	40	37	25	42	47	28	23	41	59	43	34	44	30

Source: Statistics Netherlands (CBS) Statline

Besides computer skills, the CBS has also conducted surveys with a view to measuring the level of internet skills. These are carried out in the same way as those for computer skills. Respondents are asked which of the following *activities* they have ever carried out on the internet, namely:

- using a search engine to find information;
- sending an email with an attachment;
- posting messages in chatrooms, newsgroups or discussion forums;
- making a telephone call via the internet;
- sharing folders with other people so as to exchange music, films etc.;
- creating a web page.

Table 27 shows the percentage of people in the Netherlands who said they had mastered each of these skills (or more accurately: had carried out these activities). High percentages were recorded for the first two activities. Nearly all internet users have used a search engine or send an email with an attachment at some time. The other 'skills' attracted lower scores. The percentage of people who have ever designed a web page has decreased in the past three years. Table 27 compares the various skills by sex, age and educational level. The less well educated send fewer emails with attachments, and use search engines less than the better educated. However, the less well educated score higher than the better educated in terms of posting messages on forums and sharing folders for the exchange of films.



**Table 27**  
**Internet** skills of all people using the internet, by sex, age and educational level;  
 the Netherlands 2005 - 2008

		Total	Sex		Age				Education			
			male	female	12-25	25-45	45-65	65-75	low	med.	high	
Using search engine	a	2005	95	95	94	96	96	93	84	90	96	99
		2006	96	96	95	97	97	94	88	92	97	99
		2007	95	96	94	98	96	94	81	92	95	99
		2008	95	95	96	98	98	93	85	91	97	98
Sending an email with an attachment		2005	83	86	80	85	87	79	66	71	85	95
		2006	86	88	84	87	89	83	73	76	87	96
		2007	86	87	84	89	89	82	65	76	87	96
		2008	86	87	84	89	89	82	69	74	88	95
Posting messages in chatroom / newsgroup / forum		2005	25	28	20	49	23	10	4	26	25	22
		2006	27	30	24	48	28	12	9	28	25	28
		2007	31	34	27	54	32	16	6	31	31	29
		2008	36	39	34	66	38	20	9	40	35	34
Making a telephone call via the internet	a	2005	7	9	5	8	9	5	3	5	9	7
		2006	16	19	12	17	18	13	11	11	16	20
		2007	30	32	28	50	30	19	12	32	30	30
		2008	:	:	:	:	:	:	:	:	:	:
Sharing folders for exchange of music / films		2005	20	25	14	42	16	10	2	24	18	18
		2006	24	30	18	48	24	9	2	26	23	23
		2007	29	34	24	57	29	14	4	33	28	26
		2008	:	:	:	:	:	:	:	:	:	:
Creating a web page	a	2005	17	22	10	28	17	9	4	16	16	19
		2006	20	26	13	33	20	11	5	18	16	27
		2007	19	23	15	35	20	11	2	19	16	24
		2008	17	21	13	32	17	9	2	17	15	19
None of the above		2005	3	3	3	1	2	5	12	6	2	0
		2006	3	2	3	1	2	4	9	5	2	0
		2007	3	2	4	1	2	4	16	5	3	1
		2008	3	3	3	1	2	5	8	6	2	0

Source: Statistics Netherlands (CBS) Statline

The same skills are compared with employment status and five income levels in Table 28. In this case, the higher income groups score higher for use of a search engine and sending email with attachments, and the lower income groups score higher for posting messages and sharing folders for the exchange of films. Making phone calls via the internet increased significantly in this four year period.

**Table 28**  
**Internet** skills of all people using the internet, by employment status and income;  
 the Netherlands 2005 - 2008

		Employment status				Income				
		Employ- ed	< 12 hrs	>= 12 hrs	Unem- ployed	1st	2nd	3rd	4th	5th
Using a search engine	2005	96	94	96	90	93	94	94	96	95
	2006	97	97	97	92	95	95	96	96	97
	2007	97	97	97	89	95	92	95	96	97
	2008	97	97	97	91	94	93	96	97	96
Sending an email with an attachment	2005	87	87	87	75	76	83	85	85	87
	2006	89	89	89	80	81	85	85	89	90
	2007	90	87	90	73	81	81	86	88	90
	2008	89	91	88	77	90	89	94	93	95
Posting messages in chatroom / newsgroup / forum	2005	25	42	23	20	28	27	25	23	19
	2006	27	43	26	24	27	27	27	26	27
	2007	32	48	31	22	35	26	30	33	29
	2008	37	56	36	26	36	39	37	38	32
Making a telephone call via the internet	2005	8	10	8	6	7	7	6	7	7
	2006	17	19	16	14	16	14	17	15	16
	2007	30	45	29	25	34	30	28	30	29
	2008	:	:	:	:	:	:	:	:	:
Sharing folders for exchange of music / films	2005	20	33	18	16	24	21	20	19	15
	2006	24	42	22	21	26	26	23	25	21
	2007	30	47	28	22	35	27	29	31	25
	2008	:	:	:	:	:	:	:	:	:
Creating a web page	2005	17	22	17	13	18	15	19	16	15
	2006	20	27	19	15	21	17	20	19	20
	2007	20	27	19	14	21	18	18	21	19
	2008	17	29	16	12	15	16	20	15	18
None of the above	2005	2	4	2	6	4	4	3	3	2
	2006	2	3	2	5	3	3	3	3	2
	2007	2	1	2	8	3	5	4	2	2
	2008	2	2	2	6	4	5	3	1	2

Source: Statistics Netherlands (CBS) Statline

Since the measurements carried out annually by Eurostat and the CBS emphasize the type of usage instead of actual skills, very little is known about the population's practical computer and internet skills. In order to obtain more reliable and fuller insight into real-world skills levels, the University of Twente carried out a performance benchmarking on digital skills in 2007 and 2008 (the exercise has been repeated in 2009). Both measurements were based on 109 participants living in the local area. The recruitment procedure was based on quota sampling, where subjects are selected proportionately by sex, age group (four) and educational level (three). This gives a reasonable indication of the level of skills in the adult population, but cannot be deemed statistically representative for the population the Netherlands as a whole. The performance tests are so labour-intensive that it would hardly be possible to test 1000 subjects.

In the first performance test, the subjects are given nine tasks concerning government information. The second performance test was concerned with tasks related to leisure activities. Of the nine tasks, two were intended to measure operational skills, two others to measure formal skills, three to measure information skills and two to measure strategic skills. The results for the assigned tasks is summarized in Table 29. In the operational skills section, subjects were able to complete an average of 80% and 73% of the 8 items in the respective years. In the formal skills section, subjects were able to complete an average of 72% and 83% of the 5 items in the respective years. The completion rates for the information and strategic skills sections were much lower, (at 62 / 53% and 25 / 30% respectively)

as can be seen from the table below. The actual time the subjects needed to complete the tasks also varied widely.

**Table 29**

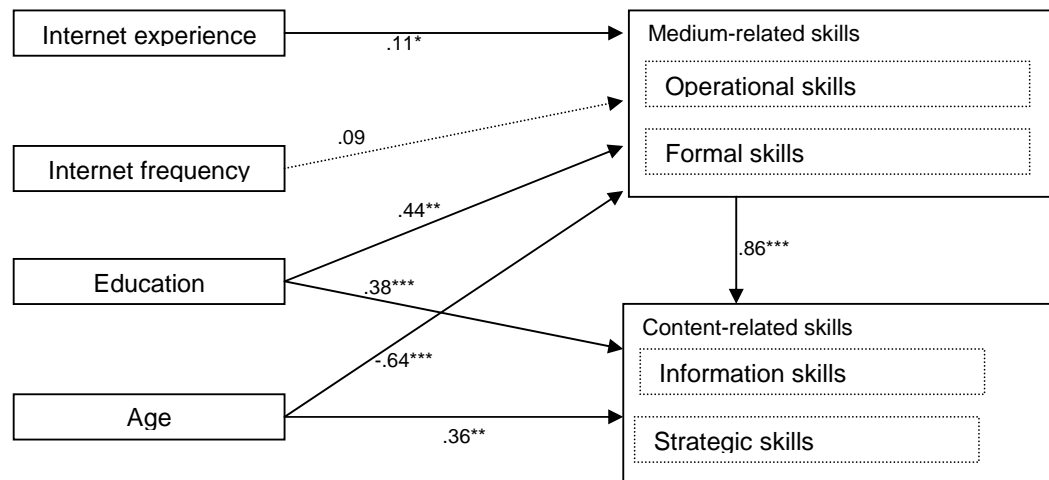
Average number of tasks completed and the time spent per type of internet skill

	Average percentage completed		Average time spent in sec. / (standard deviation)	
	2007	2008	2007	2008
Operational skills section	80	73	553 (254)	409 (185)
Formal skills section	72	83	616 (255)	443 (214)
Information skills section	62	53	939 (449)	919 (327)
Strategic skills section	25	30	1466 (575)	1628 (534)

Source: University of Twente

These results elicit the conclusion that there are not so many problems with operational and formal internet skills, and that these skills are also distributed fairly evenly. The problems and inequality sooner lie in the information and strategic internet skills.

The results of this survey give an indication that the surveys conducted by the European Commission and the CBS both sketch an overly positive image of the actual skills levels. Unfortunately, there are no standards for comparison and it is difficult to draw conclusions on the basis of absolute values. Internet skills have never been surveyed in this much detail in other countries. Since the Netherlands has a high internet penetration in households, and a relatively high educational level, the results in other parts of the world will probably be lower.



**Figure 3:** The impact of internet experience, internet usage frequency, educational level and age on medium- and content-related skills (adapted from: Van Deursen, A., Van Dijk, J. and Peters, O. (2010). Internet Skills: The Role of Gender, Age, Education, Internet Experience and Amount of Internet Use.)

Comment: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . The dotted line is a non-significant path.

Operational and formal skills together represent the medium-related skills. These are the skills that a person needs to be able to use the medium. Information and

strategic skills together represent the content-related skills. A person needs these skills to be able to deal with what the medium has to offer. Van Deursen et al. (2010) created a model to summarize the factors that have an impact on both the medium- and content-related skills (based on the two surveys carried out by the University of Twente). Figure 3 shows a simplified representation of this model.

It is also clear from Figure 3 that educational level and age are the two most important variables. Both surveys showed that, in terms of educational level, the differences are greater as the tasks become more difficult (from operational to strategic tasks). In terms of age, the older respondents score lower for both operational and formal skills compared with younger respondents. Much more notable, however, is the fact that the opposite applies to the content-related skills: the older the respondent, the better his or her content-related skills. One important conclusion is that the so-called digital generation (18-29) scores well in terms of operational and formal skills, but not significantly better than the older age groups in terms of information and strategic skills. Figure 3 also illustrates that medium-related skills have a major impact on content-related skills. A notable conclusion is that the skills level only has a low correlation to the number of years of internet experience and to the number of hours the subject spends online. This corresponds with the observation made above. Computer and internet skills did not increase in the period between 2005 and 2008, whereas - as shown previously - the frequency of use did rise sharply. These findings temper the assumption that the skills problem will resolve itself as the older generation passes on.

#### **Overall conclusions regarding skills**

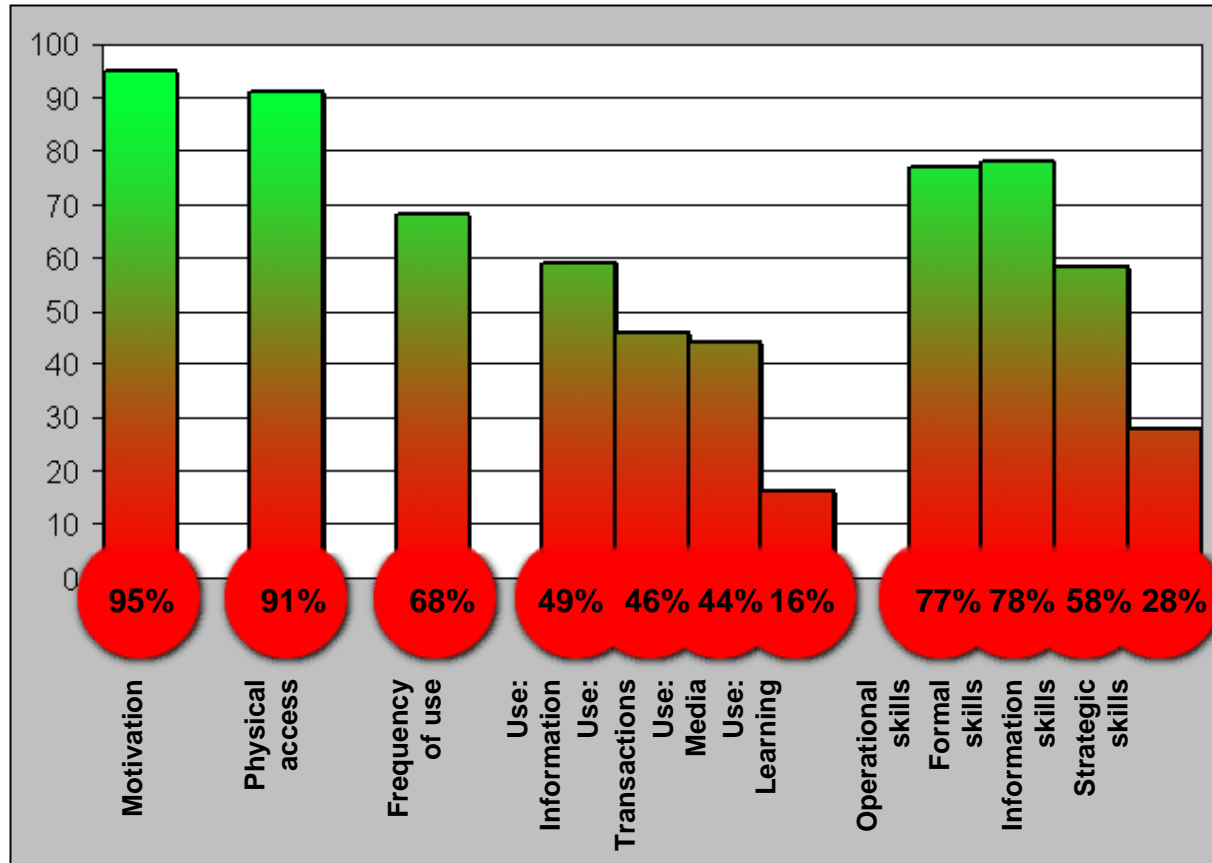
It is not possible to draw any valid and reliable conclusions about the level of computer and internet skills among either the Dutch or the European population on the basis of this data. The figures do, however, indicate that the skills level is far from optimum. The measurements of performance carried out by the University of Twente show that the level of information and strategic skills in particular is low. That means that while the internet is rapidly becoming a generally accessible channel for information and communications - in terms of motivation, physical access and frequency of use - the skills level of the European and the Dutch population continues to lag behind.

### 3 Access meter

On the basis of the data presented in Chapter 2 we can construct an access meter. Figure 4 shows this in diagram form.

**Figure 4:**

Access to the internet in 2008 - Access meter on the basis of motivation, physical access, frequency of use, type of use and skills



A number of comments and explanatory notes must be added to the figure above. The percentages were arrived at as follows:

- **Motivation.** In the Netherlands, 5% of the population indicated no interest or no desire to use the internet; the remaining 95% seems to be well motivated to do so.
- **Physical access.** 91% percent of all individuals in the Netherlands have access to the internet either at home or elsewhere.
- **Frequency of use.** 68% of internet users in the Netherlands use the medium nearly every day.
- **Type of use.** The four categories correspond to the international comparison tables 13, 14, 15 and 16. The percentages shown are the averages for the activities shown in the table as applicable to each category.
- **Skills.** These percentages are based on two measurements of performance carried out at the University of Twente. The percentage

shown is the average for completed tasks in each skill category, drawn from the two measurements.

The percentages reported, particularly in the case of skills, should be taken as no more than an indication. It would not be possible to use these figures as a baseline measurement if an annual comparison were to be carried out. As we have often emphasized in this report, there has never been a large-scale international or national survey into computer and internet skills. No previous large-scale survey has made a distinction between the four skills as set out in Figure 4. To date, computer and internet skills have only been measured indirectly, by asking respondents how many of the specified activities they have ever carried out on the computer or on the internet. The assumption has been: the more activities, the greater the skills. There is a crucial need for a survey that takes both medium- and content-related skills into account, and it is important that skills are measured as directly as possible.

Besides the trends that are summarized in each section of the previous Chapter, the most important trend to emerge from all this data is illustrated clearly in Figure 4. It appears that high levels of motivation, access and frequency of use do not necessarily mean that the user has sufficient skills and uses the internet in a variety of ways. It is a false assumption that a person has the ability to do something simply because he uses the appropriate tools, and extending the period of experience with the internet does not in itself resolve the skills problem. This certainly applies to the information and strategic skills. This serves to underline that the measurement of these particular access factors should be given more attention, and on a larger scale.