

National Agency for Education, Report 176

Schools and Computers 1999

– a quantitative picture –

Summary: In the autumns of 1993, 1995 and 1997, the National Agency for Education carried out a survey of the availability of computers in the schools. Now, in the spring of 1999, the same survey has been repeated. Between 1997 and 1999, the number of computers in the schools has continued to increase considerably. On the primary-secondary school level (*grundskolan*, 7-16 age group), the number of computers increased by 39 percent. In 1999, about ten pupils share a computer, as compared to 13 in 1997. In the municipal and county council upper secondary schools (*gymnasium*), the number of computers has increased by 22 percent and computer density has increased from seven to five students per computer. In independent (*fristående*) upper secondary schools, the number of computers has increased by 91 percent and computer density from five to three students per computer. On the lower grades level, 57 percent of the computers used in teaching have a connection to the Internet, as compared to 31 percent in 1997, but the distribution among municipalities has also increased between 1997 and 1999. The number of teachers per computer is still six on the primary-secondary level and two on the upper secondary and the municipal adult education level. In independent primary-secondary schools, three teachers share a computer, compared with four in the years before, and in the independent upper secondary schools, the number has not changed from one computer per teacher. Thirty-nine percent of the students on the primary-secondary level and 59 percent on the upper secondary school level have access to an e-mail address. The corresponding percentage of teachers with access to an e-mail address is 66 percent in the primary-secondary schools and 82 percent in the upper secondary schools.

Key words: quantitative survey, computers, information technology, Swedish schools

Foreword

The National Agency for Education surveyed the availability of computers in the school for the first time in Autumn 1993, in collaboration with the Swedish Association of Local Authorities and the Federation of County Councils.

The result of the 1993 survey, which was presented in the report *Schools and Computers – a survey of computer use in the schools*, attracted a good deal of attention from school boards, the cabinet office, the media, and other users.

In consideration of the fact that availability and access are important prerequisites for computer usage in teaching, a nation-wide quantitative study of the conditions for using information technology (IT) in teaching was carried out in the autumns of 1995 and 1997. These studies were aimed at **all school-governing bodies**. The intent was, among other things, to present the data on a governing-body level so that each municipality and municipal council could then compare itself to other municipalities. The result of the 1995 survey was presented in the National Agency for Education's report no. 99, *Schools and Computers 1995 – a quantitative picture*, and the 1997 survey was presented in the National Agency for Education's report no. 147, *Schools and Computers 1997 – a quantitative picture*.

The purpose of this year's survey has been, as with previous surveys, to try to answer questions on: the number of computers used in teaching, the number of schools and the number of school computers that have a connection to the Internet and what kind of connection it is, placement of the school computers, availability of computers for teacher use only, and whether school-governing bodies have an IT strategy or action program for the computer field. For the first time, we also included a question about the number of teacher computers that have a connection to the Internet and students' and teachers' access to e-mail.

This year's survey has been conducted in cooperation with the Delegation for IT in the Schools (ITiS). The delegation is instructed to realize "*The Tools of Learning: National program for IT in the schools*". Thus the study has been enlarged to include questions about the present infrastructure in the municipalities.

In Government Document no. 1997/98:176, *The Tools of Learning: National program for IT in the schools*, it is stressed that the schools "...have an important assignment in compensating for pupils' differing conditions. Since knowledge of information technology is necessary in preparation for the future labor market and provides a generally stronger position in society, all students must be given sound knowledge of IT. Schools are thus required to have good accessibility to computers, and teachers must have good skills in how IT can be used in teaching. An investment in IT in the schools is therefore well motivated."

The computers by themselves, however, are no guarantee that information technology is used in teaching. For this reason, the National Agency for Education is following up and evaluating the use of IT in the schools in several projects. The most extensive of these is a three-year study led by Professor Ulla Riis of the Department of Education at Uppsala University. The study is part of the so-called ELOIS project with researchers in Uppsala and Linköping and will be completed in the autumn of 1999.

The survey was conducted by *LK Statistik & Utredningar* in Linköping, on commission by the National Agency for Education. Project coordinator at the National Agency for Education has been Sonja Tiderman.

Stockholm in November 1999

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Schools and Computers 1999

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Summary

The number of computers in the schools has continued to increase between 1997 and 1999. This applies to both computers used by teachers and ones used in teaching.

The number of computers for teacher use has increased by 17 percent in municipal primary-secondary schools (*grundskola*), 22 percent in upper secondary schools (*gymnasium*), and 5 percent in local authority-administered adult education (*komvux*). In schools for the learning disabled (*särskola*), the submitted number of teachers' computers decreased by 6 percent.

This decrease in the number of teachers' computers and the slight increase in the number of computers used in teaching at schools for the learning disabled are partly due to the fact that in 1999 as compared to 1997, fewer school-governing bodies submitted separate reports on the computers at the schools for the learning disabled. Many of them now report these figures in the statistics for the primary-secondary schools.

The number of computers and number of pupils per computer vary among types of schools according to table 1 below.

Table 1: Computers used for teaching in different types of schools

Computers used in teaching	1993		1995		1997		1999	
	No. of students per computer	No. of computers	No. of students per computer	No. of computers	No. of students per computer	No. of computers	No. of students per computer	
Municipal primary-secondary schools	21 143	38	45 013	19	72 899	13	101 602	10
Independent primary-secondary schools			1 526	12	2 175	13	3 182	10
Municipal+county council upper secondary schools	24 191	11	40 547	8	53 168	7	65 075	5
Independent upper secondary schools			974	6	1 413	5	2 692	3
Local authority-administered adult education	4 417	*	8 286	8	11 663	9	14 906	9
Municipal+county council schools for the learning disabled	1 294	8	1 821	6	2 271	4	2 429	4
Independent schools for the learning disabled			48	5	47	7	63	5
Adult education for the learning disabled			388	6	314	8	580	4
Special schools			196	4	209	4	311	3
SSV, National Schools for Adults			25	**	52	**	43	**
Schools for Sami			16	8	40	4	10	17

* Information not available

** Not relevant measurement

Since 1993, there has been a successive decrease in the number of computers placed in computer rooms. Almost three out of four computers used in teaching in the primary-secondary schools and nearly nine of ten in the schools for the learning disabled are now placed in the classroom. In the upper secondary schools, however, more than half of the

computers used in teaching are still to be found in computers rooms, and within local authority-administered adult education, almost three of four.

The number of teaching computers with a connection to the Internet varies greatly with type of school, with the highest percentage in the upper secondary schools and local authority-administered adult education (almost nine computers of ten), a lower percentage in the primary-secondary schools (more than every two computers), and the lowest in the schools for the learning disabled (over one computer of three).

The number of teachers (adjusted to number of full-time positions) per computer has not changed appreciably during the years from 1997 to 1999. In the primary-secondary schools, there are six teachers per computer, in the upper secondary schools and local authority-administered adult education, two teachers share a computer, and in the schools for the learning disabled, the figure is seven teachers per computer.

Since 1997, the percentage of school-governing bodies that report that they have adopted an IT strategy/action program for the computer field has not changed appreciably. Within the upper secondary schools and local authority-administered adult education, the percentage has even dropped somewhat.

1. Background

In 1993, 1995, and 1997, the National Agency for Education conducted quantitative surveys of the availability of computers in the schools. The studies were last presented in 1998 in the Agency's Report no. 147, *Schools and Computers 1997 – a quantitative picture*.

During Summer 1999, the survey was repeated with the same goal groups as in 1995 and 1997. The 1993 study covered the following types of schools: primary-secondary schools (*grundskola*, age group 7 to 16), upper secondary school, local authority-administered adult education, and schools for the learning disabled under jurisdiction by local authorities and county councils. The studies of 1995, 1997, and 1999 also extended to these types of schools: adult education for the learning disabled, schools for Sami, special schools, and SSV, the National School for Adults. These schools can have either public or independent school-governing bodies.

The survey was carried out using a questionnaire that was sent to all school-governing bodies in the end of May, 1999. Two reminders were sent out in August. Each school board was expected to collect the data from their schools and compile the answers for each type of school. Implementation and processing of the study was done by *LK Statistik & Utredningar* in Linköping, commissioned by the National Agency for Education.

The intent of the study was, based on the different types of schools and school-governing bodies, to provide a quantitative picture of the number of computers, their placement, and their access to the Internet, e-mail, and the joint schoolnet WAN (Wide Area Network). The questions concerned both computers used in teaching and computers for use by teachers only. Furthermore, each school-governing body was asked if they had adopted an IT strategy or action program for the computer field.

Many school-governing bodies are in charge of several types of schools that use the same buildings and computers. In other words, the school types – at least from the point of view of the survey – are integrated. There are approximately twenty different combinations of “computer-integrated” types of schools, the most common being: primary-secondary schools–schools for the learning disabled; upper secondary school–local authority-administered adult education; upper secondary school–local authority-administered adult education–adult education for the learning disabled; and local authority-administered adult education–adult education for the learning disabled. In the analysis of the data, this has been taken into consideration. If, for instance, the upper secondary school and the local authority-administered adult education in a municipality share the same computers, the number of computers and the total of the number of students and teachers in both types of schools have been recorded under “municipal upper secondary school.”

Some of the results from municipal primary-secondary schools and upper secondary school are shown according to the municipal categories drawn up by the Swedish Association of Local Authorities.

In a separate table appendix, a summary of the responses from each school-governing body is presented.

In calculating numbers of students and teachers per computer and of access to e-mail, information on the number of students and teachers was used that unfortunately does not correspond to the same time period as when the survey was made, which was June 1, 1999, but to the most recently available period, which was October 15, 1998. The information pertains to the number of pupils and teachers in the school-governing bodies and types of school that sent in responses to the questionnaire. For the calculation of the number of teachers per computer, the number of teachers has been adjusted to apply to full-time positions. For the calculation of access to e-mail, however, the number of teachers = individuals. Within the local authority-administered adult education schools, the number of students has been adjusted to apply to full-time students.

The number of responses was 1,864 of a total of 1,953 recipients of the questionnaire, which gives a response frequency of 95.4 percent in total. A percentage of 98.8 of the total number of students is covered by the responses. The response frequency for the different types of schools and school-governing bodies is presented in Chapter 7.

Where possible in the report, comparisons are made with the 1993, 1995, and 1997 surveys.

The 1999 survey comprises seven types of schools and six types of school-governing bodies. To make the presentation somewhat simpler, the types of schools and school-governing bodies have been grouped as follows:

- Municipal primary-secondary school (including sub-municipalities acting as school-governing bodies).
- Independent primary-secondary school.
- Municipal and county council upper secondary school, including federations of upper secondary schools acting as school-governing bodies.
- Independent upper secondary school.

- Local authority-administered adult education. School-governing body either municipality, county council, or federation of upper secondary schools.
- Municipal and county council schools for the learning disabled.
- Independent schools for the learning disabled.
- Adult education for the learning disabled. School-governing body either municipality or federation of upper secondary schools.
- Special schools (with the state as the school-governing body).
- National School for Adults (with the state as the school-governing body).
- School for Sami (primary-secondary school with a governmental school-governing body called the Sami School Authority).

2. Computers used in teaching

Questions 2 and 3 of the questionnaire concerned computers used in teaching. This also includes computers used for teaching *and* for teacher use.

Primary-secondary schools (*grundskolan*)

According to the questionnaire of 1999, there is a total of almost 105,000 computers used in teaching in municipal and independent primary-secondary schools. Since 1997, the number of computers used in teaching in the municipal primary-secondary schools has increased by 39 percent, and in the independent primary-secondary schools by 82 percent. The greater increase among independent schools as compared to municipal schools is a result of the fact that the number of students in independent schools has increased sharply.

Computer density has also advanced, or to put it differently: the number of pupils per computer in both municipal and independent primary-secondary schools has declined from 13 to 10 from 1997 to 1999.

Table 2 shows the total number of computers used in teacher and the number of pupils per computer in the municipal and independent primary-secondary schools.

Table 2: Number of computers for teaching in the primary-secondary schools

Municipal primary secondary schools	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	21 143	45 013	72 899	101 602	139
Number of pupils per computer	38	19	13	10	

Independent primary-secondary schools	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Total	1 526	2 175	3 182	182
Number of pupils per computer	12	13	10	

Computer density varies somewhat among different kinds of municipalities. In table 3, the number of pupils per computer in municipal primary-secondary schools is distributed according to the municipal categories used by the Swedish Association of Local Authorities. The differences among municipal categories has leveled off considerably during the six-year period covered by the surveys. The sparsely-populated municipalities, however, still have the lowest number of computers per student.

Table 3: Number of pupils per computer in municipal primary-secondary schools, according to municipal category

Municipal primary-secondary schools Municipal category	Pupils per computer 1993	Pupils per computer 1995	Pupils per computer 1997	Pupils per computer 1999
Cities	54	*22	12	10
Suburban municipalities	38	21	14	10
Large towns	39	18	14	10
Medium-large towns	39	19	13	10
Industrial municipalities	32	19	13	10
Rural municipalities	36	19	12	9
Sparsely-populated municipalities	23	14	8	7
Other large-size municipalities	37	21	12	9
Other small-size municipalities	34	22	12	9

*No data available for Malmö in 1995

In table 4 below, the percentage of computers used in teaching in the primary-secondary schools that are connected to the Internet is shown, as well as the percentage participating in local networks. The number of local networks decreased between 1993 and 1995 (probably because of more computers in the classrooms), but has since increased to more than half. An equally large percentage of the computers are connected to the Internet.

Table 4: Percentage of computers used in teaching in primary-secondary schools that are...

Municipal primary-secondary schools	1993 Percent	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	..	31	57
...connected to a local network	30	24	38	57

Independent primary-secondary schools	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	49	57
...connected to a local network	45	49	60

When it comes to Internet-connections and local networks, the differences among municipal categories is greater than when it comes to the number of pupils per computer, which can be seen in table 5 below. The highest percentage in both cases is in the sparsely-populated municipalities and the lowest in the big cities.

Table 5: Percentage of computers used in teaching in municipal primary-secondary schools in different municipal categories in 1999 that...

Municipal primary-secondary schools Municipal category	...are connected to the Internet		...are connected to a local network	
	Percent 1997	Percent 1999	Percent 1997	Percent 1999
Cities	27	43	38	51
Suburban municipalities	31	57	32	56
Large towns	32	63	38	58
Medium-large towns	28	54	35	53
Industrial municipalities	24	53	32	55
Rural municipalities	33	59	41	64
Sparsely-populated municipalities	56	77	50	78
Other large-size municipalities	32	59	47	62
Other small-size municipalities	28	54	37	52

In diagrams 1 and 2, the placement of the computers used in teaching is presented. In municipal primary-secondary schools, less than one in four computers is placed in a computer room. Since 1993, the percentage of computers placed in the classroom or other teaching facility has increased steadily.

In the independent primary-secondary schools as well, the percentage of computers placed in the classroom or other teaching facility has increased considerably, but it is still lower than in the municipal primary-secondary schools.

The increase in percentage of computers placed in classrooms can be explained as a result of the fact that the national time schedule presently in force has no allocation for computer science as a subject, which the last one did. Instead, the aspiration is for the computer to be a work tool in all subjects. For this reason, computers are needed in teaching classrooms and not only in special computer rooms.

Diagram 1: Placement of computers used in teaching in municipal primary-secondary schools

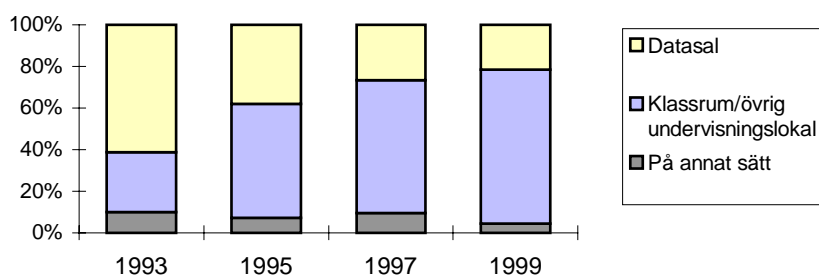
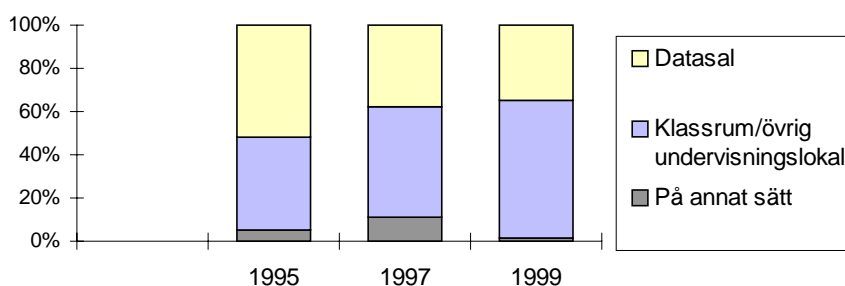


Diagram 2: Placement of computers used in teaching in independent primary-secondary schools



Upper secondary school (*gymnasium*)

According to the questionnaire from 1999, a total of just under 68,000 computers are used in teaching on the upper secondary school level. Since 1997, the number of computers used in teaching has increased by 22 percent within the municipal and county council upper secondary schools and by 91 percent in the independent upper secondary schools. The number of students per computer in the municipal and county council upper secondary schools has declined from 7 to 5 and in the independent upper secondary schools from 5 to 3 between 1997 and 1999.

Table 6 shows the number of computers used in teaching in the municipal and county council upper secondary schools and in the independent upper secondary schools.

In the presented figures for upper secondary schools, the answers from more than a third of the school-governing bodies for local authority-administered adult education that found it impossible to distinguish its adult education computers from its upper secondary school computers are included. In calculating the number of students per computer, the adult education students from these school-governing bodies have been included.

In this year's report, we do not distinguish between municipal and county council upper secondary schools, since there have been changes in the responsible school-governing bodies, which would make comparisons in time misleading, especially for county council schools.

Table 6: Number of computers used in teaching in upper secondary schools

Municipal + county council upper secondary schools	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	24 191	40 547	53 168	65 075	122
Number of students per computer	11	8	7	5	

Independent upper secondary schools	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	974	1 413	2 692	191
Number of students per computer	6	5	3	

In upper secondary schools, too, computer density varies somewhat depending on type of municipality. In table 7, the number of students per computer in municipal upper secondary schools distributed among the categories used by the Swedish Association of Local Authorities is presented. Here it is the big cities that have the highest number of students per computer, while in other cases the differences are small.

Table 7: Number of students per computer in municipal upper secondary schools, divided into municipal category

Municipal upper secondary schools	Students per computer 1993	Students per computer 1995	Students per computer 1997	Students per computer 1999
Cities	*13	10	10	9
Suburban municipalities	12	9	7	6
Large towns	11	8	6	5
Medium-large towns	10	8	6	5
Industrial municipalities	6	5	5	4
Rural municipalities	8	6	6	5
Sparsely-populated municipalities	7	5	5	4
Other large-size municipalities	11	7	6	5
Other small-size municipalities	6	4	5	4
Federation of upper secondary schools		8	7	5

* No data available for Göteborg for 1993

In table 8 below, two figures are presented: the percentage of upper secondary school computers used in teaching that are connected to the Internet and the percentage that are connected to a local network. The percentage connected to a local network has increased successively and now constitutes nine of ten computers. An equally large percentage is connected to the Internet. The percentages in both cases are somewhat higher in the independent than in the municipal upper secondary schools.

Table 8: Percentage of computers used in teaching in the upper secondary schools that are...

Municipal + county council upper secondary schools	1993 Percent	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	..	66	87
...connected to a local network	48	63	78	88

Independent upper secondary schools	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	58	91
...connected to a local network	70	73	93

Table 9 shows the computers used in teaching in municipal upper secondary schools vis-à-vis connection to the Internet/local networks, distributed according to municipal category. Here it is the rural municipalities in both cases that have the lowest percentages, while the cities and small-size municipalities have the highest.

Table 9: Percentage of computers used in teaching in 1999 in municipal upper secondary schools in various municipal categories that are...

Municipal upper secondary schools	...connected to the Internet		...connected to a local network	
	Percent 1997	Percent 1999	Percent 1997	Percent 1999
Municipal category				
Cities	50	94	84	97
Suburban municipalities	48	85	91	89
Large towns	70	89	81	86
Medium-large towns	68	86	77	88
Industrial municipalities	66	81	69	86
Rural municipalities	55	75	62	79
Sparsely-populated municipalities	53	87	80	89
Other large-size municipalities	61	89	76	92
Other small-size municipalities	77	94	77	96
Federation of upper secondary schools	48	85	76	86

Diagrams 3 and 4 show how the computers used in teaching in upper secondary schools are placed. More than half of the computers in the municipal and county council upper secondary schools but only a little over a fourth of these computers in the independent upper secondary schools are placed in computer rooms. During the period from 1993-1999, however, the percentage of computer rooms has steadily declined.

In spite of this decline, the percentage of computers placed in computer rooms is still higher on the upper secondary school level than on the primary-secondary level. The reason behind this may be that most of the upper secondary programs have special computer science subjects or courses that require all students of the class to have access to a computer at the same time.

Diagram 3: Placement of computers used in teaching in municipal and county council upper secondary schools

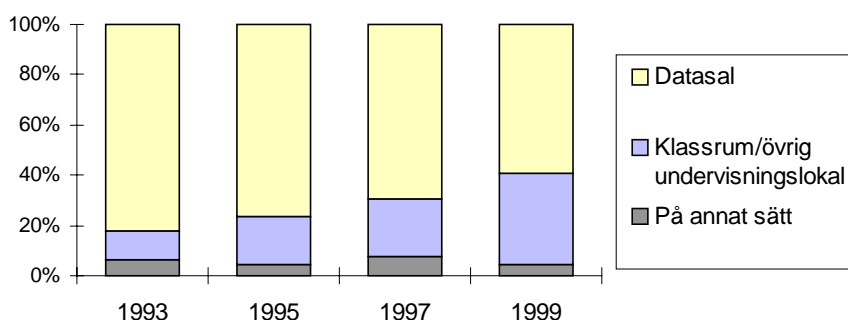
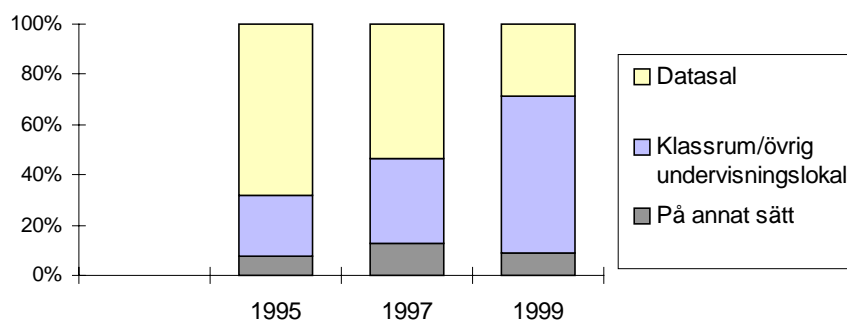


Diagram 4: Placement of computers used in teaching in municipal and county council upper secondary schools



Local authority-administered adult education (*komvux*)

According to the survey of 1997, there were just under 15,000 computers used in teaching in local authority-administered adult education. Since 1997, the number of computers used for teaching within *komvux* has increased by 28 percent. If the number of students at local authority-administered adult education is adjusted to apply to full-time students as of October 15, 1998, the number of full-time students per computer is nine. Nine full-time students was the figure for 1997 as well. This is because the number of students in local authority-administered adult education has risen at about the same pace as the number of computers.

Slightly over a third of the school-governing bodies for local authority-administered adult education and municipal upper secondary schools share the same computer equipment. In these cases, local authority-administered adult education is presented as part of the municipal upper secondary schools.

Table 10 shows the number of computers used in teaching in local authority-administered adult education.

Table 10: Number of computers used in teaching within local authority-administered adult education

	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	4 417	8 286	11 663	14 906	128
Number of students per computer		8	9	9	

In local authority-administered adult education, too, computer density varies among municipalities of different kinds. Table 11 shows the number of students per computer within local authority-administered adult education distributed among the municipal categories of the Swedish Association of Local Authorities. The value of the comparison is to some extent uncertain, partly due to the fact that for more than one third of the municipalities, *komvux* has been added to the figures for upper secondary schools. The variation in years for, e.g., the rural and sparsely-populated municipalities may be due to changes in how the municipalities in these categories have accounted for the *komvux* computers.

Table 11: Number of students per computer in local authority-administered adult education according to municipal category

Local authority-administered adult education	Students per computer 1995	Students per computer 1997	Students per computer 1999

Cities	*16	**13	**13
Suburban municipalities	7	7	7
Large towns	9	10	10
Medium-large towns	7	9	9
Industrial municipalities	7	9	8
Rural municipalities	4	12	8
Sparsely-populated municipalities	1	10	12
Other large-size municipalities	5	8	7
Other small-size municipalities	3	9	5
Federation of upper secondary schools	4	9	9

* No data from Malmö available for 1995.

** For 1997, Stockholm's *kommvux* are included in the figures for upper secondary schools.

Table 12 shows the percentage of computers used in teaching within local authority-administered adult education that are connected to the Internet or are connected to a local network. These percentages have risen and are now close to nine computers out of ten.

Table 12: Percentage of computers used in teaching in local authority-administered adult education that are...

<i>Kommvux</i>	1993 Percent	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	..	70	86
...connected to a local network	51	66	82	86

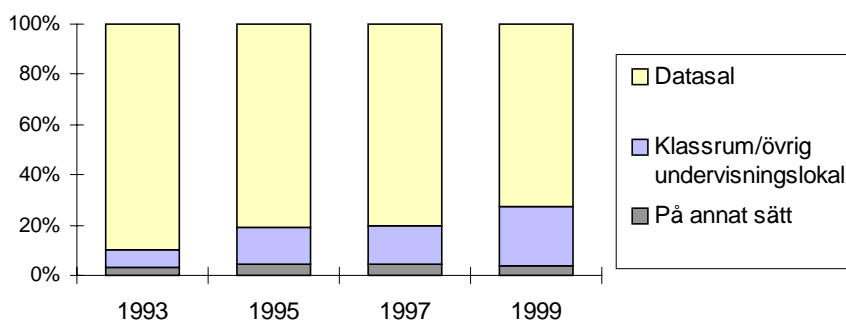
Table 13 shows the above table's figures distributed among municipal category. Here it is the suburban municipalities that in both cases have the lowest percentages, while the federations of upper secondary schools have the highest.

Table 13: Percentage of computers in 1999 used in teaching in local authority-administered adult education and ranked according to municipal category that are...

<i>Kommvux</i>	...connected to the Internet Percent	...connected to a local network Percent
Municipal category 1999		
Cities	91	95
Suburban municipalities	75	75
Large towns	91	90
Medium-large towns	87	83
Industrial municipalities	78	82
Rural municipalities	80	83
Sparsely-populated municipalities	86	85
Other large-size municipalities	88	89
Other small-size municipalities	91	88
Federation of upper secondary schools	98	98

Diagram 5 shows how the computers used in teaching in local authority-administered adult education are placed. Almost three computers of four are placed in computer rooms. The percentage of computer rooms, however, has decreased successively during the period from 1993-99.

Diagram 5: Placement of computers used in teaching in local authority-administered adult education



Schools for the learning disabled

According to the 1999 survey, a total of approximately 2,500 computers are used in teaching in schools for the learning disabled. Since 1997, the number of computers used in teaching in municipal and county council schools for the learning disabled has increased by only 7 percent. The number of pupils per computer in 1999 in the municipal and county council schools for the learning disabled is 4, which is unchanged since 1997. In independent schools for the learning disabled, there was an average of 5 pupils per computer in 1999.

In cases where the schools for the learning disabled and the primary-secondary schools shared the same computer equipment, the figures for the schools for the learning disabled have been added to the figures for the primary-secondary schools. The same procedure was applied when, e.g., upper secondary schools for the learning disabled use the same computers as the other upper secondary schools.

The slight increase in the number of computers used in teaching is partly due to the fact that in 1999 there were fewer school-governing bodies than in 1997 who accounted separately for the computers used in their schools for the learning disabled. Several of them now count these computers as belonging to the primary-secondary schools. In 1997, 82 percent of the school-governing bodies gave separate accounts for the computers used in schools for the learning disabled. In 1999, this figure had fallen to 69 percent.

Table 14 shows the number of computers used in teaching in municipal and county council schools for the learning disabled and likewise independent such schools.

Table 14: Number of computers used in teaching in schools for the learning disabled

Municipal+county schools for the learning disabled	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	1 294	1 821	2 271	2 429	107
Number of pupils per computer	8	6	4	4	

Independent schools for the learning disabled	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	48	47	63	134
Number of pupils per computer	5	7	5	

Table 15 below shows first, what percentage of the computers used in teaching in schools for the learning disabled have a connection to the Internet and, secondly, what percentage are

connected to a local network. The percentage in local networks is low in schools for the learning disabled. However, it has successively increased and is now one out of three computers. A somewhat larger share of the computers are connected to the Internet. The figures from the small number of independent schools for the learning disabled vary greatly from year to year.

Table 15: Percentage of computers used in teaching in schools for the learning disabled that are...

Municipal+county schools for the learning disabled	1993 Percent	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	..	25	37
...connected to a local network	15	21	25	32

Independent schools for the learning disabled	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	91	11
...connected to a local network	45	0	3

Diagrams 6 and 7 show how the computers used in teaching in schools for the learning disabled are placed. Most of these computers, almost nine out of ten, are placed in the classroom/other teaching facility. The number of computers placed in computer rooms has decreased during the period from 1993-99.

Diagram 6: Placement of computers used in teaching in municipal and county council schools for the learning disabled

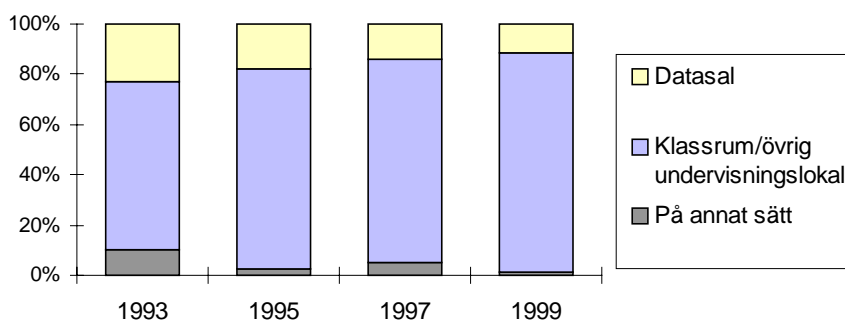
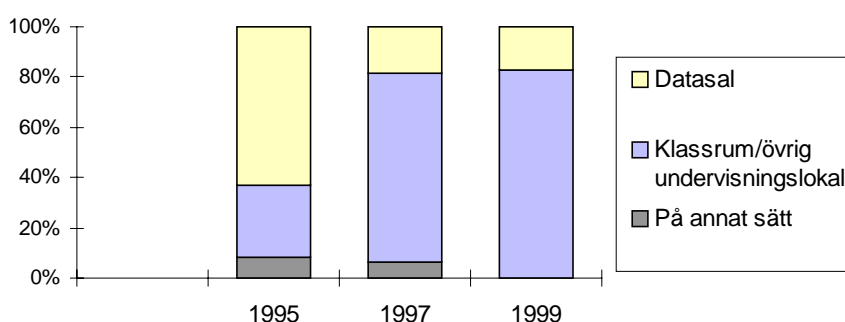


Diagram 7: Placement of computers used in teaching in independent schools for the learning disabled



Remaining types of schools

Table 16 shows the number of computers used in teaching in the following types of schools: adult education schools for the learning disabled, special schools, National Schools for Adults, and the Sami schools. Of the latter, there are six primary-secondary schools, and they have the governmental Sami School Authority as their school-governing body.

In 43 percent within the school-governing bodies, adult education for the learning disabled share computers with local authority-administered adult education and/or upper secondary schools. Figures from adult education for the learning disabled is then included in that from these types of schools.

Regarding the National Schools for Adults, the number of “students per computer” is not shown in the table, since this measurement cannot be considered relevant in such schools.

Table 16: Number of computers used in teaching in remaining types of schools

Adult education for the learning disabled	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	388	314	580	185
Number of students per computer	6	8	4	
Special schools	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	196	209	311	149
Number of students per computer	4	4	3	
National Schools for Adults	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	25	52	43	83
Schools for Sami	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Total	16	40	10	25
Number of students per computer	7	4	17	

Table 17 shows the percentage of computers used in teaching in remaining types of schools that are connected to the Internet or are connected to a local network. The percentage has successively increased and is now close to half of the computers in adult education for the learning disabled and in the Sami schools. In special schools and the National Schools for Adults, just about all the computers have connections to the Internet and are units in local networks.

Table 17: Percentage of computers used in teaching in remaining types of schools that are...

Adult education for the learning disabled	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	24	46
...connected to local networks	45	28	44
Special schools	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	63	92
...connected to local networks	23	78	90
National Schools for Adults	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	100	100
...connected to local networks	64	90	100
Schools for Sami	1995 Percent	1997 Percent	1999 Percent
...connected to the Internet	..	38	40
...connected to local networks	0	45	50

Diagrams 8-11 show how the computers used in teaching are placed in remaining types of schools. In adult education for the learning disabled, special schools, and the Sami schools, a

majority of the computers are placed in the classroom/other teaching facility. In the National Schools for Adults, all of the computers are in computer rooms.

Diagram 8: Placement of computers used in teaching within adult education for the learning disabled

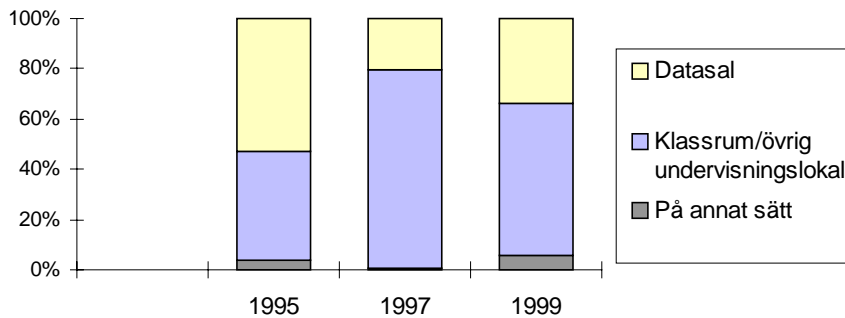


Diagram 9: Placement of computers used in teaching within special schools

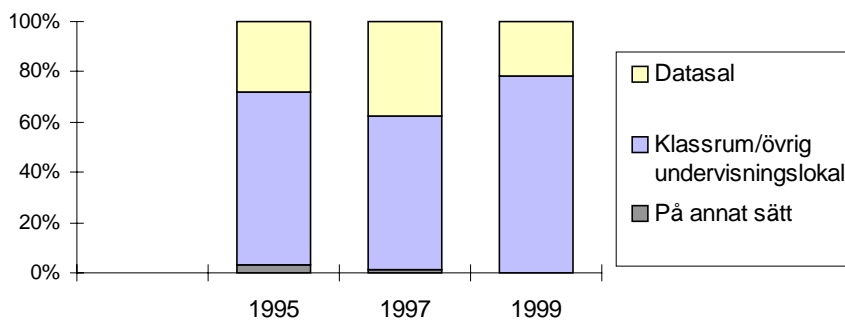


Diagram 10: Placement of computers used in teaching within the National Schools for Adults

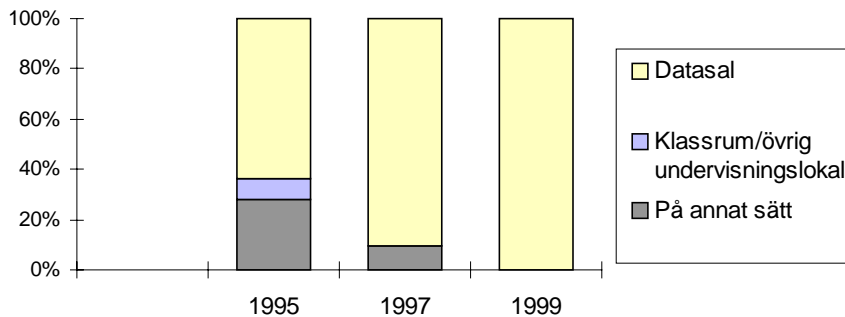
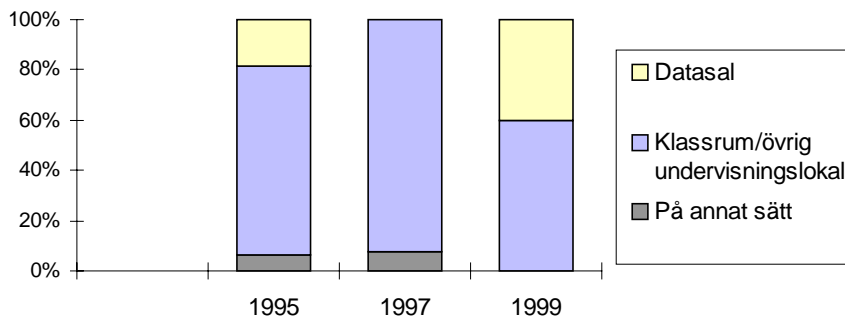


Diagram 11: Placement of computers used in teaching in the Schools for Sami



3. Computers for teachers' use only

Question 1 of the survey dealt with computers for use by teachers only. The computers used both in teaching and for teachers have been presented in chapter 2, Computers used in teaching.

Primary-secondary schools (*grundskola*)

According to the 1999 survey, there is a total of approximately 13,600 computers for teacher use only in primary-secondary schools. Since 1997, the number of computers for teachers has increased by 17 percent.

Computer density in municipal primary-secondary schools is roughly speaking unchanged – the number of teachers (adjusted to full-time positions) per computer is six for both 1997 and 1999. In independent primary-secondary schools, the number of teachers per computer has decreased from 4 to 3.

Table 18 shows the number of teachers' computers in municipal and independent primary-secondary schools.

Table 18: Number of computers for teacher use only in primary-secondary schools

Municipal primary secondary schools	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	2 764	6 632	11 020	12 879	117
Number of teachers per computer	27	12	6	6	

Independent primary secondary schools	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	268	517	766	148
Number of teachers per computer	6	4	3	

Upper secondary schools (*gymnasium*)

According to the survey of 1999, there are approximately 16,000 computers in the upper secondary schools for teacher use only. Since 1997, the number of teachers' computers within municipal and county council upper secondary schools has increased by 22 percent and in the independent upper secondary schools by 77 percent.

Between 1997 and 1999 the number of teachers per computer has not changed from 2 in the municipal and county council upper secondary schools. In the independent upper secondary schools, computer density is an unchanged 1 teacher per computer.

Table 19 shows the number of computers for teacher use in municipal and county council and in independent upper secondary schools.

Table 19: Number of computers for teacher use only in upper secondary school

Municipal + county council upper secondary schools	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
---	----------------	----------------	----------------	----------------	--------------------------

Number of computers	3 404	8 531	12 677	15 416	122
Number of teachers per computer	7	3	2	2	
<hr/>					
Independent upper secondary schools	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)	
Number of computers	235	331	585	177	
Number of teachers per computer	2	1	1		

Local authority-administered adult education (*komvux*)

According to the 1999 survey, there is a total of approximately 2,500 computers within local authority-administered adult education that are for teacher use only. Since 1997, this number has increased by 5 percent.

The number of teachers per computer was 2 for both 1997 and 1999.

Table 20 shows the number of computers for teachers within local authority-administered adult education.

Table 20: Number of computers for teacher use only within local authority-administered adult education

Komvux	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	471	1 432	2 364	2 487	105
Number of teachers per computer	9	2	2	2	

Schools for the learning disabled

According to the 1999 survey, there is a total of more than 350 computers for teacher use only in the schools for the learning disabled. Since 1997, the number of computers for teachers within municipal and county council schools for the learning disabled has decreased by 6 percent.

The number of teachers per computer in municipal and county council schools for the learning disabled is 7 for both 1997 and 1999. For independent schools for the learning disabled, there is no information available about the number of teachers per computer.

Table 21 shows the number of computers for teacher use only in municipal and county council schools for the learning disabled and in independent schools for the learning disabled.

The decrease in the number of teachers' computers in schools for the learning disabled is partly due to the fact that in 1999, fewer school-governing bodies than in 1997 gave a separate report on the computers in their schools for the learning disabled.

Table 21: Number of computers for teacher use only in schools for the learning disabled

Municipal+county council schools for the learning disabled	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	109	186	356	335	94
Number of teachers per computer	29	15	7	7	
<hr/>					
Independent schools for the learning disabled	1993 Number	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers		17	19	24	126

Remaining types of schools

Table 22 shows the number of teachers' computer in the following types of schools: adult education for the learning disabled, special schools, the National Schools for Adults, and the Schools for Sami.

Table 22: Number of computers for teacher use only in remaining types of schools

Adult education for the learning disabled	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	64	57	94	165
<hr/>				
Special schools	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	59	40	90	225
Number of teachers per computer	5	7	3	
<hr/>				
National Schools for Adults	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	10	80	52	65
<hr/>				
Schools for Sami	1995 Number	1997 Number	1999 Number	Index 1999 (1997=100)
Number of computers	6	6	0	0
Number of teachers per computer	4	4		

Teachers' computers with an Internet connection

In the 1999 survey, the question was asked for the first time as to how many computers for teacher use only were connected to the Internet. The percentages among different types of schools are presented in table 23 below. In primary-secondary schools and schools for the learning disabled, approximately two of three teacher computers can be connected on-line, while the figure for upper secondary schools and local authority-administered adult education is nine of ten.

Table 23: Number of computers for teacher use only that are connected to the Internet

1999	
Type of school	Percent
Municipal primary-secondary school	69
Independent primary-secondary school	68
Municipal+county council upper secondary school	89
Independent upper secondary school	90
Local authority-administered adult education	87
Municipal+county council schools for the learning disabled	63
Independent schools for the learning disabled	33
Adult education for the learning disabled	78
Special schools	93
National Schools for Adults	100
Schools for Sami	..

4. The Internet and joint municipal schoolnets (WAN)

The Internet

The percentage of computers used in teaching that have an Internet connection has been presented under each type of school in chapter 2, and the teachers' computers in chapter 3. Questions 7-9 in the questionnaire were about the number of *schools* with access to the Internet.

Table 24 shows the percentage of schools within each type that have access to the Internet.

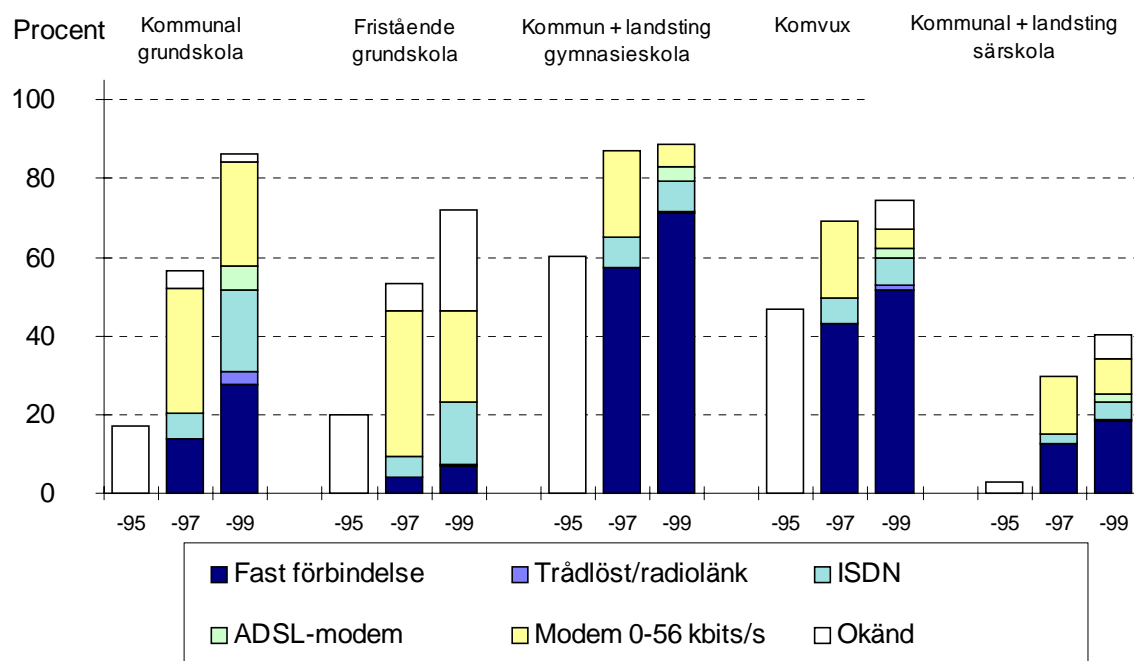
In 1999, close to nine out of ten primary-secondary schools and upper secondary schools have an Internet connection, which is a substantial increase for primary-secondary schools since 1997. The independent schools show a somewhat lower percentage than the municipal. Within local authority-administered adult education, about three out of four schools have access to the Internet, while schools for the learning disabled and adult education for the learning disabled have less than every other one. For local authority-administered adult education, schools for the learning disabled, and adult education for the learning disabled, however, the percentages in 1999 are somewhat uncertain, due to insufficient data on the number of schools within these types.

Table 24: Access to the Internet

	Percentage of schools with Internet connections		
	1995 Percent	1997 Percent	1999 Percent
Municipal primary-secondary school	17	56	86
Independent primary-secondary school	20	53	72
Municipal+county council upper secondary school	59	85	89
Independent upper secondary school	40	69	81
Local authority-administered adult education	47	72	≈75
Municipal+county council schools for the learning disabled	3	31	≈41
Independent schools for the learning disabled	23	39	29
Adult education for the learning disabled	14	19	≈48
Special schools	38	86	100
National Schools for Adults	50	100	100
Schools for Sami	0	100	17

Within municipal upper secondary schools and local authority-administered adult education, most of the schools had access to an on-line Internet connection. On the primary-secondary level, the distribution is fairly even between on-line connection, ISDN, and modem. Among independent schools, modems and ISDN are predominant. The distribution of type of connection for the five largest types of schools is shown in diagram 12 on the next page. Here, too, the total level in 1999 is somewhat uncertain regarding local authority-administered adult education and schools for the learning disabled.

Diagram 12: Percentage of schools with an Internet connection



Tables 25 and 26 show the capacity and bandwidth of the Internet connection for each type of school. Two of three municipal primary-secondary schools, schools for the learning disabled, and adult education schools for the learning disabled that have an Internet connection are connected via a municipal node. For upper secondary schools and local authority-administered adult education, the corresponding figure is about three of four. Independent schools, as can be understood, normally have their connection coming directly to the school.

Table 25: Capacity of the Internet connection

1999	Percentage of schools with connections...		
	directly to the school	Via joint municipal node	no data available
	Percent	Percent	Percent
Municipal primary-secondary schools	26	67	7
Independent primary-secondary schools	48	3	49
Municipal+county council upper secondary schools	20	80	0
Independent upper secondary schools	61	2	37
Local authority-administered adult education	16	72	13
Municipal+county council schools for the learning disabled	25	65	10
Independent schools for the learning disabled	20	0	80
Adult education for the learning disabled	26	64	10
Special schools	38	25	38
SSV, National Schools for Adults	50	0	50
Schools for Sami	0	0	100

Regarding the Internet connection's bandwidth, the primary-secondary schools have approximately equally as many of the less than 128 kbits/s kind as the 128 kbits–2 Mbits/s kind. In the municipal and county council upper secondary schools, the lesser bandwidth is rare, and one school of three has more than 2 Mbits/s. Similar figures apply to local authority-administered adult education, though with a slightly smaller percentage of the largest bandwidth. Even for schools for

the learning disabled and adult education for the learning disabled, the majority have bandwidths of 128 kbits/s–2 Mbits/s.

Table 26: Bandwidth of the Internet connection

1999	Percentage of schools with...			
	<128 kbits/s	128 kbits - 2 Mbits/s	>2 Mbits/s	No data available
	Percent	Percent	Percent	Percent
Municipal primary-secondary schools	40	41	13	7
Independent primary-secondary schools	24	16	1	60
Municipal+county council upper secondary schools	14	54	32	0
Independent upper secondary schools	28	28	9	35
Local authority-administered adult education	11	54	21	14
Municipal+county council schools for the learning disabled	18	44	24	14
Independent schools for the learning disabled	0	0	0	100
Adult education for the learning disabled	26	47	15	12
Special schools	13	63	0	25
SSV, National Schools for Adults	0	100	0	0
Schools for Sami	0	0	0	100

Joint municipal schoolnets (WAN)

Question 10 in the 1999 survey concerned joint municipal schoolnets (WAN, Wide Area Network). Table 27 shows the percentage of schools according to school type that are connected to joint municipal schoolnets, and table 28 shows the percentual distribution of the school-governing bodies among the most common bandwidths.

Less than half of the municipal primary-secondary schools but close to three out of four upper secondary schools are connected via WAN. Special schools have a nation-wide network of their own. For local authority-administered adult education, schools for the learning disabled, and adult education for the learning disabled, the percentages are somewhat uncertain.

Table 27: Percentage of schools that are connected to a joint municipal schoolnet (WAN)

Percentage of schools that are connected to a joint municipal schoolnet (WAN)	
1999	Percent
Municipal primary-secondary schools	44
Independent primary-secondary schools	6
Municipal+county council upper secondary schools	74
Independent upper secondary schools	3
Local authority-administered adult education	≈58
Municipal+county council schools for the learning disabled	≈28
Independent schools for the learning disabled	0
Adult education for the learning disabled	≈49
Special schools	75
SSV, National Schools for Adults	0
Schools for Sami	0

For the municipal school-governing bodies with a joint municipal network, the most common bandwidth between the schools is greater than 2 Mbits/s in seven cases out of ten.

Table 28: School-governing bodies with schools that are connected to a joint municipal schoolnet (WAN) – the most common bandwidth between schools

Most common bandwidth between schools Percentage of school-governing bodies with WAN 1999	<128 kbits/s	128 kbits - 2 Mbits/s	>2 Mbits/s
	Percent	Percent	Percent
Municipal primary-secondary schools	6	23	71
Municipal+county council upper secondary schools	12	8	80
Local authority-administered adult education	7	19	75
Municipal+county council schools for the learning disabled	11	22	67
Adult education for the learning disabled	8	13	79
Special schools	17	0	83

5. E-mail

Questions 4-6 and 11-12 in the 1999 survey were about e-mail. The school-governing bodies were asked how many students and teachers, respectively, had access to e-mail, either with a personal e-mail address or without, and how many of these had access to their own e-mail address even outside the school network.

The answers to these questions were of highly diverse quality. Many respondents found it difficult to know how to judge the technical solutions they used. It also seemed difficult to judge the schools' and the school-governing bodies' varying degree of control and involvement in the field. The concept of "access outside the school network" was interpreted variously – some people thought this was a question of what kind of equipment students and teachers had in their homes. Since the responses from a majority of the schools were collected in two stages, there have been many problems in judging the comparability of the answers.

According to the questionnaire responses, a little more than a third of the primary-secondary pupils have access to e-mail via school. For upper secondary school students, the figure is about 60 percent, while for local authority-administered adult education (adjusted to full-time students), it is one- third. The percentages according to the various types of schools is presented in table 29 below.

Table 29: Percentage of students with access to e-mail

Percentage of students with access to e-mail 1999	with a personal e-mail address	with access to e- mail w/ out a personal address	Total	with access even outside school
	Percent	Percent	Percent	Percent
Municipal primary-secondary schools	25	14	39	16
Independent primary-secondary schools	23	14	37	12
Municipal+county council upper secondary schools	54	4	59	38
Independent upper secondary schools	51	13	65	39
Local authority-administered adult education	29	6	34	19
Municipal+county council schools for the learning disabled	13	9	22	9
Independent schools for the learning disabled	0	6	6	2
Adult education for the learning disabled	4	11	16	13
Special schools	16	27	43	8

SSV, National Schools for Adults

Among teachers, according to the questionnaire responses, two-thirds in primary-secondary schools and in local authority-administered adult education have access to e-mail via their school. Of the upper secondary school teachers, more than three-fourths have e-mail. The percentage according to various school type is presented in table 30 below.

Table 30: Percentage of teachers with access to e-mail

Percentage of teachers with access to e-mail 1999	with a personal e-mail address	with access to e- mail w/ out a personal address	Total	with access even outside school
	Percent	Percent	Percent	Percent
Municipal primary-secondary schools	51	14	66	34
Independent primary-secondary schools	32	22	55	20
Municipal+county council upper secondary schools	80	2	82	55
Independent upper secondary schools	59	14	73	42
Local authority-administered adult education	64	3	67	45
Municipal+county council schools for the learning disabled	28	9	38	19
Independent schools for the learning disabled				
Adult education for the learning disabled	44	3	47	31
Special schools	84	5	89	4
SSV, National Schools for Adults				
Schools for Sami	0	13	13	0

Table 31 shows the answers from the school-governing bodies concerning where their e-mail server was situated. For the municipal primary-secondary schools, more than half replied that they have a joint municipal server. For upper secondary schools, local authority-administered adult education, and schools for the learning disabled, this applied to a little over half. The independent schools replied that their servers are locally placed at the school or in some other manner, but a majority of them left this question unanswered.

Table 31: Access to e-mail server

1999	Percentage of school-governing bodies with e-mail servers...		
	locally at the school	Joint municipal	other arrangement
	Percent	Percent	Percent
Municipal primary-secondary schools	16	58	23
Independent primary-secondary schools	18	2	20
Municipal+county council upper secondary schools	29	46	13
Independent upper secondary schools	32	3	12
Local authority-administered adult education	21	45	17
Municipal+county council schools for the learning disabled	13	45	16
Independent schools for the learning disabled	6	0	0
Adult education for the learning disabled	5	26	5
Special schools	38	50	0
SSV, National Schools for Adults	100	0	0
Schools for Sami	0	0	0

Table 32 shows the school-governing bodies' answers to the question of whether they have an e-mail catalogue service with addresses to teachers/students. For the municipal primary-secondary schools and local authority-administered adult education, approximately one of three school-governing bodies has answered that they have a joint municipal e-mail catalogue. The upper secondary schools

have slightly fewer, but there one out of five school-governing bodies has a local catalogue within the school.

Table 32: Access to an e-mail catalogue service with addresses to teachers/students

1999	Percentage of school-governing bodies with e-mail catalogues...		
	locally at the school Procent	joint - municipal Procent	no catalogue service Procent
Municipal primary-secondary schools	12	35	51
Independent primary-secondary schools	8	1	41
Municipal+county council upper secondary schools	19	29	37
Independent upper secondary schools	23	0	21
Local authority-administered adult education	12	33	41
Municipal+county council schools for the learning disabled	9	28	42
Independent schools for the learning disabled	0	0	12
Adult education for the learning disabled	3	17	23
Special schools	50	38	0
SSV, National Schools for Adults	100	0	0
Schools for Sami	0	0	0

6. IT strategy/action program

Question 13 of the questionnaire was: *Does the school-governing body have an IT strategy or action program for the computer field?* The question pertained to programs that had been adopted by a board or committee. There were three responses to choose from:

- YES, a separate program*
- YES, as part of the school plan*
- NO*

Table 33 and diagram 13 show the answers for the sub-groups of school-governing bodies and types of schools in 1999. These answers are compared to the answers from 1993, 1995, and 1997. Up to 1997, there was an increase in the percentage of school-governing bodies that answered that they had a program. Between 1997 and 1999, no appreciable increase has taken place. In upper secondary schools and local authority-administered adult education, the percentage with an IT program has even fallen somewhat. Within municipal primary-secondary schools, more than three of four school-governing bodies answer that they have a program; within upper secondary schools, local authority-administered adult education, and schools for the learning disabled, about two of three. Independent schools have a low percentage of programs – less than a third.

In some municipalities, the answers on primary-secondary schools could not be interpreted on the school-governing (municipal) level, since different submunicipalities have given different answers.

Table 33: School-governing bodies that have adopted IT strategies/action programs for the computer field

Municipal primary-secondary schools	1993	1995	1997	1999
	Percent	Percent	Percent	Percent
Specially adopted program	11	35	68	67
Part of school plan	6	10	9	12
No program	75	43	15	18
No information available	8	10	5	2

Different answers from sub-municipalities		3	3	1
Total	100	100	100	100

Independent primary secondary schools	1995	1997	1999
	Percent	Percent	Percent
Specially adopted program	16	18	15
Part of school plan	14	12	9
No program	62	56	36
No information available	7	14	40
Total	100	100	100

Municipal+county council upper secondary schools	1993	1995	1997	1999
	Percent	Percent	Percent	Percent
Specially adopted program	11	35	55	52
Part of school plan	5	8	10	11
No program	62	42	17	19
No information available	22	14	18	18
Total	100	100	100	100

Independent upper secondary schools	1995	1997	1999
	Percent	Percent	Percent
Specially adopted program	22	16	22
Part of school plan	6	13	5
No program	57	55	29
No information available	14	15	44
Total	100	100	100

Local authority-administered adult education	1993	1995	1997	1999
	Percent	Percent	Percent	Percent
Specially adopted program	8	32	62	54
Part of school plan	3	6	9	14
No program	41	40	15	18
No information available	48	22	14	14
Total	100	100	100	100

Municipal+county council schools for the learning disabled	1993	1995	1997	1999
	Percent	Percent	Percent	Percent
Specially adopted program	5	40	59	57
Part of school plan	5	13	10	12
No program	62	28	11	14
No information available	28	19	19	17
Total	100	100	100	100

Independent schools for the learning disabled	1995	1997	1999
	Percent	Percent	Percent
Specially adopted program	0	6	0
Part of school plan	8	0	0
No program	85	56	29
No information available	8	38	71
Total	100	100	100

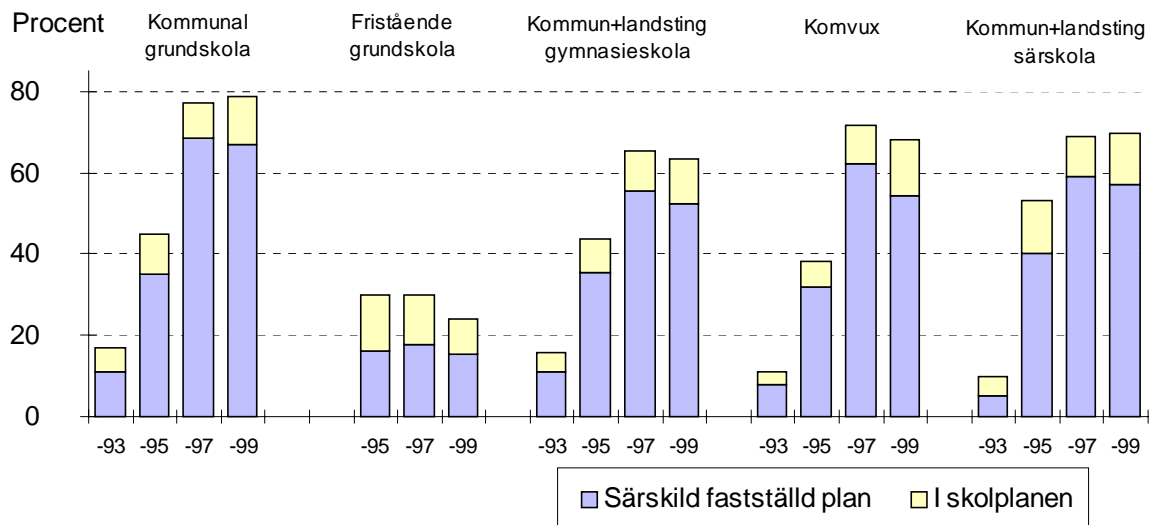
Adult education for the learning disabled	1995	1997	1999
	Percent	Percent	Percent
Specially adopted program	32	39	32
Part of school plan	10	7	10
No program	36	13	7
No information available	23	41	51
Total	100	100	100

Special schools	1995	1997	1999
8 school-governing bodies, 8 schools	Percent	Percent	Percent
Specially adopted program	13	43	50
Part of school plan	0	0	0
No program	50	43	13
No information available	38	14	38
Total	100	100	100

National Schools for Adults		1995	1997	1999
1 school-governing body, 2 schools		Percent	Percent	Percent
Specially adopted program		0	0	100
Part of school plan		0	0	0
No program		100	100	0
No information available		0	0	0
Total		100	100	100

Schools for Sami		1995	1997	1999
1 school-governing body, 6 schools		Percent	Percent	Percent
Specially adopted program		0	100	0
Part of school plan		0	0	0
No program		100	0	0
No information available		0	0	100
Total		100	100	100

Diagram 13: Percentage of school-governing bodies with IT strategies/action programs for the computer field



7. Response frequency

The 1999 survey was sent to a total of 1,953 recipients, distributed among seven types of schools and six kinds of school-governing bodies. The number of answers was 1,864, which means that responses came from 95.4 percent. This 95.4 percent represent approximately 98.8 percent of the total number of students attending these particular types of schools.

The response frequency varies between different sub-groups as can be seen in table 34. The reason why the number of responses within the municipal primary-secondary schools is larger than the number of municipalities in Sweden is because, in some municipalities, the questionnaire was sent to the sub-municipal councils in charge of the primary-secondary educational level.

Table 34: Response frequency for different sub-groups

Response frequency	1993		1995		1997		1999	
	No. of responses	Percent	No. of responses	Percent	No. of responses	Percent	No. of responses	Percent
Municipal primary-secondary schools	258	90	349	97,2	388	96,8	379	98,7
Independent primary-secondary schools			206	95,4	294	92,7	301	92,3

Municipal+county council upper secondary schools	201	87	277	93,2	291	95,7	286	97,6
Independent upper secondary schools			70	90,9	83	90,2	88	81,5
Local authority-administered adult education	231		281	93,4	290	96,0	290	97,3
Municipal+county council schools for the learning disabled	112		151	90,4	257	93,5	255	98,1
Independent schools for the learning disabled			15	88,2	24	96,0	25	92,6
Adult education for the learning disabled			175	91,6	228	93,8	230	93,5
Special schools			8	100,0	7	87,5	8	100,0
SSV, National Schools for Adults			1	100,0	2	100,0	1	50,0
Schools for Sami			1	100,0	1	100,0	1	100,0
Total			1 534	93,8	1 865	94,7	1 864	95,4

The response frequencies in 1995, 1997, and 1999 must be assessed as exceptionally high. The reliability of the material should be excellent. Comparability with the 1993 survey, however, is somewhat more uncertain, but should be relatively good for most of the questions as long as the comparison is limited to the national level.

In 1993, there was probably a “drop-out” of unknown extent, because some school-governing bodies did not answer the questionnaire with a view to all their school types. In 1995 and 1997, an effort was made to calculate the extent of this drop-out. According to the responses in 1997 from the school-governing bodies, this “partial drop-out” comprised 162 schools, making up 1.6 percent of the total number of students in all types of schools and school-governing bodies.

In 1999, emphasis was given the fact that the answers had to be complete, i.e., cover all the schools of the school-governing body. It is therefore assumed that there has been no partial drop-out in 1999.

8. Survey questionnaire

(Logotype, LK Statistik & utredningar)



Schools and Computers 1999

Complete questions and explanations for the questionnaire form

Check first that you are answering the questionnaire for the correct type of school. The type is printed on the label in the upper right-hand corner. You should have received one report form for each type of school. If several types of schools are integrated in terms of computers, please make a note of this on the extra lines below the label.

Page 1 **Compilation of answers from the schools**

Question 1 **In total, how many computers were available for teacher use only, i.e., for teachers' pedagogical work for such things as preparation and evaluation of**

classes, correcting tests, constructing teaching materials or databases, etc., as of June 1, 1999?

Report only computers that the school-governing body (employer) has supplied for teacher use only. Computers that are also used in teaching are to be reported under question 2. After the total number of computers for teacher use, write down how many of them are portable (laptops) and how many of the total are connected to the Internet.

Question 2 **In total, how many computers were available for use in teaching in the schools as of June 1, 1999?**

Computers within each institution intended for teacher use only or other computers that are used only by teachers for their personal work are to be reported under question 1. After the total number of computers used in teaching, write down how many of them are laptops, how many are connected to the Internet, and how many are connected to local networks.

Question 3 **Where are the computers used in teaching placed?**

Please report here how many of the total number of computers used in teaching according to question 2 are placed in separate computer rooms and how many are placed in other teaching facilities.

Questions 4-5 **How many of the teachers and students, respectively, have access to e-mail?**

5 Please report here how many teachers and students, respectively, have access to e-mail in school, including how many have a personal e-mail address and how many have access to e-mail but without a personal e-mail address.

Question 6 **How many teachers and students, respectively, have access to their e-mail even outside the school's network?**

Please report here how many teachers and students, respectively, have access to their own school e-mail address even outside the school's network, no matter what the technology.

Page 2 Questions to be answered by each school-governing body

Question 7 **How many schools have access to the Internet?**

The object was to determine how many schools have access to the Internet and which technology is used for the connection. The alternatives are modems with a capacity of up to 56 kbits/s, ADSL modems (Asymmetric Digital Subscriber Line), ISDN (Integrated Services Digital Network), wireless connections via a radio relay link, or an on-line connection.

Question 8 **The capacity of the Internet connection**

The number of schools with their own Internet connection coming directly to the school, and the number of schools with Internet connections via joint municipal nodes.

Question 9 **The bandwidth of the Internet connection**

The number of schools with three different bandwidths for their Internet connection – less than 128 kbits/s, 128 kbits/s–2 Mbits/s, or more than 2 Mbits/s.

Question 10 **Occurrence of joint municipal schoolnets (WAN, Wide Area Network)**

The number of schools participating in a joint municipal network, and the most common bandwidth of the net between schools (same classifications as in question 9).

Question 11 E-mail server in...

To be indicated here is whether the schools' e-mail goes via an individual server at each school, via a joint municipal server, or in some other way.

Question 12 Is there an e-mail catalogue service with addresses to teachers/students?

If a catalogue service is available, please note if it is local at each school or joint municipal.

Question 13 Does the school-governing body (municipal council, county council, independent school, special school, or governmental National Schools for Adults) have an IT strategy or action program for the computer field?

The question applies only to programs that have been officially adopted by a board or committee.

Note! The reported information must include all the schools of all types that the school-governing body is in charge of.

If there are any questions about collecting and presenting the answers to these questions, please call or e-mail to:

Sten Johansson 013-20 88 52 sten.johansson@lkstat.linkoping.se

For questions on ItiS, call or e-mail to:

Staffan Viberg 0171-254 77, 070-518 54 77 staffan.viberg@kommun.enkoping.se

LK Statistik & utredningar
(logotype)

**Questionnaire form for
"SCHOOLS AND COMPUTERS 1999"**

Page 1. Compilation of answers from schools

Note! The answer is for this kind of school :

If other types of schools have been integrated.....
into the answer, please write which types here:.....

Question 1

Computers for use by teachers only

How many computers?

Total

All types (F10) of which laptops (F11) computers connected to the Internet (F12)

Number of computers:

Question 2**Computers used in teaching**

How many computers?

Total

All types (F20) of which laptops (F21) computers connected to the Internet (F22)
connected to local network (F23)

Number of computers:

Question 3

Placement of computers used in teaching

How many computers?

In computer rooms (F31) In other teaching facilities (F32)

Number of computers:

Question 4

Access to e-mail for teachers

How many teachers?

With personal e-mail addresses (F41) Access to e-mail without a personal e-mail address (F42)

Question 5

Access to e-mail for students

How many students?

With personal e-mail addresses (F51) Access to e-mail without a personal e-mail address (F52)

Number of people:

Question 6

Number of teachers/students with access to their e-mail addresses even outside the school's network:

Teachers: (F61) Students: (F62)

Views and comments: _____

Person in charge of submitting answers:

Send to: LK Statistik & Utredningar
581 81 Linköping

Phone: _____

Fax: 013-20 53 60

Questionnaire form for "SCHOOLS AND COMPUTERS 1999"

Page 2. Questions to be answered by each school-governing body

Note! The answer is for this type/these types of school(s): _____

Question 7

How many schools have access to the Internet...

Total number of schools with access to the Internet F70

Of which via...

modem 0-56 kbits/s F71

ADSL modem F72
ISDN F73
Wireless/radio relay link F74
On-line connection F75

Number of schools:

Question 8

Capacity of the Internet connection

Number of schools with...

connection coming directly to the school F81

via joint municipal node F82

Number of schools:

Question 9

Bandwidth of the Internet connection

Number of schools with bandwidth of...

<128 kbits/s F91

128 kbits-2 Mbits/s F92

>2 Mbits/s F93

Number of schools:

Question 10

Joint municipal schoolnet (WAN)

Number of schools in joint municipal network

Number of schools:

Most common bandwidth between the schools:

<128 kbits/s 128 kbits-2 Mbits/s >2 Mbits/s

Question 11

E-mail server placed...

Locally at the schools ☒

Jointly in the municipality ☒

Other arrangement ☒

Question 12

Is there an e-mail catalogue service with addresses to teachers/students?

Yes, locally at the schools ☒

Yes, jointly at the municipal level ☒

No ☒

Question 13

Does the school-governing body have an IT strategy/action program for the computer field?

This question applies only to programs that have been officially adopted by the board/committee.

YES, specially adopted program	☒
YES, part of the school plan	☒
NO	☒