



Teenagers


and the new

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information technologies

Analysis of the data resulting from a survey relating to new information technologies among teenagers and their families in Ticino.

Febraury 1999



The ATED analysis does not attempt to isolate the sociological motives explaining the results presented. For this reason there are no references to underlying theory and we omit cultural aspects which should be the basis of a separate behavioural research.

The survey can be found on Internet:
<http://www.tinet.ch/ated/survey>

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Summary

1. In the Canton of Ticino, 2 families (with teenagers attending school) out of 3 own a personal computer (PC). Usually, it is the youngest members of the family who use it. The computer is more widespread in families whose children go to high school than in families whose children follow an apprenticeship.

2. Internet is not widespread in the families, since 81% of the respondents are not connected to it. Among Internet users the most likely „navigators“ are males attending high school. The teenager-parent gap concerning the use of Internet is not as wide as it is for the use of the PC. Parents who use Internet most are of Swiss nationality.

3. More than 90% of those interviewed indicated that the personal computer is a tool. It is interesting to note that most of the students attending lower secondary school define it as a (clever) robot. They look at the personal computer in two ways: as a source of knowledge and as entertainment. The use of the personal computer varies: more than 80% use it to write; whereas more than 70% use it to play. Also, it has been observed that - depending on which type of school is attended - the ways of using the personal computer differ.

4. Internet is mainly considered a means of communication and for finding information. Lower secondary school students, in particular non-Swiss and females, see the web as a source of information. In terms of its use it turns out that the Internet is mainly employed to search for information, though both curiosity and entertainment are incentives to surf on the web. The most regular info searchers are, once more, high school students, mainly Swiss males; whereas vocational students or young people following an apprenticeship surf the web for entertainment or curiosity. It is interesting to note that lower secondary school students and non-Swiss mostly use Internet as a means of communication.

5. Among the youngsters interviewed, 3 out of 5 claimed to use the computer weekly; whereas nearly 1 out of 5 never uses it, or hardly ever. Those who use a personal computer daily are mostly males following an apprenticeship; whereas it is less used by non-Swiss females attending lower secondary school. As far as an Internet connection is concerned, only 1 teenager out of 6 has one at home and uses it effectively.

6. School plays a fundamental role in the students' information technology education; in fact about 41% of them have learnt how to use a personal computer at school. It has also been observed that those attending lower secondary school claimed to have learnt how to use a personal computer from "somebody else", i.e. directly from a parent or a relative. It is mostly the Swiss females who ask their parents;

whereas non-Swiss often become familiar with Information technology through a friend's help.

7. As far as the computer skills relating to the teenagers' world are concerned, about half of those interviewed are able to install a computer program. 2 people out of 3 use an anti-virus program; the most used programs concern end-user computing. Most of those interviewed save data only if necessary and a high percentage of respondents never do; only 17% of the people who responded save data regularly. In addition, nearly 80% of teenagers do not know any programming language.

8. When asked "Do you think you will be using a computer in your future job?" 2 out of 3 answered affirmatively, especially those attending an apprenticeship or vocational schools. Moreover, 70% of the young people - in particular males attending lower secondary and high schools - plan to use the computer at home and for fun in the future. Also the question "Will you be using the Internet, in the future, to make purchases?" was asked in order to sound Internet prospects. Most of the interviewed (40%) did not express themselves about the prospects of a virtual market. The users are uncertain about this specific use of Internet. Moreover, even though many companies use large numbers of personal computers, those actually connected to the virtual net are only relatively few.

In the last decades information technology and its tools have spread rapidly in all sectors of society. It has been a sudden development and today it seems irreversible considering the role computers play in our post-industrial society. The presence of Information technology has given rise to many and profound changes in all the fields of everyday life, from the socio-economic to the educational one. Nobody today can remain aloof even though attitudes and behaviour towards the new technologies are not unique. Many have accepted the computer phenomenon without delay, becoming fully aware of it; others have tried to avoid it as far as possible, viewing this new reality as too demanding, maybe intrusive and with too many unknown factors.

In this scenario there are technologies which seem to become basic instruments able to condition people's ways of learning, of communicating, of working and generally of living. For instance, Internet is more and more often on everybody's lips and this for the most diverse topics.

We are witnessing a growing awareness of the incredible possibilities offered by the "information highways", even though some aspects of the new media are not really novelties but rather improvements of what is already available. For instance, the concept of combined use of media - i.e. the transmission of integrated images, sounds, texts, ... - was already available through illustrated books, cinema or television. What draws interest to the new media seems to be the so-called technical interaction which differs from the "traditional" interaction among human beings. The latter is a symmetrical sort of communication which takes place within a recurrent circuit of reciprocal regulations and corrections; whereas in the former the receiver has no direct contact with the transmitter, he interacts only with a machine.

Technical interaction is made possible by the computer; it was impossible to create it from means such as radio, newspapers, television or interaction among distant human beings. The novelties of communication via the computer are, thus, technical interaction and technical processing of information (the computer is not a passive machine but an active one able to process information automatically within the limits of its program)¹. Thanks to this particular kind of interaction, i.e. one dividing space and time produced by means of electronic communication (for instance: e-mail), it is possible to receive messages from remote locations without any delay (or at least a very short one). The rapid increase of electronic communication networks has practically eliminated distance. Even though geographically far away, the users are able to interact with each other or to act within the limits of a mediate quasi-interaction².

Another important element which characterizes Internet is the great risk of obsolescence regarding information: the process to access the net and the tools to navigate keep evolving. Moreover, the advantage and the disadvantage of Internet is the abundance (or super-

¹ University course (1997-98) on Teorie della comunicazione di massa (i.e. Theories of Mass Communication) held by Professor U. Saxer in Lugano at the Facoltà di scienze della comunicazione.

² J. B. Thompson, *Communication media and modernity*, 1998.

³M. Calvo, F. Ciotti, G. Roncaglia, M.A. Zela, Internet '96, 1996.

abundance) of raw information. This makes it difficult for the users to find "second level" information: to organise and/or evaluate data in order to be able to choose the right course when surfing on the web³. Often it is also possible to find oneself on sites containing information of dubious moral value (such as racist ideas, paedophilia,...) because there is no regulation about what can or cannot be loaded on the net.

The present analysis has tried to address some of these issues relating to the Internet phenomenon, in addition to quantifying the presence and use of information technologies.

1.1 Goals of the survey

The objective of this analysis is to highlight the cultural impact that the new technology is having on teenagers and their families. At the same time we want to provide companies, organizations and public institutions with some information about the economic and social impact of the "technological" phenomenon. In this way we should have a fairly complete picture of the technological "habits" teenagers and their families have in Ticino.

It is often claimed that the personal computer is nowadays commonplace in the home. This analysis tries to stress how much and in what way the personal computer is effectively used at home, at school and at work. Parallel to the analysis of the use of the personal computer we observed the new, fast-spreading phenomenon: the use of Internet.

1.2 Methodology

This analysis - promoted by ATED, in cooperation with two bureaux in the public administration of Canton Ticino (USR: Ufficio studi e ricerche del Dipartimento istruzione e cultura, i.e. Analysis & Research Bureau in the Education & Culture Department) and USTAT (Ufficio cantonale di statistica, i.e. Bureau of Statistics) - involved a total of 1386 teenagers enrolled in the schools of Canton Ticino. Among the interviewed, 508 attended lower secondary school, 304 attended high school and 574 attended vocational school either: full-time or combined with an apprenticeship.

The data was collected from a questionnaire handed out by teachers to selected classes during school time. The survey was carried out in the period February - April 1998.

Table 1 shows the structure of the sample and compares it with the total population of teenagers at school.

Table 1**Structure of the sample and comparison with the total population (in %)**

	Lower secondary School		High School		Vocational School	
	sample	total pop.	sample	total pop.	sample	total pop.
Sex						
Male	49.8	51.2	48.0	45.9	54.7	61.7
Female	50.2	48.8	52.0	54.1	45.3	38.3
Age						
13-14 years old	66.9	80.0	0.0	0.0	0.0	0.0
15-16 years old	32.3	19.9	36.8	45.0	28.9	33.6
17-18 years old	0.8	0.1	49.7	44.4	46.0	43.7
19 years old & older	0.0	0.0	13.5	10.6	25.1	22.7
Location						
Centre	28.3	28.1	33.9	28.8	25.6	28.4
Suburbs	43.8	44.6	35.2	48.4	43.7	44.1
Hinterland	17.9	20.9	22.7	18.3	22.3	21.5
Mountain	10.0	6.4	8.2	4.5	8.4	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

From the table presented above, the sample of teenagers involved in the survey seems to be representative of the situation in Ticino. Furthermore, the segmentation of the sample in age groups should allow the observation of any trend in the expanding technological universe.

The questionnaire had a total of 40 questions, some concerning the use of the personal computer at home, at school or at work; others concerned the skills acquired, the equipment installed and the attitude towards the new technologies.

Through the teenagers' opinions the survey has tried to emphasize the spread and use of the personal computer and Internet in families living in Ticino. Nevertheless, we must bear in mind that the data collected cannot be generalized to every family unit in the Canton since the survey targeted a very specific part of the population, i.e.: families with a teenager son or daughter enrolled in a state school.

Table 2**Structure of family units in 1990**

	Number of family units		Number of people in family units	
	Absolute number	Percentage	Absolute number	Percentage
Families with children	48'497	41.1	169'478	62.0
Families without children	69'487	58.9	103'671	38.0
Total	117'984	100.0	273'149	100.0

Source: Federal census of the population in 1990 / Statistical Year-Book of Ticino, Bellinzona, USTAT, 1997

The data in Table 2 shows that only 41.1% of family units consist of families with children. Moreover, many of these do not have children aged from 13 to 19. Therefore, the information collected through our survey refers to a restricted number of family units with a very specific structure. Indeed, the presence of a teenager is very likely the reason which triggers greater awareness of computer technology.

To end these methodological notes we must remind the reader that the number of answers given to each question varies, even considerably. Indeed, the questionnaire included questions to which only teenagers owning computer equipment at home could answer; whereas other questions, relating to the use of the computer, could be answered by every teenager who had had the chance to use one anywhere (for instance: at school, at work or at a friend's).

2.

Information technologies in the families

In this first chapter we highlight indicators of general aspects relating to the level of dissemination of information technology in the families of Ticino.

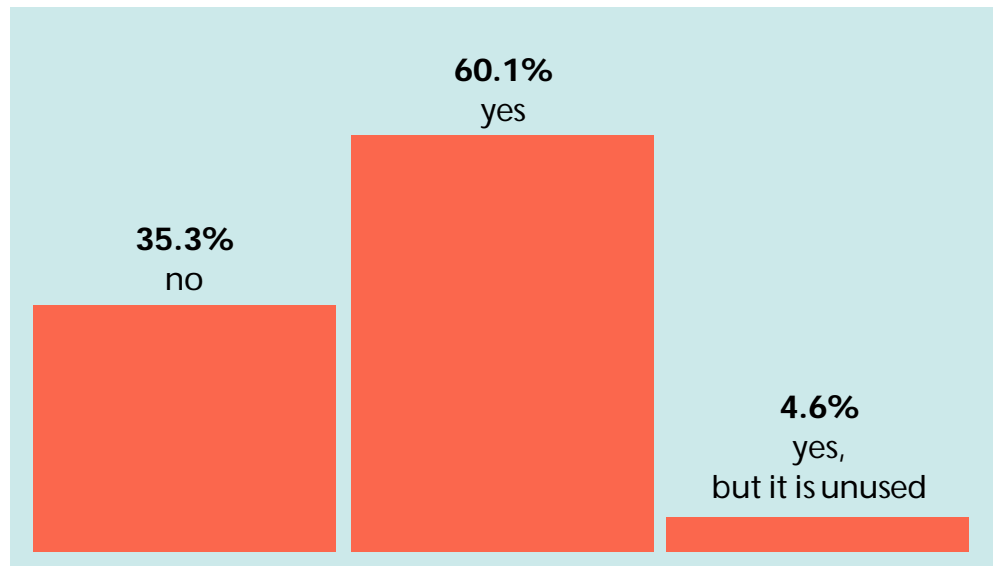
2.1

The presence of the personal computer

The interviewed were asked some questions concerning their family unit, especially if they have a personal computer at home. In general, about 2 families (with teenagers) out of 3 own a personal computer: a small percentage of them (5%) own a personal computer (PC) but do not use it.

Graph 1

Distribution of PC in families with teenagers living in Ticino



It is interesting to note that 70% of the Swiss families in the sample have a PC and use it; whereas the percentage lowers to 54.5% for the families of Italian nationality and to 40.5% for families of other nationality. In all three cases only a low percentage of them report that the PC is present at home but not used. It has also been observed that about 80% of the teenagers attending high school have a PC and use it more often than those attending lower secondary school. This high number of PCs - present in those homes where teenagers are attending high school - is due to the fact that nowadays the computer has become an important tool in the educational system. It was noted that who is attending vocational school have got a smaller number of PCs at home when compared to other students, probably because he/she can already use it at work and at school. Moreover, the percentage of teenagers coming from medium-high income

families is more frequently found in high school. This aspect might make it easier and quicker for them to buy and upgrade the computer equipment

Table 3 *Presence and use of the PC at home according to the type of school attended by the teenager (in %)*

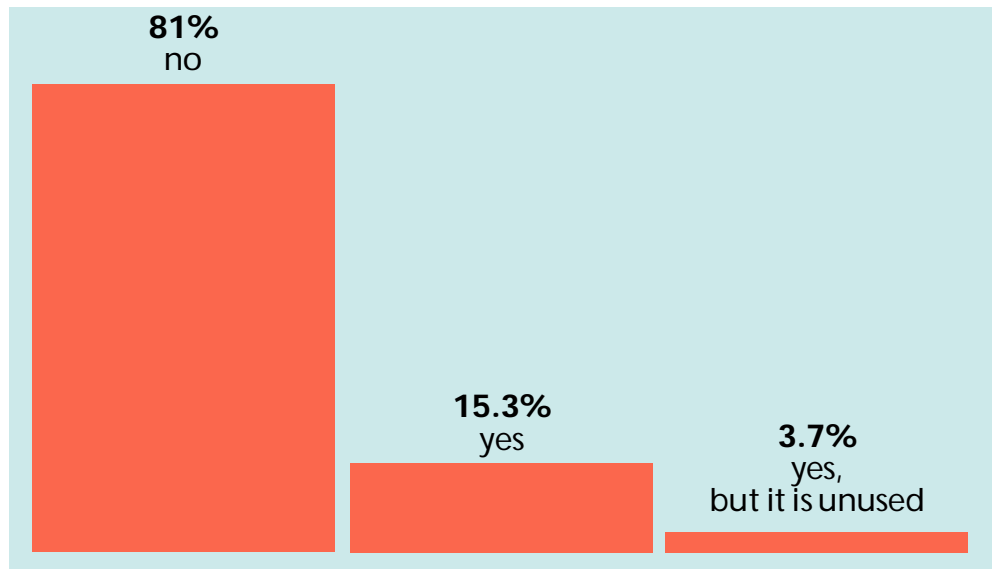
	Lower secondary School	High School	Vocational School
Absent	42.1	17.5	39.2
Present but unused	5.0	3.1	5.1
Present AND used	52.9	79.4	55.7

2.2 The coming of Internet

In the questionnaire there were questions concerning the knowledge and use of Internet. Analysing the answers it turns out that 81% of the families with teenagers are not connected to Internet. In spite of Internet being well-known and spoken about by lots of people, still today the number of families connected to Internet is small. This situation is probably due to different factors, on the one hand there is a certain amount of complexity in installing and using Internet. On the other hand, the costs of this new technology are not yet included in the family's budget.

Graph 2

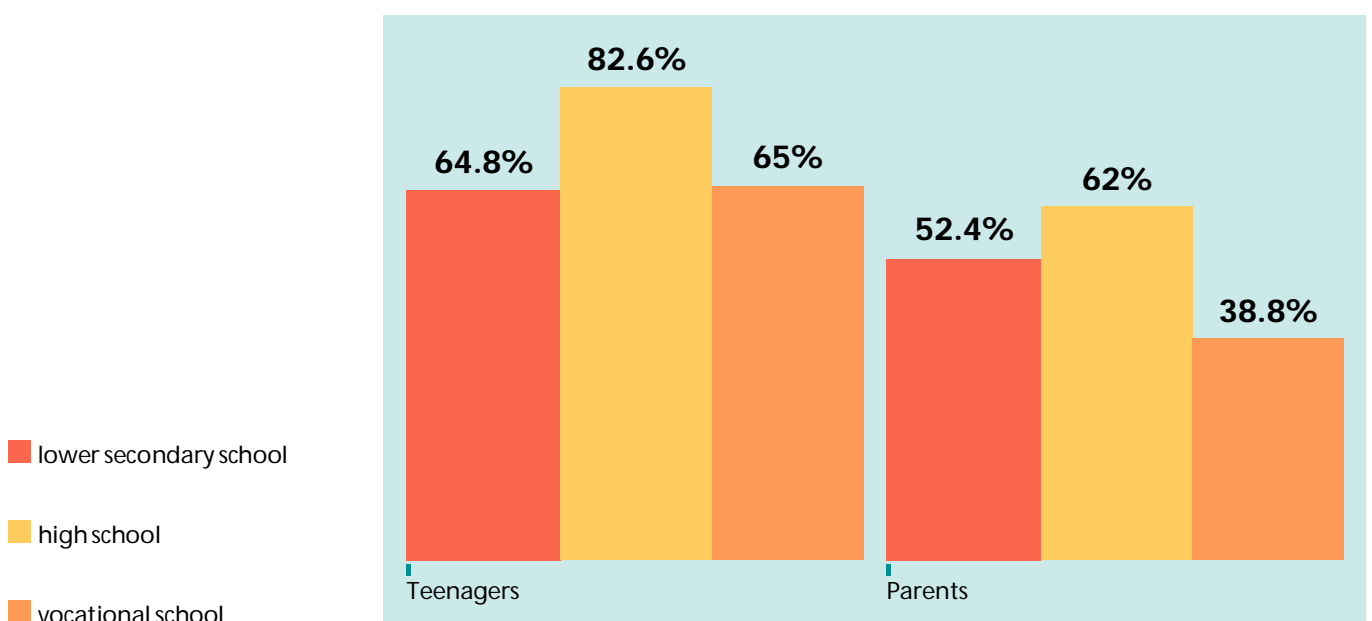
Distribution of Internet by the families living in Ticino



When asked “Who uses the PC (Internet included) at home most?” 69% of the teenagers claimed to use it more than their parents; indeed, only half of the parents connected to Internet actually use it. The gap between parents and children is mostly visible with male teenagers attending high school. As far as Internet is concerned, 20% use it personally and it is in this category that males attending high school are found. The teenager-parent gap on the use of Internet is not as wide as on the use of the PC. Parents who more often surf on Internet are Swiss nationals.

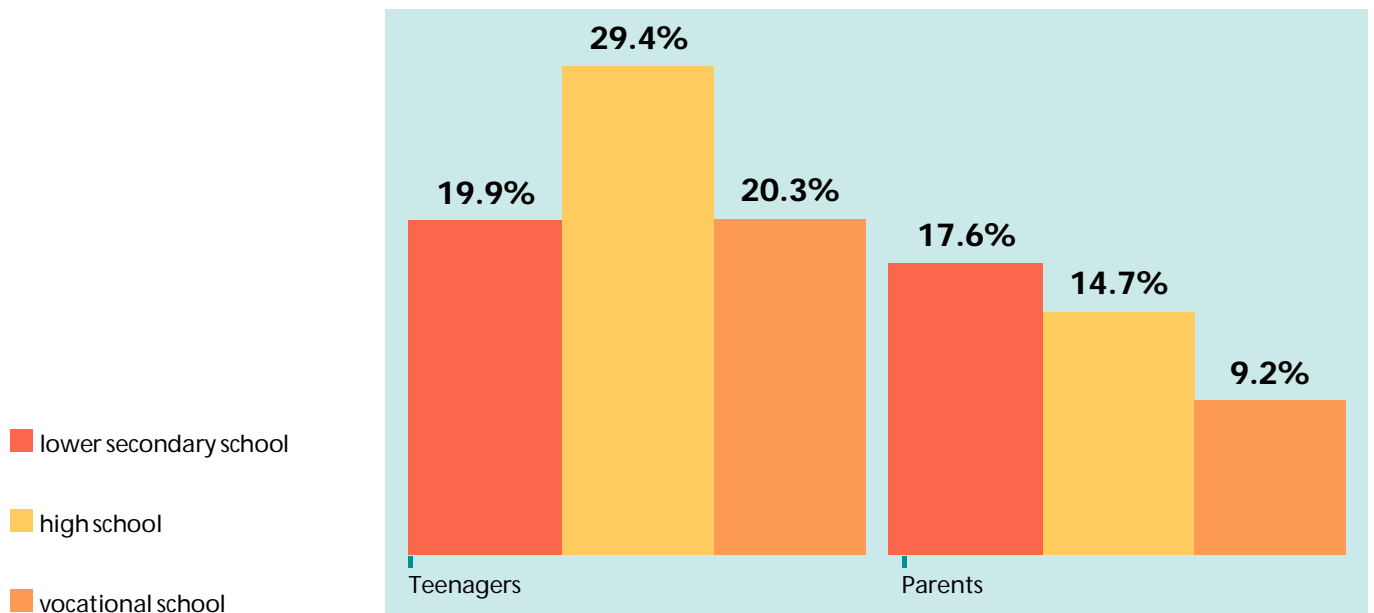
Graph 3

Use of the PC in the family: comparison between teenagers and parents



Graph 4

Internet use in the family: comparison between teenagers and parents



Graph 4 shows that it is parents of lower secondary school teenagers who more often use Internet. We could formulate the hypothesis that Internet has a wider impact on younger parents.

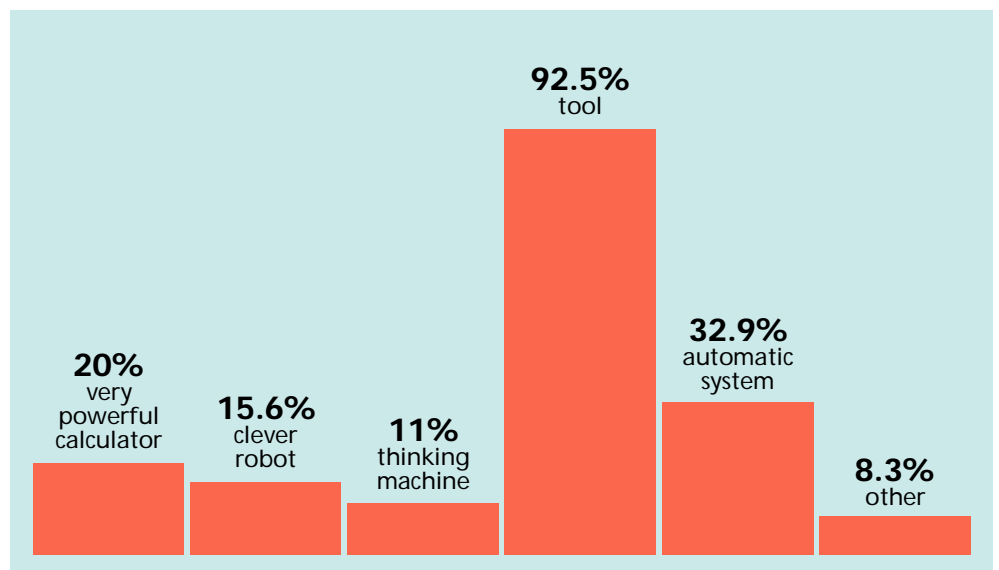
3. Teenagers and information technology

This chapter deals with youth and its attitude, opinions and skills in relation to information technology.

3.1 Attitudes towards information technologies

In our survey two questions inquired in what light the PC is seen and it was discovered that more than 90% of the interviewed think of it as a tool. It is defined as a very powerful calculator, especially by males attending high school. Most of the youngest teenagers (13 years old) attending lower secondary school define it as a (clever) robot since they view the PC both as an educational tool and, more often, as a play thing. It is considered an automatic system by the teenagers attending vocational school, mostly males and non-Swiss.

Graph 5 *Functionality of the PC (various answers possible)*



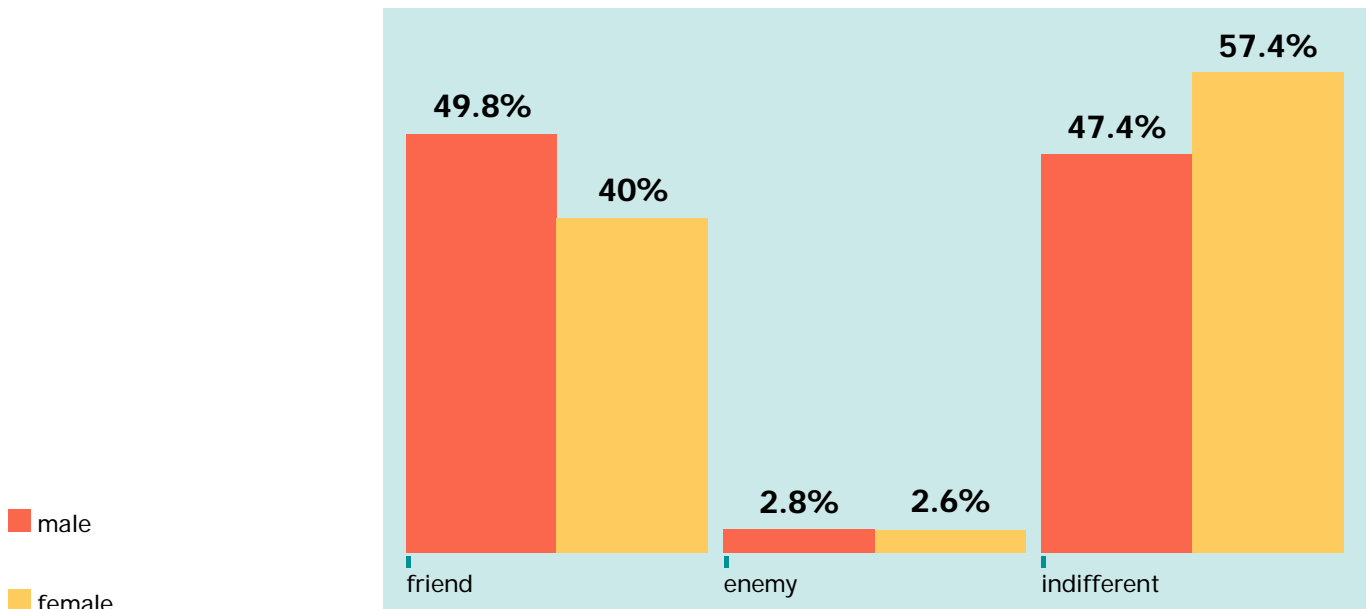
Another question was asked about the personal computer: "How do you consider the PC?" 45% consider it a "friend"; whereas only 3% consider it an "enemy". Those attending lower secondary school are more likely to consider it a "friend"; whereas more than half attending post-compulsory schooling consider it "indifferently".

Table 4**Considerations about the personal computer according to the type of school attended (in %)**

	Lower secondary School	High School	Vocational School
Friend	52.1	38.2	42.5
Enemy	1.6	2.0	4.0
indifferent	46.3	59.8	53.5

There is a marked lack of interest from girls towards the PC which is defined as an "indifferent" tool. In a USSR inquiry (1989-1993), a similar question was asked to lower secondary school students. Generally, there are no major differences, though the number of teenagers that consider the PC as an enemy seems to be decreasing. Though their sample was smaller and limited to 6 lower secondary school classes, 12% of the females viewed the personal computer as a potential enemy; whereas for the males the percentage was 4%⁴. The following graph relating to our survey shows how these percentages have clearly decreased: 2.6% for the females and 2.8% for the males.

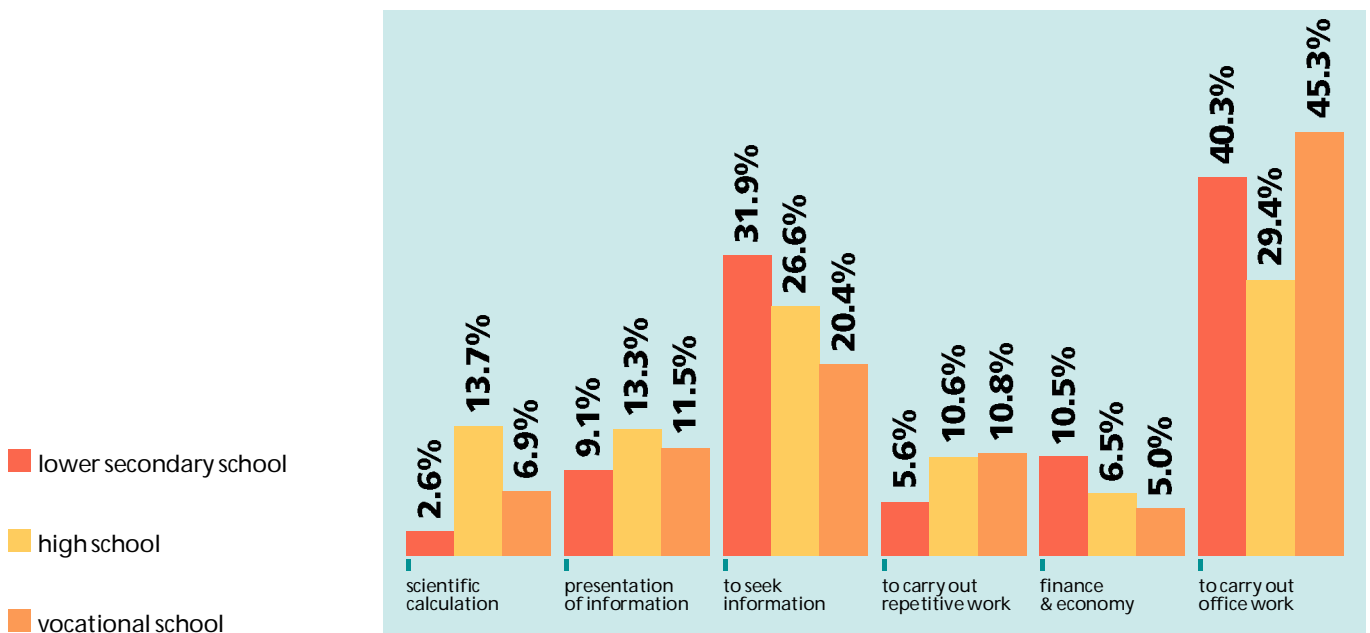
⁴ M. Donati et al., P3i - Progetto d'integrazione dell'informatica nell'insegnamento (i.e. Project for integrating Information technologies in the educational system), Bellinzona, Ufficio studi e ricerche (Study & Research Office), 1994.

Graph 6**Attitude towards the PC according to sex**

According to the teenagers interviewed, the personal computer is most suitable in the information-seeking field (26.0%) and in carrying out office work (40.0%). Furthermore, teenagers attending high school consider the PC valuable for performing scientific calculations. As one can see, even though there is not much difference in age among the interviewed (from 13 years old to 19 and older ones), their views about the technological world are somewhat different.

Graph 7

The most suitable PC operational field according to the type of school

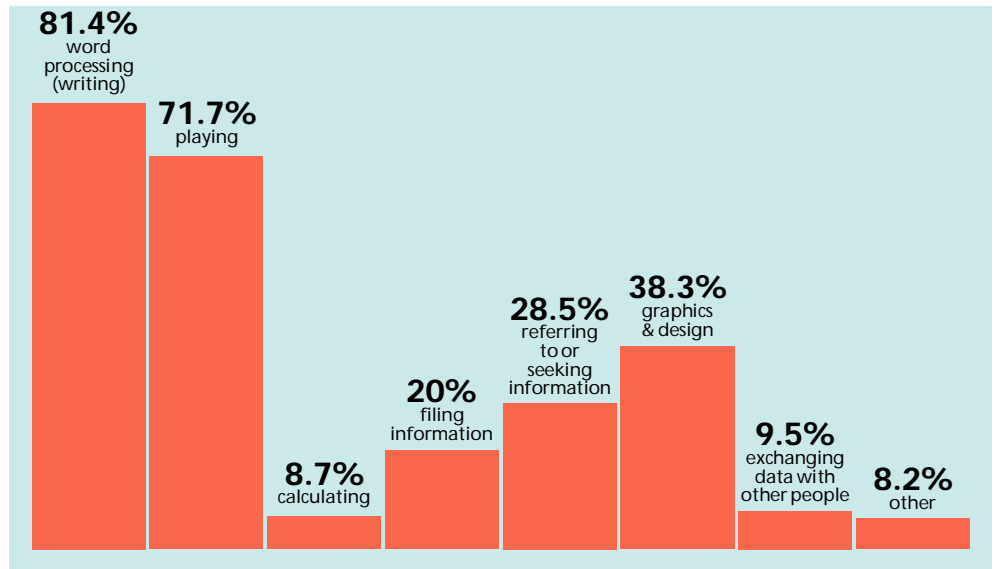


According to males the PC is mostly used to carry out repetitive work; whereas according to females the PC is useful to carry out office work (both statements are found equally in lower secondary and vocational schools).

As far as the practical use of the personal computer is concerned, it turns out that more than 80% of the users need it for word processing; whereas more than 70% use it to play. „Play“ occupies a top position on the chart of computer activities.

Graph 8

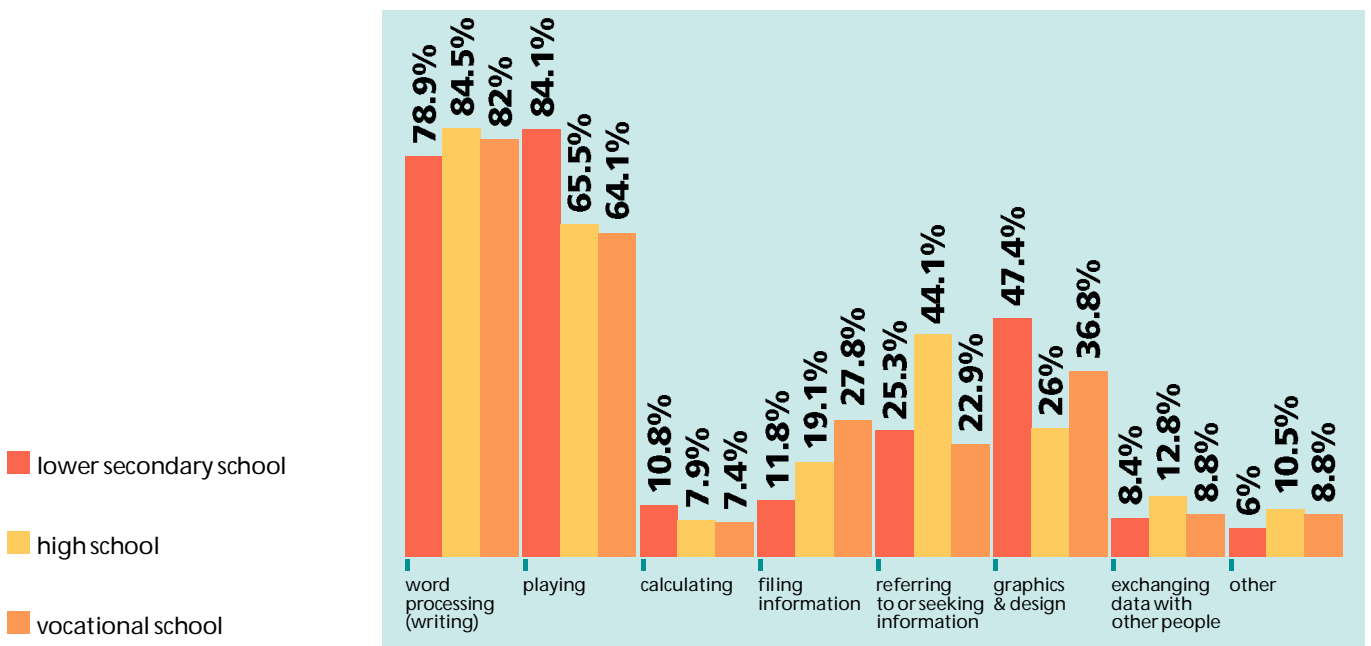
Use of the PC at home



Females and most Swiss nationals use the PC as a typewriter; whereas students attending lower secondary school (especially males) use it to play. Teenagers attending vocational school use the personal computer to catalogue information; whereas those attending high school use it mostly for seeking information. Moreover it turned out that lower secondary school students particularly use graphics and design programs. Therefore interest in information technology varies according to age and the school attended. It is interesting to note that there is a correlation between the hypothetical use of the PC and its real use.

Graph 9

Use of the PC according to the type of school

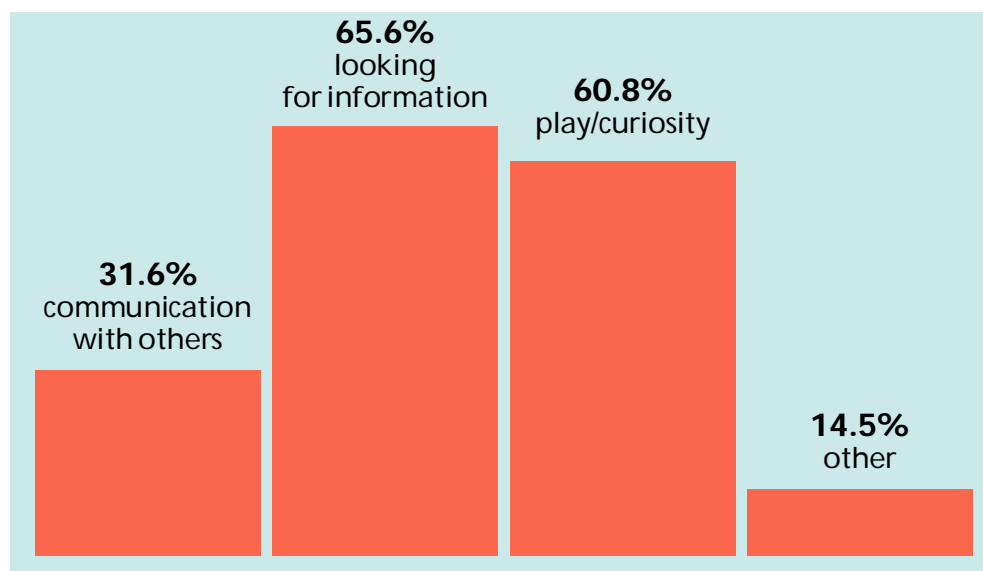


The same question was asked to the members of the interviewed's family: "In what field do they need - or, rather use - the PC?" Again 80% use it to write but the „play“ percentage lowers to 62%. This might be due to the fact that in the family the PC is also used for other activities such as filing and retrieving information, graphics and design.

It was also asked why they use Internet. The most frequent answers were: looking for information, for fun/curiosity.

Graph 10

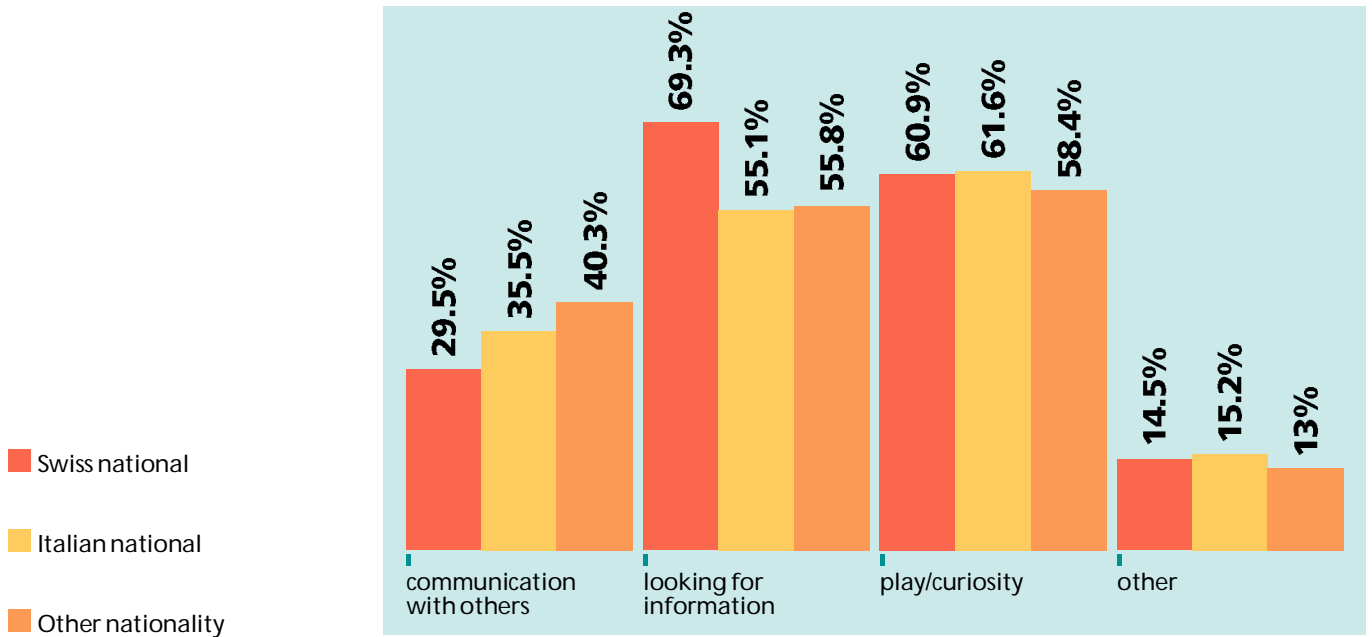
Main reasons for using Internet



Among the Internet users it is mostly foreigners (40.3%) who use it to communicate. This response can be interpreted in two ways: foreigners use Internet to communicate with people sharing the same culture; or, by e-mail they can even send intercontinental messages at the cost of a local phone call.

Graph 11

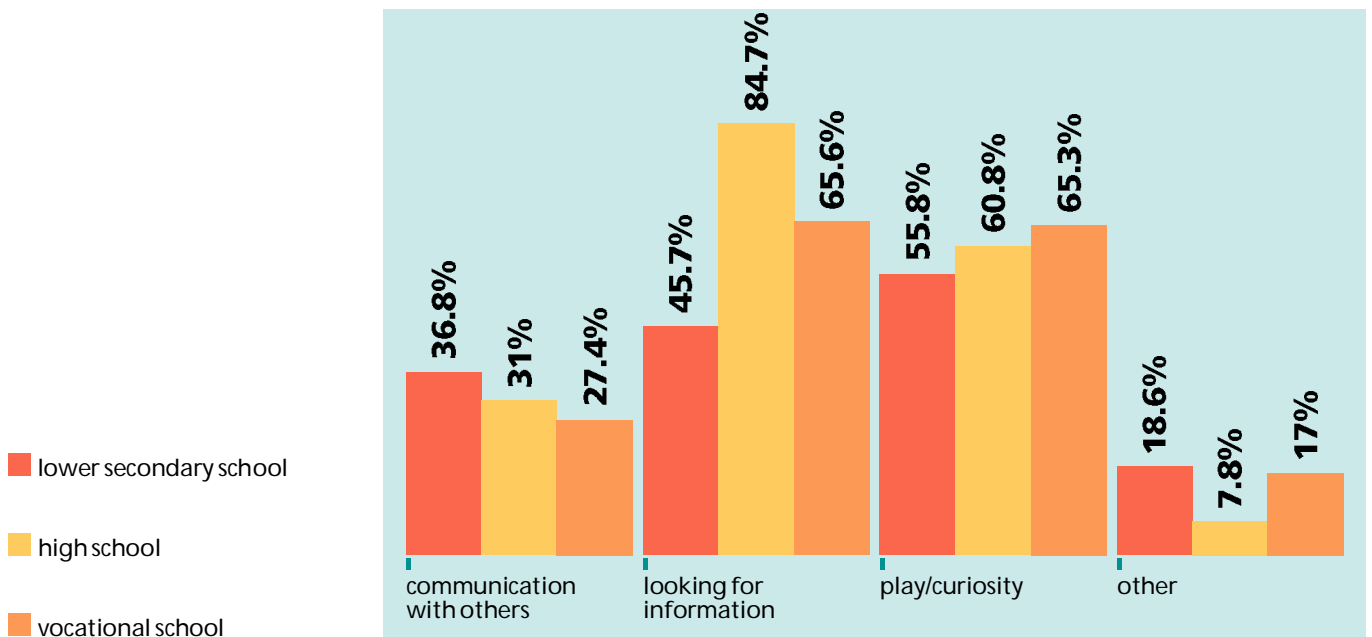
Use of Internet according to nationality



The usual surfers on the net looking for information are the students attending high school and are mostly Swiss males. Whereas males attending vocational school prefer to use Internet as a means of entertainment and to satisfy their curiosity. It is interesting to note that lower secondary school students use the net to communicate more than the others interviewed.

Graph 12

Use of Internet according to the type of school



3.3

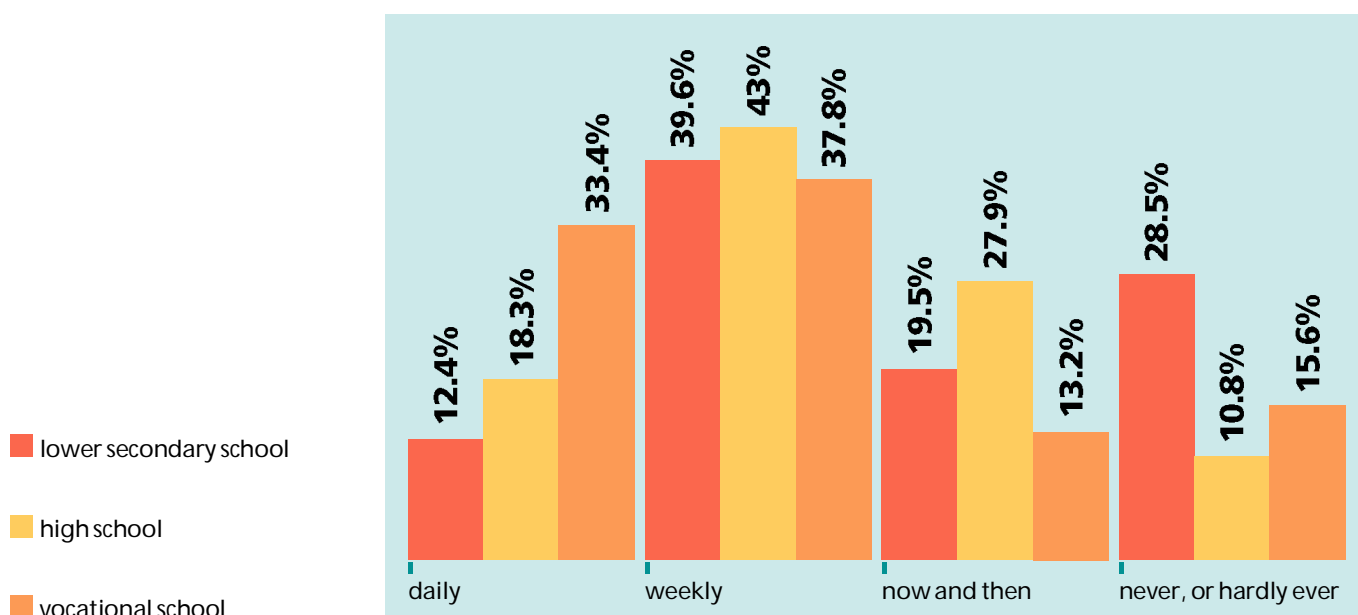
Time spent in front of the computer (PC)

Some questions in our survey related to the frequency with which teenagers use the PC and Internet.

About 60% of the interviewed use the PC weekly; whereas about 20% never or hardly ever do. It is interesting to note that those who use it daily are mostly males attending vocational school; whereas foreign females attending lower secondary school rarely use it. From these responses it can be staked that the latter are less attracted by technology.

Graph 13

Frequency of PC utilization according to the type of school



Moreover, those who have a PC at home use it 2 and a half hours a week (average); whereas, at school and at work teenagers spend about 2 hours (average) in front of the computer (only half of the interviewed answered this second question).

Table 5

Weekly use of the PC at home, according to the type of school (in %)

	Lower secondary School	High School	Vocational School	Total
1-2 h	52.7	43.3	36.2	44.1
3-5 h	27.2	25.9	28.0	27.1
6 h and more	20.1	30.8	35.8	28.8
Total	100.0	100.0	100.0	100.0
absolute numbers	313	217	315	845

Table 6**Weekly use of the PC at school and on the job, according to the type of school (in %)**

	Lower secondary School	High School	Vocational School	Total
1-2 h	80.9	71.9	39.0	56.3
3-5 h	15.6	25.1	12.5	16.2
6 h and more	3.5	3.0	48.5	27.5
Total	100.0	100.0	100.0	100.0
absolute numbers	173	171	398	742

The same question was asked about the use of Internet: 60% of the whole sample do not use it, a large difference when compared to what was observed earlier with the use of the PC. Internet is something new and still has to take a strong hold among users.

When looking at those students who are connected to Internet from home (i.e. about 15% of the sample) we note that the net is used 1 h and 45 min. per week (average).

Among those who have the opportunity of surfing on the net at school or at work (i.e. 37% of the sample) its use diminishes to 1 h per week (average).

Table 7**Use of Internet at home on a weekly basis, according to the type of school (in %)**

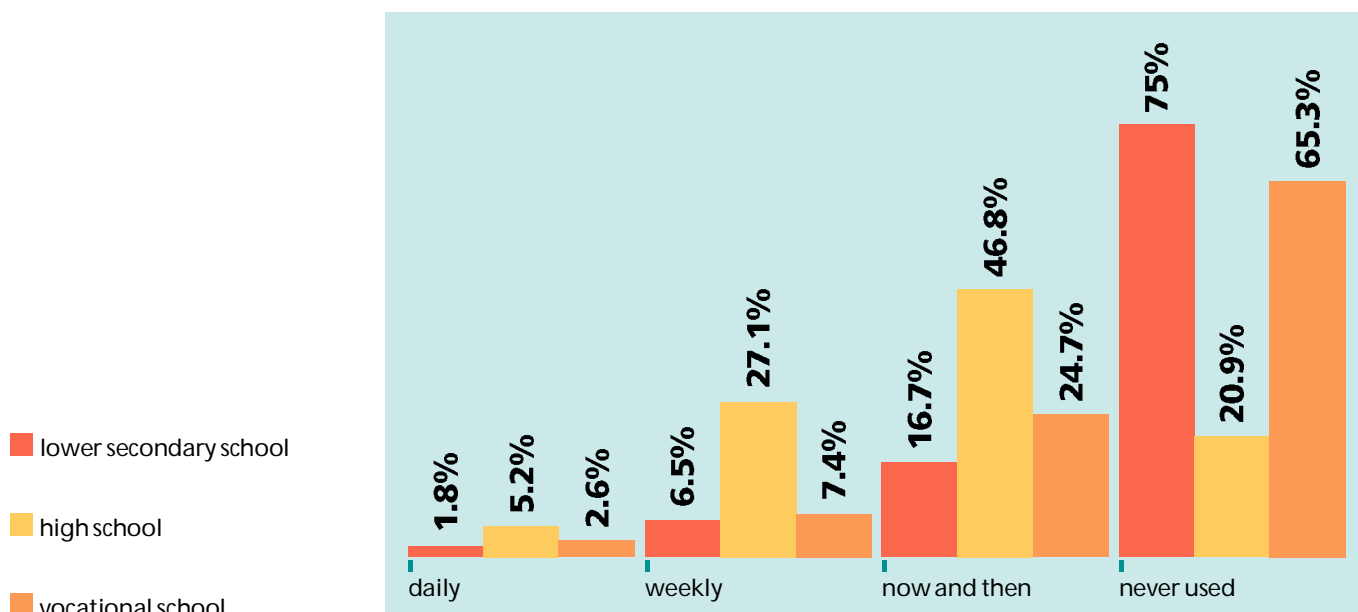
	Lower secondary School	High School	Vocational School	Total
1-2 h	69.5	54.0	50.7	58.4
3-5 h	15.4	30.0	24.7	22.5
6 h and more	15.1	16.0	24.6	19.1
Total	100.0	100.0	100.0	100.0
absolute numbers	72	50	77	199

Table 8**Use of the Internet at school and on the job, on a weekly basis, according to the type of school (in %)**

	Lower secondary School	High School	Vocational School	Total
1-2 h	74.1	69.6	74.0	71.0
3-5 h	21.6	24.6	15.2	22.2
6 h and more	4.3	5.8	10.8	6.8
Total	100.0	100.0	100.0	100.0
absolute numbers	23	138	46	207

Graph 14

Frequency of use of the Internet according to the type of school attended



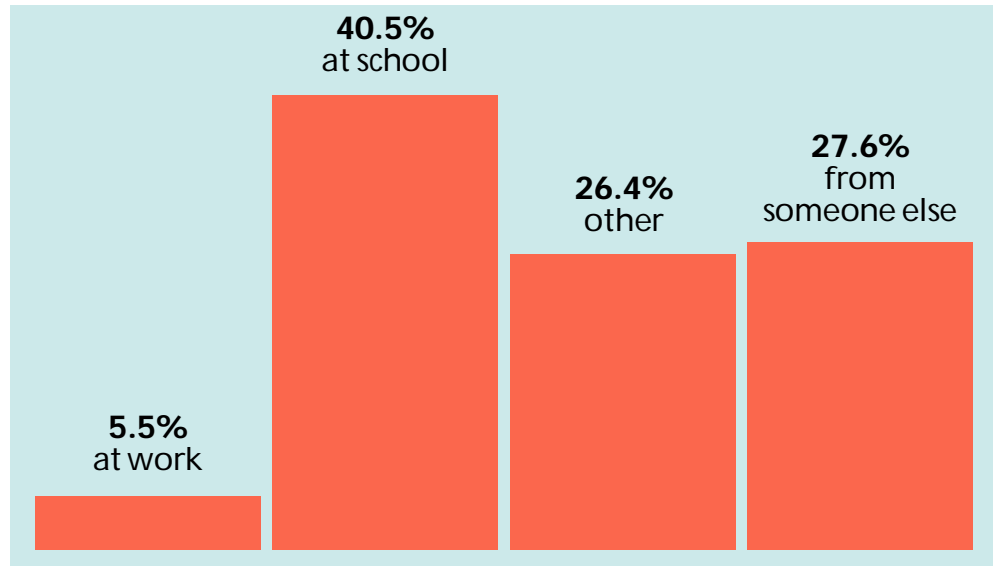
3.4

Approaching information technology

The first approaches to the PC usually occur when students are about 12 years old (average) and generally they learn how to use it at school. However, those attending lower secondary school claim they learnt how to use a PC from "somebody else", i.e. from a parent or a relative. It is more likely for Swiss females to ask their parents than for males to do so. On the other hand, foreigners (usually males) usually ask a friend. The important role played by the school in introducing information technology must not be forgotten since about 41% of the interviewed teenagers learnt how to use a PC at school.

Graph 15

Where teenagers have learnt to use the PC

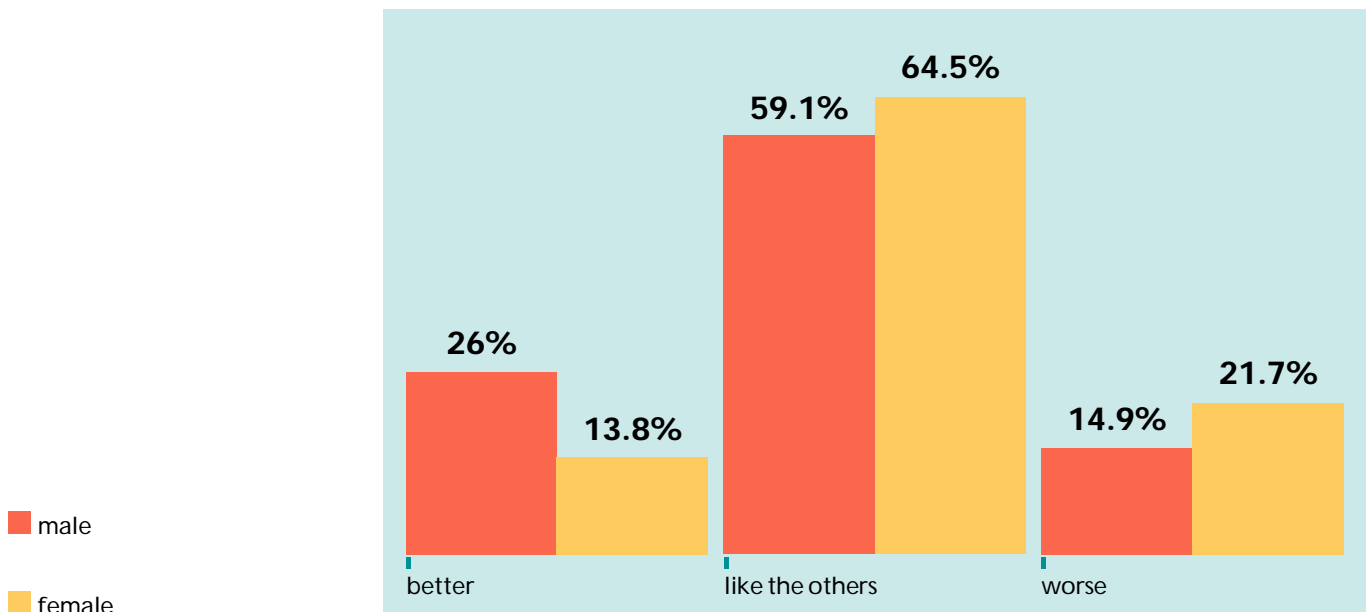


As far as mastering the use of the PC is concerned, 60% claim to be able to use it "like the others", 20% claim to do so "better" and the remaining 20% claim to do so "worse". It has been observed that the "worse"-category mostly contains high school foreign females; whereas Swiss and Italian males claim to use the PC "better" than their fellow students. This confirms our previous observation, i.e.: girls consider themselves less suited to information technology than boys. However, it must be remembered that - when having to judge their own skills - female teenagers tend to be more cautious than males⁵.

⁵ M. Bolognini, Y. Prêteur, *Estime de soi (i.e. Self-esteem)*, Lausanne-Paris, Delachaux et Niestlé, 1998.

Graph 16

Ability in using a PC according to sex (self-evaluation)



■ male
■ female

3.5

Teenagers' PC skills

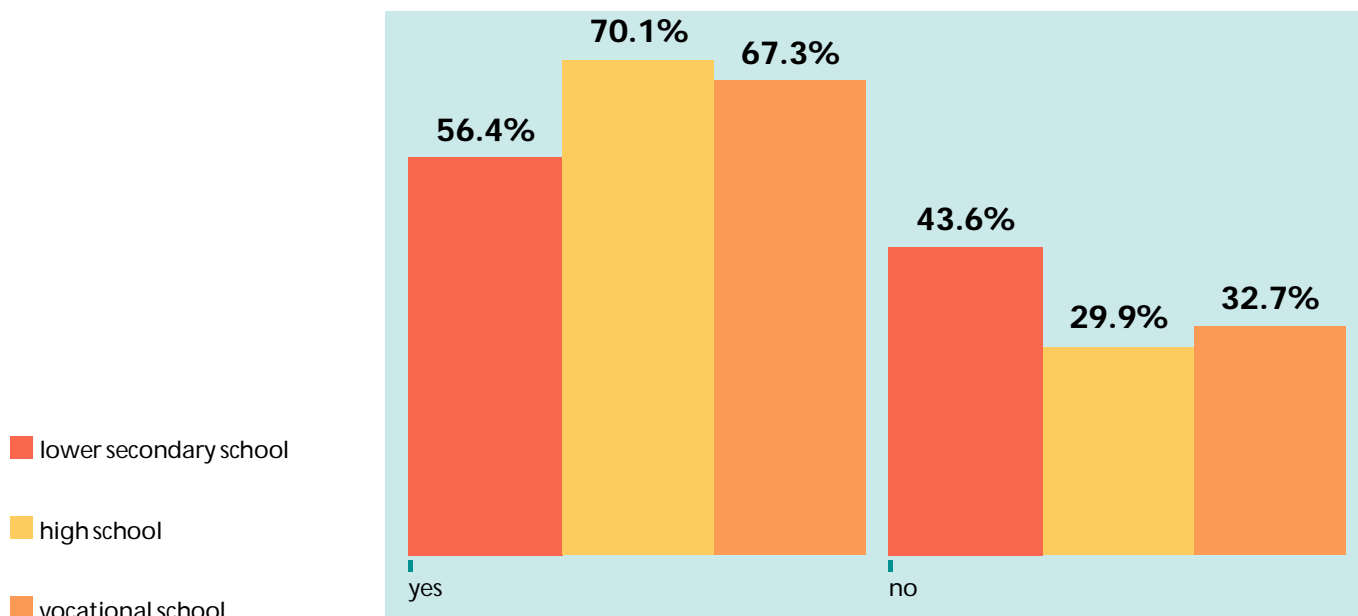
To the question "Do you know what a spreadsheet is?" half of the interviewed answered negatively and more than 15% gave the wrong answer. Very likely the terminology used in the questionnaire differs drastically from the kind usually employed by teenagers among themselves. Indeed in their everyday language they do not speak of spreadsheets but of Excel.

Table 9 Use of Excel according to the type of school (in %)

	Lower secondary School	High School	Vocational School
Yes	56.4	70.1	67.3
No	43.6	29.9	32.7

Two out of three students use an anti-virus program, particularly Swiss high school males. The most used programs are the ones concerning end-user computing. Students who do not use an anti-virus program are usually foreign females attending lower secondary school.

Graph 17 Use of anti-virus programs according to the type of school



As far as data backups are concerned it has been observed that most of the interviewed save data only when necessary and a large number of teenagers never do. Only 17% save data regularly.

Table 10**Data backup according to the type of school (in %)**

	Lower secondary School	High School	Vocational School
Regularly	16.4	18.8	18.2
Only when necessary	56.0	61.4	57.1
Never	27.6	19.8	24.7

More than half of the vocational students use the computer simply to write letters as this is related to their job. Instead, there is a higher percentage of high school students who use the computer to format texts and write reports. In each of the three activities it is the Swiss teenagers who are most active.

Table 11**Use of the PC for word processing according to the type of school (in %)**

	Lower secondary School	High School	Vocational School
Often	35.2	51.5	54.4
Rarely	37.5	34.2	33.1
Never	27.3	14.3	12.5

About 80% of those interviewed do not know a programming language (such as Pascal, Basic...). Naturally, this is something more specific, and someone using a standard PC program does not necessarily master a programming language. Students who know a programming language are attending vocational school and are usually Swiss males.

Table 12**Knowledge of programming languages according to the type of school (in %)**

	Lower secondary School	High School	Vocational School
Yes	5.1	26.8	32.5
No	94.9	73.2	67.5

Nearly half of those interviewed, mostly Swiss high school students, are able to install a program on a PC; there is however a large number who do not (about 30%). As far as PC hardware is concerned, it was revealed that 43% of those interviewed are unable to add or modify components; whereas, 30% have no clue as to what this means. The remaining teenagers who responded positively to this

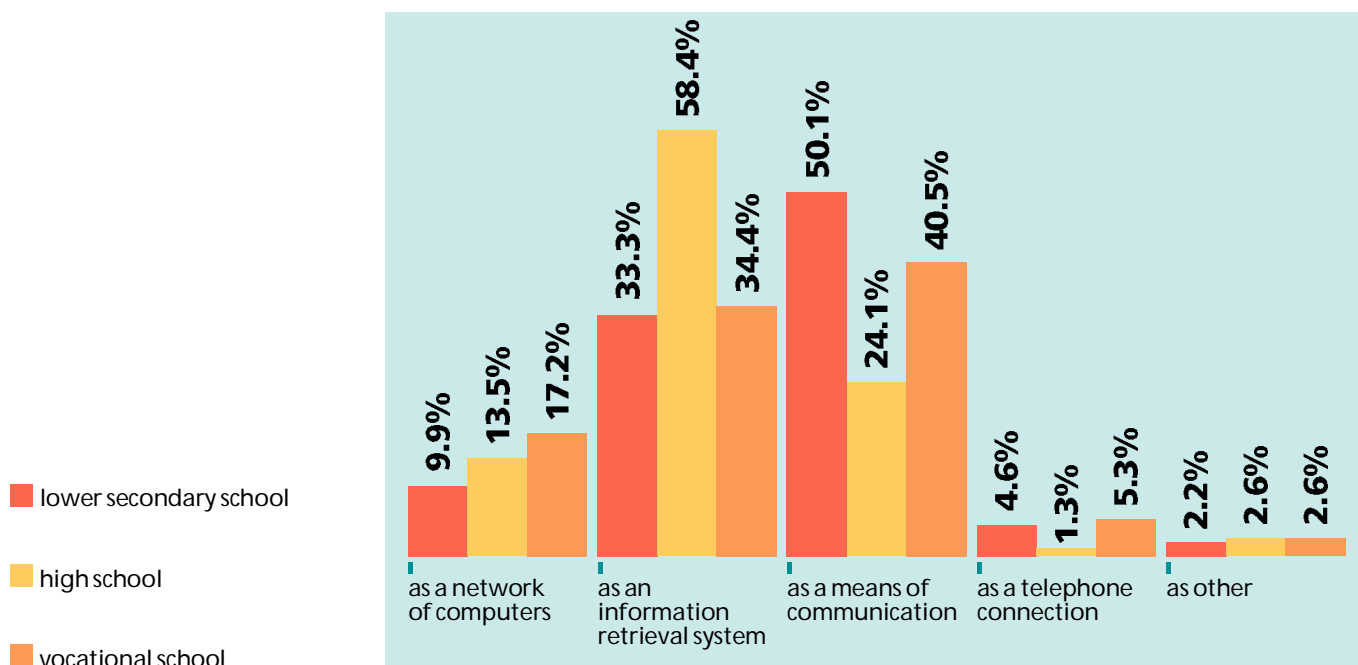
question are once more high school students. This confirms once more that those who use the PC more frequently are also the ones that can handle it more easily.

Table 13 *Ability to install a program on the PC according to the type of school (in %)*

	Lower secondary School	High School	Vocational School
Yes	41.8	57.7	47.8
No	24.3	28.2	33.4
Do not know	33.9	14.1	18.8

As far as Internet is concerned it turned out that this new media is viewed first of all as a means of communication and searching for information. Students attending lower secondary school, mostly foreign females, see the virtual net as a means of communication; whereas to high school students, especially Swiss males, Internet is a useful tool for seeking information. To those attending vocational school, mostly males, Internet is perceived as a network of computers.

Graph 18 *How Internet is viewed according to the type of school*



Some questions in our survey concerned the teenagers' future expectations, in particular if their future is likely to go towards an even more technological dimension? In general, according to those interviewed, the PC improves human life/conditions, even though a considerable number (mostly females) do not know what to answer. Moreover, to the question "Will you be using the PC in your future job?" two teenagers out of three answered positively. Vocational students in particular who are in contact with the work environment every day are aware of the rapid expansion of computers.

Table 14**Forecast of using the PC in the working environment (in %)**

	Lower secondary School	High School	Vocational School
Yes	57.2	66.3	72.1
No	7.4	4.6	5.9
Do not know	35.4	29.1	22.0

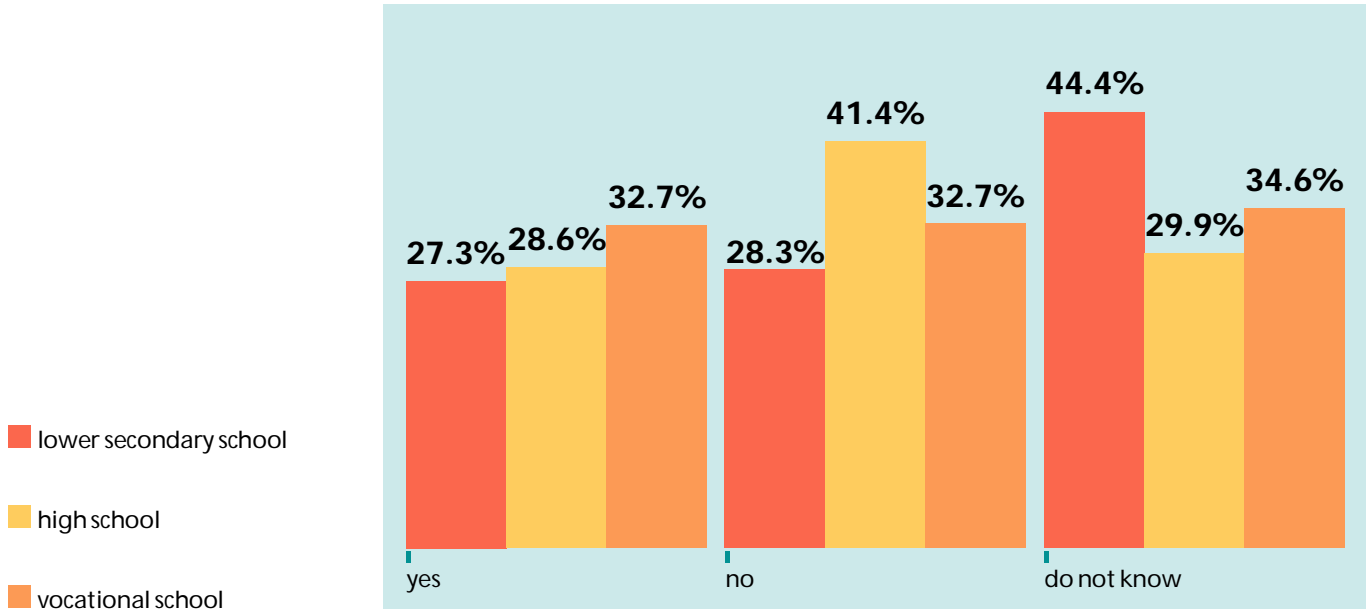
Another important response concerns the home: about 70% of the students (in particular comprehensive and high school males) expects to use the computer at home in the future as a hobby and for entertainment. Internet development prospects have also been surveyed: to the question "Will you be using Internet for your future purchases?" most of the interviewed did not express themselves on the prospects of a virtual market (about 40% of those interviewed answered "I don't know"). Certain doubts about the Internet virtual market can, therefore, be perceived. It is interesting to note that those most confident in the future virtual market are mostly males. Once again the males' approach towards technology is more immediate and less fearful. The negative opinion expressed by a part of those interviewed is due to a general distrust, although one notices a lessening of this distrust as age increases. In this respect teenagers attending vocational school are less sceptical, perhaps because they have direct work experience as a point of reference.

Graph 19a+b+c

Forecast about future purchases on the Internet, according to the type of school

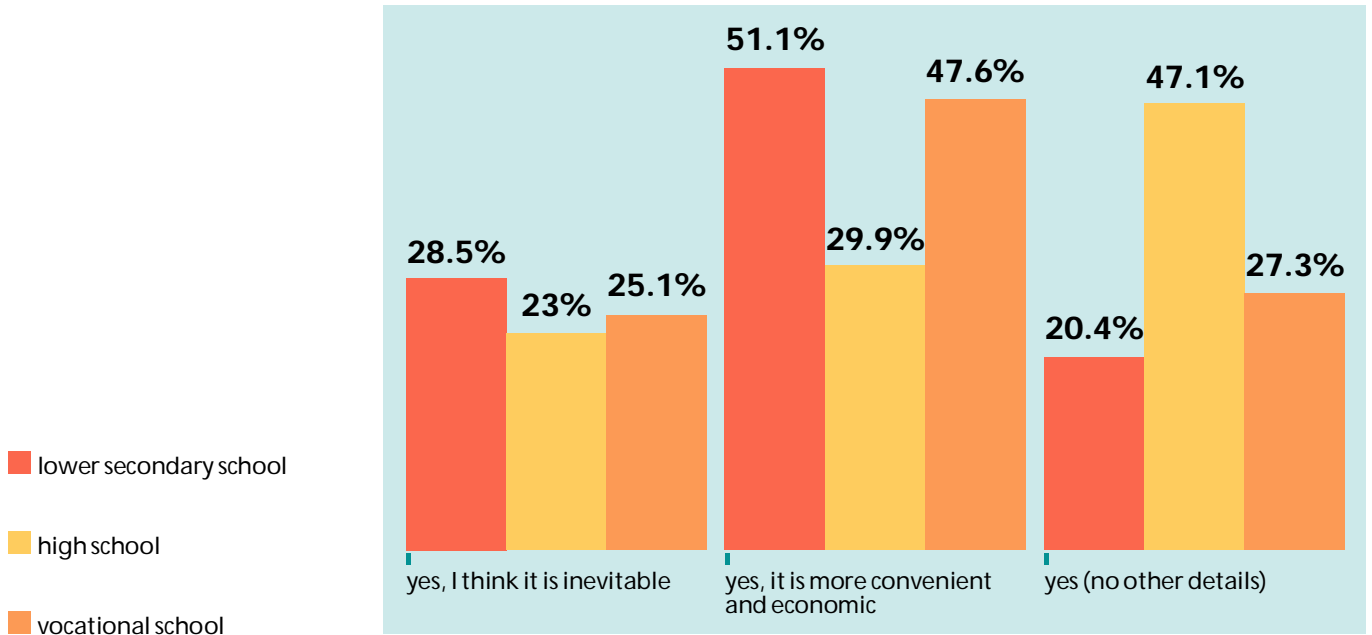
Graph 19a

Total answers



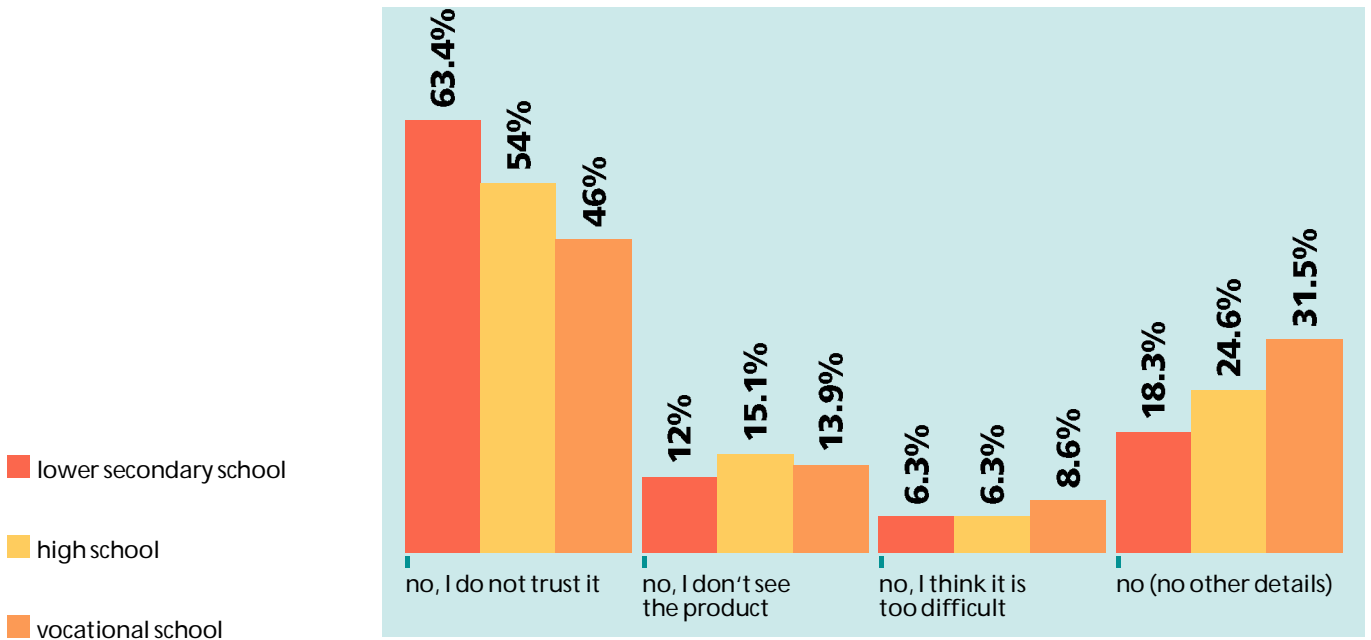
Graph 19b

Reasons for Saying yes



Graph 19c

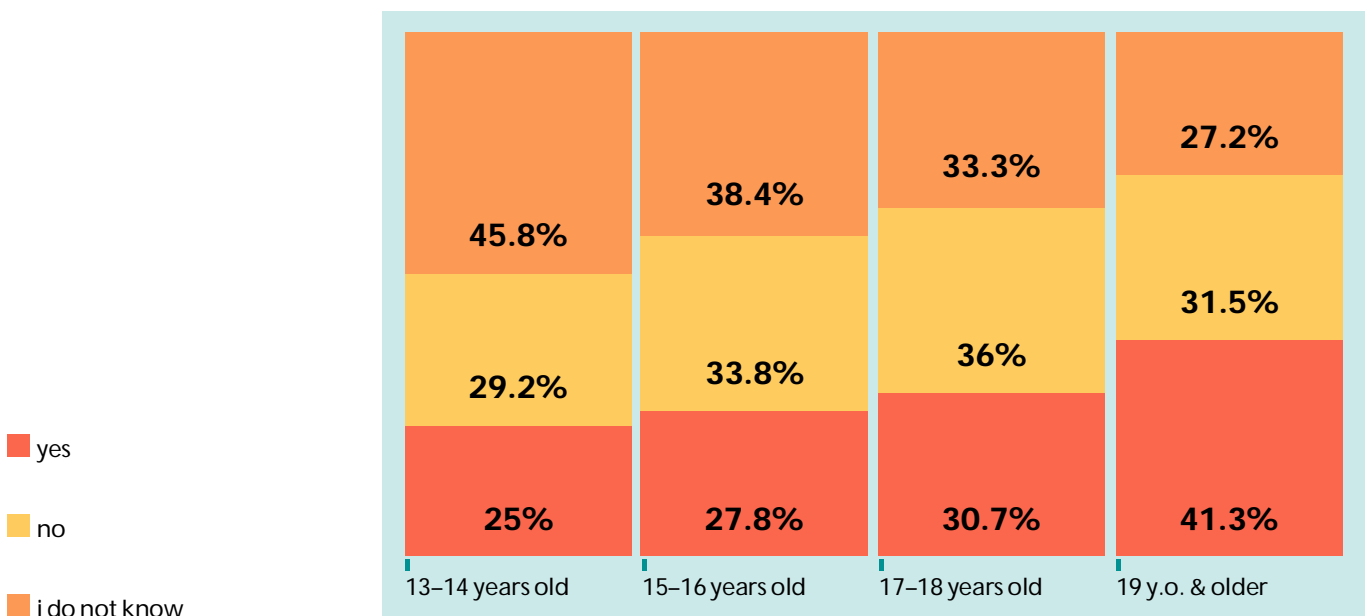
Reasons for Saying no



Trust in Internet increases in proportion to age and this is confirmed in diagram 19d. If only 1 in 4 lower secondary school students thinks Internet will be used in the future to make purchases, by the end of compulsory schooling 2 in 4 teenagers think positively about it; i.e. the percentage of positive thinkers has doubled. The same tendency is found in the „I-do-not-know“ answers; whereas, the percentage of those expressing themselves negatively is fairly constant with regard to age.

Graph 19d

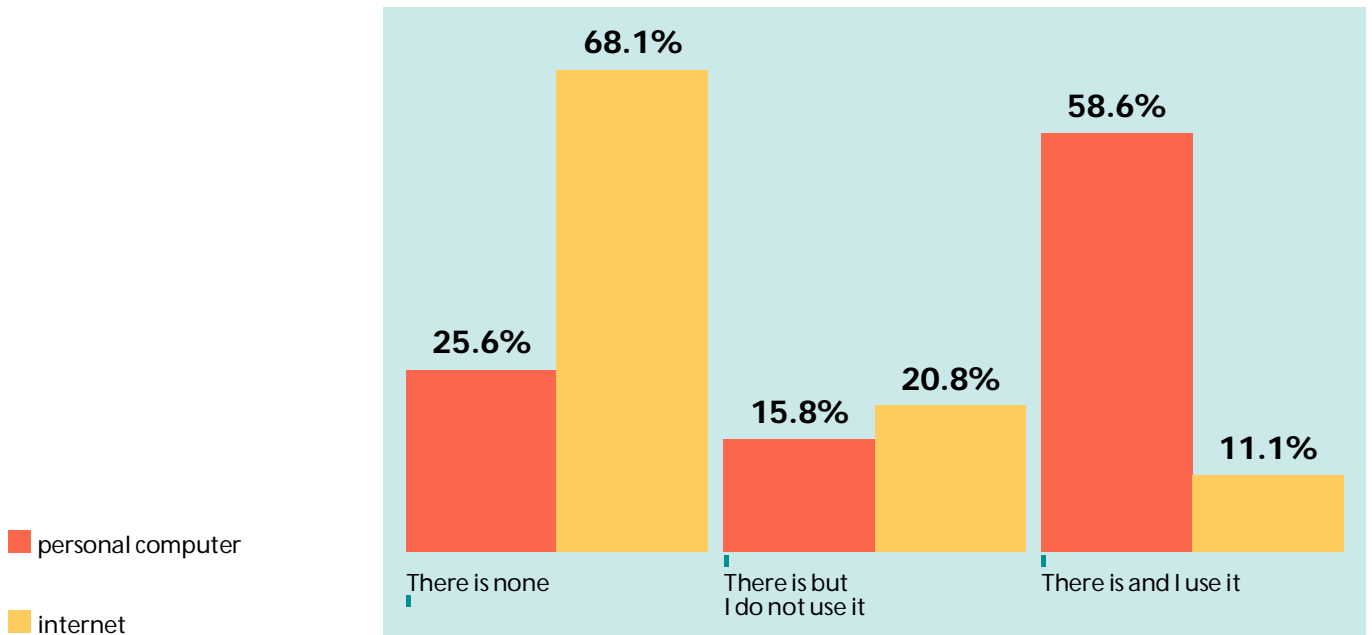
Forecasts about future purchases on Internet according to age (total answers)



We want to end our analysis by pointing out the degree of computerization in companies training apprentices independent of their market sector. In general, the personal computer is fairly common (3 companies out of 4 have got at least one PC); whereas Internet connections are still only a few. It is also interesting to note that the degree of diffusion observed within companies is similar to the one found in family units.

Graph 20

Availability of PC's and Internet connections at work



The results from our survey show that in general more than half of the families with teenagers in Ticino own a personal computer at home. Usually, it is the youngest members in the family unit who use it. As far as other media are concerned, Internet in particular, its diffusion is still fairly limited. However, we are probably at the beginning of a fast growing phase and in the years to come Internet will follow, perhaps even at a faster rate, the growth trend of the PC.

On the one hand, Internet is a relatively new phenomenon to which society has not yet got used. On the other hand, Internet is not economically accessible to everyone as its connection is fairly expensive to families whose budget is medium-low. At the moment, even schools and companies have a smaller number of Internet connections when compared to the number of PCs installed.

Information technology is nevertheless particularly present in every teenager's life. Nowadays the personal computer has a place both at school and at work and nearly every teenager - whose interests and degree of mastery vary - has to face up to this machine. The regular computer users are mostly males; whereas females are more reluctant to enter the technological world. When considering the kind of school attended and the student's age it turns out that the most dedicated users are those attending high school. However, there is often a gap between the use and familiarity (high) and the level of their technical skills (just sufficient).

At the moment it is difficult to predict the development and expansion of the new technologies in our society. Still, the personal computer seems set to become - besides television - the second screen present in all family units.

Bibliography

E. BARCHECHATH, La Société de l'Information a-t-elle une valeur? In: "Informatique-Informations", Juin 1998, pp.29-35, n 36.

M. BOLOGNINI, Y. PRÊTEUR, Estime de soi, Lausanne-Paris, Delachaux et Niestlé, 1998.

M. CALVO, F. CIOTTI, G. RONCAGLIA, M. A. ZELA, Internet '96, Bari, Laterza, 1996.

M. DONATI e altri, P3i – Progetto d'integrazione dell'informatica nell'insegnamento, Bellinzona, Ufficio studi e ricerche, 1994.

C. GUIDOTTI, S. BERNASCONI, Censimento degli allievi 1996/97, Bellinzona, Ufficio studi e ricerche, 1997.

D. L. HOFFMAN, W. D. KALSBECK, T. P. NOVAK, Internet and Web Use in the U. S. In: "Communications of the ACM", December 1996, Vol. 39, n 12.

R. KRAUT, The Internet @ Home, In: "Communications of the ACM", December 1996, Vol. 39, n 12.

R. NIEDERER, K. FREY, Informatik und Computernutzung im schweizerischen Bildungswesen, Zurigo, ETH, 1990.

J. B. THOMPSON, Mezzi di comunicazione e modernità, Bologna, Il Mulino, 1998.

UFFICIO CANTONALE DI STATISTICA, Annuario statistico ticinese, Bellinzona, 1997.

A. VENKATESH, Computers and Other Interactive Technologies for the Home. In: "Communications of the ACM", December 1996, Vol. 39, n 12.

M. BADAN, Computer ed Internet al proprio domicilio, giugno 1998, <http://www.bluewin.ch/italian/live/ricerca/index.html>

M. ALIPPI, B. WERNLI, L'individuo di fronte ai nuovi sistemi di telecomunicazione, Centro di documentazione e ricerca OSC Mendrisio; ricerca in corso.

CORSO UNIVERSITARIO di Teorie della comunicazione di massa tenuto alla Facoltà di scienze della comunicazione di Lugano (1997-1998) dal professor U. Saxer

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This survey was carried out during the period February-April 1998

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