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ICT use among 13 year old Swedish children

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Abstract

The children in the Swedish compulsory schools have grown up in a digital culture, but they have internalized ICT in different ways and gained mostly of their knowledge by peer-based learning. The aim with this study is to give an empirical understanding of 13 years old Swedish pupils user patterns of ICT during school and everyday life. The data is collected through a survey (n=256) and the informants are 13-years old Swedish children. All children have access to ICT but they use it in various ways. Three different user groups are outlined and the children's use of ICT differs in both qualitative and quantitative ways. These findings should be seen in relation to Sweden's ranking as a high connected country, at the same time as the Swedish National Agency for Education would like to have more explicit national strategies and guidelines for ICT in the educational system.

Introduction

Societal discourse describes today's children and young adults as members of a digital generation and they are seen as highly skilled ICT users. However, there is both a lack of empirical evidence of a homogenous digital generation (Bennett, Maton and Kervin 2008; Buckingham 2006; OECD 2007) and also empirical evidence of a heterogeneous group of young users (e.g. Burhanna, Seeholzer and Salem 2009; Jones et al., forthcoming; Kennedy et al. 2008). More understanding about young people's use of ICT based on empirical research has been called for (e.g. Bennett, Maton and Kervin 2008; Jones et al. forthcoming; Kennedy et al. 2008; OECD 2007).

Sweden stands out from other European countries regarding digital connectivity (Waverman and Dasgupta 2009), and the first digital divide in respect of socio-economic status and age is lower in Sweden than in many other countries (Findahl 2007; 2008). On the other hand Swedish lacks national ICT strategies for education, in contrast to for example Norway, Denmark and Great Britain (Skolverket 2009a). Given this context, the aim of this study is to give an empirical account of 13 year old Swedish pupils' use patterns of ICT during school and everyday life.

The digital generation debate

Never before has a generation been so defined in the public mind by its relationship to technology. Pollsters, market researchers, and journalists closely track their every move, inventing a gaggle of catchy buzz words to describe them—"N-geners," "Webheads," "Keyboard Kids," "CyberChildren," and "the MySpace Generation," to name only a few. (Montgomery 2007, p. 2)

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The children participating in this study were born in Sweden in 1994 and consequently can be classified as belonging to the group called the “digital generation”. Children and young adults in the digital generation are expected to be familiar with digital technology and are described as ‘native’ users (Akande 2008; Carstens and Beck 2005; Howe and Strauss 2000; Lenhart, Rainie and Lewis 2001; Pedró 2006; Prensky 2001a, 2001b; Tapscott 1998; Veen 2003; Veen and Vrakking 2006).

Bennett, Maton and Kervin (2008) have made a review of the digital native debate and found two key claims. The first claim is that a digital native generation exists and the second claim is that the educational system must change to meet their needs. The problem is, according to Bennet, Maton and Kervin, that these claims seem to be without empirical and theoretical foundation. Jones et al. (forthcoming) found in their study that students born after 1983 are a heterogeneous generation with different uses and appreciation of new technologies. They also make different demands about the use of new technologies in their education. As a result of their findings they “advocate caution to all those arguing that universities and academic staff have to change to accommodate a new Net generation of Digital Native students” (paragraph 5, Discussion and conclusion). They are not the only ones that criticize the lack of empirical evidence in the debate. The OECD Centre for Educational Research and Innovation (CERI) discussed the idea of New Millennium Learners (NML), another name for the group.

“All experts agreed on the importance of NML as an emerging phenomenon all over OECD countries and its relevance for educational policy making and practice. But as a matter of fact, there is little evidence supporting some commonly held beliefs, as for instance that this is exclusively a generational phenomenon and that all teenagers are equally NML” (OECD 2007, p. 2).

There are a great number of “well-established conceptions regarding the characteristics of the digital natives, but these are more based on theoretical assumptions than on empirical evidence” (OECD 2007, p. 2). A study that partially supports the idea of digital generation is a large ethnographic study in the United States about youth engagement with new media (Ito et al., 2008). Their findings provide a deep description of three different online activities among youths: hanging out, messing around and geeking out. Behind these three categories lies a picture of youth that use new media for socialising and learning. Ito et al. recommend that educators, parents and policymakers be open to these new forms for learning. On another hand, Ito et al. also found heterogeneity in use related to different social groups, which should be taken in consideration. Thus Ito et al. (2008) provide some empirical evidence for the claim that the educational system must change to meet the needs of the youth, evidence asked for by Bennet, Maton and Kervin (2008). At the same time Jones et al. (forthcoming) found a group of university students with different use, skills and demands for ICT that need to be further studied before changing the system.

This article is based on the assumption that a homogeneous group of native ICT users does not exist. Instead the digital generation should be seen as a heterogeneous group of young ICT users that we need to learn more about if we are to meet their needs in school and working life. To contextualise the information provided by this study, it is first necessary to be familiar with the Swedish context.

Sweden as a digital culture

In 1994, the year that the informants in this study were born, the Swedish government made a great effort to increase everyone’s use of “new technology” and improve their attitudes towards it. Sweden aimed to develop into one of the

leading nations in respect to the use of ICT in the public sector, workplaces, education and everyday life (SOU 1994:118).

In 1995, according to Statistics Sweden (1995), 60% of the Swedish population aged between 16 and 64 used computers at their work or in their leisure time. Less than 30% of computer users had a computer at home and only a fourth of them used their computer every day. Towards the second half of the 1990s, the use of computers in Sweden was strongly related to work and study. During the decade, however, computer ownership among families with young children tripled (Statistics Sweden, 2008). The large increase in computer access at the end of the 1990s could be related to the Swedish government's decision to establish the so-called home computer concept in 1997. To decrease the gap in computer access between low- and high-income earners, all employees had an opportunity to rent a computer from their employer at advantageous rates (IT-Kommissionen 2002).

Children's access to computers and the Internet at home has continued to increase, but at a slower pace. In 2006, 97% of children living with both parents had computer access at home and 94% also had Internet access. Among children living with single parents 85% had computer access and 81% had Internet access (Statistics Sweden, 2008). Access to computers at home is often strongly related to socioeconomic background, but Sweden "have near-universal access in all socio-economic groups" (OECD 2005, p.23) among 15 years old children. 90% of Swedish teenagers and adults between 16 and 75 used the Internet. 89% of those between 16 and 40 are almost daily users of the Internet. That means that 89% of the population born in four different decades are more or less daily Internet users. Even among those between 41 and 60, a majority are more or less daily users (PTS 2008). The Connectivity Scorecard report (Waverman and Dasgupta 2009) ranked Sweden, for the second year in a row, the country with the second best connectivity among 16 countries in the world with an innovation driven economy. The concept connectivity stands for:

...the holistic interaction between a country's ICT infrastructure – incorporating telecoms systems as well other hardware and software – and the end users, including the various skills they need to get the best usage from the tools. This interaction defines the roadmap and the needed improvements in infrastructure, complementary capital (e.g. software), skills, and importantly, the attitude towards ICT. (Waverman and Dasgupta 2009, p.3).

It has been a conscious effort of the Swedish government that all citizens should have access to the Internet via, for example, public libraries and schools. The children have access to computers in school and pre-school, even though the possibilities for using them are strongly dependent on the local school's economic situation and the teacher's attitudes toward computers. Sweden, like other Scandinavian countries, has a rather high level of computers and of access to the Internet in lower secondary schools in relation to other EU25+2 countries (Empirica 2006). A national study by The Swedish National Agency for Education (Skolverket 2009b) shows that 80% of compulsory school teachers use computers every day, mostly for information retrieval in connection to lesson planning. 57% of the compulsory school teachers use computers at least every week in class, but 31% use computers less than every month. In spite of the fact that Sweden is ranked as a highly developed ICT culture, less than 50% of compulsory school teachers find ICT to be an important tool in their own teaching. This sceptical attitude among teachers, identified in the Swedish National Agency for Education report, is echoed by the Empirica study (2006). In Europe, only Spanish teachers are more sceptical than the Swedish. The Swedish National Agency for Education has paid attention to the absence of national strategies for ICT development in the Swedish education system. In the present curriculum for the compulsory school

system there are few goals that are directly related to the use of ICT. Even where syllabi have specified the use of new media more precisely after a revision in 2000, the Swedish National Agency for Education still thinks that digital competence needs to be more explicit as a conception in relation to education and that digital competence should be more integrated in to the national general guidelines. The lack of national strategies and clearly worded national guidelines leaves too much to the individual teacher. The agency also concluded that most of children's ICT competence is achieved outside the school context (Skolverket 2009a).

Swedish children have great opportunities to achieve ICT competence in their everyday life, since they have high levels of access to ICT. But the amount of use differs. Medierådet (2006; 2008) observes that 29% of the children between 12 and 16 are considered high consumers of media and use the Internet more than 3 hours every day. Medierådet (2006; 2008) also shows that children who are high consumers of media tend to spend less time on schoolwork. This should be considered in relation to Swedish teachers' sceptical attitudes towards ICT as a tool for learning and education as well as the lack of national guidelines.

The conclusion must be that children in Swedish lower secondary schools today have grown up with easy access to information technology and have more or less daily opportunities to use computers, the Internet and Mobile phones. But they are also more or less dependent on informal learning since ICT competence and use is low priority in the Swedish national guidelines for compulsory schooling.

Sweden as a research context

Sweden makes an interesting context in which to study children's use of and attitudes to ICT. The great majority of Swedish inhabitants use ICT, regardless of age and socioeconomic status, and in comparison with other European countries Sweden has low levels of inequality of income distribution (Eurostat). Socioeconomic status has lower impact on children's access to home computers in Sweden than in many other European countries (OECD 2005). Sweden also has a coherent school system, with 90% of pupils in public compulsory schools and only 10% in private schools. The public and private schools compete on very similar terms. A system with school vouchers, financed by taxes, and a prohibition for charging pupils for tuition result in a system where economic status has low influence on choices for compulsory schooling. Private schools have more computers per pupil than the public schools, 4.5 pupils per computer versus 6.0 pupils per computer (Skolverket 2009b), makes it most relevant to use the pupils at public schools as informants. As a result of the Swedish culture as well as the social and educational system, a great majority of the children have almost the same opportunity to use and own computers.

Aim

The aim with this study is to give an empirical evidence of 13 year old Swedish childrens' patterns of use of ICT during school and in everyday life. This will also involve searching for differences in digital literacy between girls and boys. In relation to the characteristics of a digital generation, the study focuses on:

- Access to ICT
- Amount of use
- Kinds of use
- ICT knowledge
- Attitudes to ICT

Research context and data collection

The municipality where the research took place has approximately 20,000 inhabitants and the main occupations of inhabitants between 16 and 64 years of age

are in the production and industrial field. There are proportionately fewer inhabitants with a foreign background in this municipality than it typical for the country. The inhabitants' level of education is below average levels, but typically women are, as elsewhere, higher educated than men. There are two compulsory schools in the municipality with 967 children in grade seven to nine, both public. In the seventh grade, which constitutes the research population, there are 276 children equally divided between boys and girls (140/136). 262 of the children participated in the study, but 6 children have given incomplete or frivolous answers, giving a final response rate at 92.7%.

The data have been collected by questionnaire. The questions where inspired by earlier Swedish research and statistics in the research area (e.g Medierådet 2006, 2008; Statistics Sweden 1995, 2008). Most of the questions had closed response alternatives with ordinal rating scales. Questions about frequencies had responses given by a Likert scale. The questions about attitudes were expressing in terms of likeliness or probability and had responses with semantic differential scales. The questionnaire was answered during an ordinary lesson in December 2007. I personally visited every single class and was present in the classroom until the last pupil had finished the questionnaire. The children were verbally informed about the aim of the research and they were free to ask questions before and during the questionnaire.

Analysis

SPSS was used for statistical analysis. Since the data were either nominal or ordinal and consisted of a population and not a sample, there were some statistical limitations. There was no normal distribution in the rating scales and the data have always been treated as ordinal except for the children's rating of their ICT knowledge (Table 8) and ICT attitudes. The responses about ICT knowledge and attitudes are made in a semantic differential scale from 1 to 9 and means were calculated to make comparisons between groups.

Findings

Access to ICT

All children have access to computers and the Internet in school, they all have a computer at home and 94.5% have computers with access to the Internet. Internet access is equal according to gender. A majority, 94.1%, of the children have a Mobile phone of their own. Those 15 children that do not own a Mobile phone all have computers at home and 12 of them have Internet access. There are no differences according to gender. This means that all children have high access to ICT both during the school day and their leisure time.

Amount of use

An overwhelming majority of the children use computers every day. In the questionnaire there were six options for the amount of use; however, as a result of the high levels of use and skewness, the results will be presented in three different groups in relation to amount of use: daily users, weekly users and occasional users. The group of occasional users uses ICT every month at most. More boys than girls are daily users but more girls than boys are weekly users. There are no differences in relation to gender among the occasional users (Table 1).

Table 1. Comparison between girls and boys amount of computer use in their leisure time, percent.

	Daily users	Weekly users	Occasional users
Boys (n=128)	75.8	21.1	3.2

Girls (n=127)	61.4	35.4	3.2
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During school the figures of computer use are totally different. The majority of both girls and boys are weekly users and there are more occasional users than daily users (Table 2).

Table 2. Comparison between girls and boys amount of computer use during school, percent.

	Daily users	Weekly users	Occasional users
Boys (n=127)	18.9	59.1	22.0
Girls (n=127)	9.4	66.9	23.6

Six children answered that they never use computers at school. Their reason for not using computers differs: "I have not needed it", "Because there is nothing to do with them", "In Swedish I write at home. I found that easier", "I just do not want to use the school's computers".

There are children that are daily users in their leisure time that are occasional users during school, but not the opposite (Table 3). 21 of the 32 children that are daily users both during school and leisure time are boys.

Table 3. Correlation between children's amount of computer use during school and leisure time. (n=247)

		Computer use in school		
		Daily	Weekly	Occasional
Computer use in leisure time	Daily	32	104	34
	Weekly	4	52	15
	Seldom	-	3	3

Almost all children are frequent users of computers and Mobile phones in their everyday life and a majority of the daily computer users are also daily users of Mobile phones, more girls than boys. It is the same pattern in the entire population: 72% of girls and 62% of boys are daily users of Mobile phones. At the same time there is no correlation between amount of computer and Mobile phone use.

The findings this far suggest different user patterns in relation to amount of use. There are children that use computers every day. Even if there are limitations on personal computer use during breaks due to access and rules in school, they manage to find and use them. I find the amount of use during leisure time more relevant for the remainder of this study than use during school, since leisure use is more self-determined. From this point on I will focus on either the entire population of children or three specific groups related to use: Daily user – children that use computer daily both during school and leisure time (32 children), Weekly users – children that use computer weekly both during school and leisure time (52 children) and Occasional users – children that use computers seldom during school or leisure time, and never daily (21 children). In the next section I will look at different ICT activities in relation to amount of use.

Kinds of use

The most common computer activities during leisure time among all children are playing music, making social contact and game playing. The children in all three specified groups also use computers quite often for movie watching. They all use the computer as a media player. There are some notable differences among the three groups: the daily users use computers during their leisure time mostly for amusement and their own interests; the weekly users do the same, but also use computers for school-related information searching; and the occasional users use computers mostly for school related activities during leisure time (Table 4).

Table 4. Computer activities during leisure time in relation to amount of use.

Daily users (n=32)	Weekly users (n=52)	Occasional users (n=21)
Keep in touch with friends	Listen to music	Listen to music
Listen to music	Keep in touch with friends	Keep in touch with friends
Play games (not online)	Play games (not online)	Play games (not online)
Watch movies	Information search – own interests	Watch movies
Play online games (or LAN)	Watch movies	Information search – school related
Information search – own interests	Information search – school related	Write texts – school related
Write texts – school related	Write texts – school related	Search for pictures – school related
Information search – school related	Search for pictures – school related	Information search – own interests
Search for pictures – school related	Play online games (or LAN)	Play online games (or LAN)

During school the same user pattern repeats: the daily users are more into private activities such as chat and game playing while the weekly and occasional users are more into school-related activities (Table 5). The type of use is also related to the amount of use: all activities are more frequent among the daily users than the weekly and occasional users. For example the daily user are more frequent users of their computers for school related subjects than the other groups, even if it is an activity that is far down the list.

Table 5. Computer activities during school in relation to amount of use.

Daily users (n=32)	Weekly users (n=52)	Occasional users (n=21)
Chat with friends	Information search – school related	Write school related texts
Play games	Write school related texts	Information search – school related
Write school related texts	Search for school related pictures	Search for school related pictures
Search for school related pictures	Work with learning softwares	Work with learning softwares
Send e-mails	Chat with friends	Send e-mails
Information search – school related	Send e-mail	Play games
Work with learning softwares	Play games	Chat with friends

School related computer activities are rather uncommon among both boys and girls during leisure time (Table 6); only 32% of the girls and 25% of the boys are weekly writers of school related texts on their computers. More common computer activities among the girls are listening to music and socialising with friends: 91% of the girls listen to music every week and 89% socialise with their friends every week. The boys are keen on game playing: 87% play games every week, but they also socialise, 84% keeping in touch with friends every week. 50% of the boys search for information on their own interests every week, compared to 40% of the girls. Only 25% of the boys and 29% of the girls search for information on school related subjects on a weekly basis.

Table 6. Computer activities during leisure time in relation to gender, entire population.

Boys (n=127)	Girls (n=126)
Play games (not online)	Listen to music
Keep in touch with friends	Keep in touch with friends
Listen to music	Play games (not online)
Play online games (or LAN)	Watch movies
Watch movies	Information search – own interests
Information search – own interests	Write texts – school related
Information search – school related	Information search – school related
Write texts – school related	Search for school related pictures
Search for school related pictures	Play online games (or LAN)

During school most of the computer time is supervised by a teacher, which is reflected in the comparison between boys' and girls' computer activities. The three most common activities are school related and are the same for boys and girls (Table 7). When the children are asked about the use of computers during school, only 3% (6 boys and 2 girls) think that they use them too often. There is an almost equal division between those who think computers are used too seldom (49%) and those who think it is sufficient (48%). There are only small differences in this between boys and girls as well as between the three different user groups.

Table 7. Computer activities during school in relation to gender, entire population.

Boys (n=127)	Girls (n= 126)
Write school related texts	Write school related texts
Information search – school related	Information search – school related
Search for school related pictures	Search for school related pictures
Chat with friends	Work with learning software
Work with learning software	Send e-mails
Play games	Chat with friends
Send e-mails	Play games

There is a difference between boys' and girls' use of Mobile phones. The most common Mobile phone activities among all users are sending and receiving SMS. Looking only at daily users, SMSing is the most common activity among the girls. The boys are more into listening to music and they have also a higher degree of game playing than the girls (Table 8).

Table 8 Activities among daily users of Mobile phones, percent of daily users.

Boys (n=75)	Girls (n= 87)
Listen to music, 73%	SMSing, 84%
SMSing, 67%	Listen to music, 62%
Phone calls, 39%	Phone calls, 38%
Play games, 37%	Play games, 17%

Computers and Mobile phones are multimedia tools for the children in the study; they are used for entertainment and social networking. Boys are more into game playing than girls, and girls are more into social networking than boys.

ICT knowledge

The occasional users rank themselves as less knowledgeable in general computer knowledge than the two other groups and they want more education in basic skills such as writing and information retrieval. They have learned most of their computer skills from friends that are older or the same age. They perceive their skills to be as good as their friends or worse.

The weekly users rank themselves as more knowledgeable in general computer knowledge than the occasional users, but less than the daily users. They ask for a deeper knowledge of hardware, software and information retrieval. They have learned most of their computer skills from their teachers. Most of the weekly users rate themselves as equal to their friends in terms of ICT knowledge. There are some weekly users that perceive themselves to be worse than their friends and a few that see themselves as better than their friends.

The daily users give themselves high ranks in general computer knowledge. At the same time they ask for education in both basic skills such as word processing and e-mailing and more advanced areas such as software development and coding. The majority of daily users have learned their computer skills from older siblings. The majority see themselves as more skilled than their friends in terms of ICT knowledge but one third experiences themselves as better than their friends.

The user patterns described earlier are repeated when the children are asked to rank their skills in relation to four different computer activities. The daily users rank their skills in relation to entertainment use higher than their skills in information retrieval and word processing. The total opposite is true for the occasional users, who give themselves the highest rank in information retrieval and word processing (Table 9).

Table 9. Children's own ranking of computer skills in relation to amount of use. Average rank in brackets.

Daily users (n=32)	Weekly users (n=52)	Occasional users (n=21)
Use computer as a multimedia player (8.4)	Information retrieval (7.4)	Information retrieval (7.4)
Game playing (7.8)	Use computer as a multimedia player (7.1)	Word processing (6.9)
Information retrieval (7.8)	Game playing (6.9)	Use computer as a multimedia player (6.9)
Word processing (7.0)	Word processing (6.7)	Game playing (5.5)
Spreadsheets (1.8)	Spreadsheets (1.7)	Spreadsheets (1.6)

Girls and boys rank themselves equal in terms of information retrieval and the use of computers as media player. The boys ranked game playing as their most common activity and also ranked their skills in game playing as higher than their skills in word processing. The girls have made the opposite ranking and claim their skills in word processing are rather good. All groups, with no gender difference, have ranked their skills in spreadsheet use as really low.

The amount of use seems to have higher impact on the pupil's digital self-confidence than the type of use. The daily users rank themselves as better than the other groups in all computer related skills, both specific and general.

Attitudes to ICT

All children have positive attitudes toward ICT, but there is a difference between the three user groups as well as between the boys and the girls. The daily users are more positive in general than the other two groups.

Figure 1. Comparison between amount of use and ICT attitudes, group average rank. 1=very negative, 9=very positive.

The girls are more positive than the boys regarding use of the Internet, both as a place for information and as a place for social networking, but the boys are slightly more positive about computer use in general and they rank the importance of computer skills higher than the girls.

Discussion

The findings reveal a heterogeneous group of ICT users with gaps in their ICT skills; even the frequent users ask for more knowledge on basic computer skills. Earlier research has shown that “better-educated adolescents and adults not only use the Internet more frequently but also use it more often for information retrieval and less often for entertainment purposes than less well educated adolescents and adults” (Notten, Peter, Kraaykamp and Valkenburg 2008, p. 2). In the present study all children are at the same educational level and they all have access to computers in school and at home, even if the educational levels among the inhabitants in the research context are lower than the Swedish average. The data shows that the kinds of use are strongly related to the amounts of use among these children. A high amount of use is of ICT as a tool for entertainment and socialisation, not educational purposes. The educational aspect seems to have little impact at this age.

The most common ICT activities during leisure time are shared by all children: keeping in touch with friends, listen to music and playing games. OECD (2005) have ranked Swedish children as the fifth highest in using computers for Internet access and entertainment among the OECD countries. An ethnographic study by Ito et al. (2008) points out that the new media have made new ways for youth to socialise, and the present study shows that even occasional users socialise through computers and mobile phones. It is worth mentioning that socialising seems to be the most common reason for Swedish daily users to use computers during school, not school related issues, as is the case for the weekly and occasional users. The findings could also be compared to Selwyn, Potter and Cranmer’s (2009) study of English primary school pupils, which shows increased seriousness about ICT use as the children progress through the school years. Even though the children in the present study are older than the children in the Selwyn et al. study, they show a less serious use of ICT in school and at home. Serious use could be related to word processing, use of spreadsheets and the use of ICT as a tool for learning and studying. The children ranked themselves as fairly confident at word processing

but the frequency of use remains at the same level as it was in 2003, just below the OECD average (OECD 2005). The low level of confidence about the use of spread sheets also corresponds with the OECD reported frequency of use. Swedish children use spreadsheets considerably less than the OECD average; only Japan, Korea and Finland are around the same low level.

The overall low levels of computer use for school related issues could be discussed in relation to access to or use of computers during school, as well as teachers' attitudes. Since most computers in these schools are placed in classrooms or computer labs, the pupils need the teachers' permission to use them. This means that the use of computers at schools is dependent on the teachers' attitudes toward ICT. The lack of national guidelines (Skolverket 2009a) makes it easy for the individual teachers to give ICT low priority.

Conclusions

The sceptical attitude towards ICT amongst Swedish teachers (Empirica 2006; Skolverket 2009a, 2009b) creates challenges for the Swedish school system. These include meeting children's expressed needs, and changing teachers' attitudes. As Ito et al. (2008) describe, much learning about ICT amongst youth is self-directed or peer-based; this study supports this. However, this study has also revealed the problems with self-directed and peer-based learning. Children's skills remain self-centred and they lack basic computer skills in areas such as word-processing and spreadsheets, even in relation to other countries.

A final conclusion from this study is that further knowledge about Swedish children's use and of ICT is required, not to be able to accommodate the preferences of a highly skilled group of digital natives with special demands, but also to be able to educate all children despite their attitudes and skills in ICT so that they can become well educated members of an e-society. There seems to be a great discrepancy between the overall picture of Sweden as a mature e-society with high and widespread ICT access and children's use of ICT as a tool for learning and education.

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