INFORMATION AND COMPUTER LITERACY OF HIGH SCHOOL STUDENTS

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Abstract

In our contribution we focused on finding out the information and computer literacy of high school students. This paper presents the results of an information literacy questionnaire. Questions in the information and computer literacy questionnaire (ICLQ) were concerned with the use of computers, internet, frequency of ICT use and the purpose of internet use. Questions were generally open – ended, but we offered possibilities too. The ICLQ was filled by students (n = 283) of secondary grammar school, from different regions and districts of Slovakia. The number of boys (n =127) and girls was similar (n = 156). We used Pearson chi - square test (χ^2), for finding of statistically significant difference between genders. In our research we found that nearly all students use computers and the internet. Most students, nearly 70 %, use the internet at school. About half of all students use the internet at home. This is caused by the fact that service for access to the internet is still expensive for the most of people in Slovakia. We found that the main activity of students on the internet is the search for information (e.g. themes on essays, complementary information to the curriculum…). It means that computer literacy of students is improving. Students can use the internet and computers in school most often after lessons. The internet is using at home and at friend by boys in the higher measure in the comparison with girls. Girls use the internet more at school and at library than boys. Boys use the internet more often than girls.
Key words: *information and computer literacy, internet, computers, students.*

Introduction

The idea of information and computer literacy arises with the development of information and communication technologies (ICT). There are many definitions of information and computer literacy. Information literacy is a natural extension of the concept of literacy in our information society. Information literacy is a set of abilities requiring individuals to recognize when information is needed and to then have the ability to locate, evaluate, and use this information effectively. Information literacy is also increasingly important in the contemporary environment of rapid technological change and proliferating information resources. Information literacy is related to information technology skills, but has broader implications for the individual, the educational system, and for society (National Research Council, 1999). According to Lant (2001) information and computer literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. Information literacy is an abstract concept. As a metaphor, it is a neatly packaged and imaginative descriptive phrase that is not literally applicable or easily interpretable, implying something more qualitative and diffuse than is evident (Behrens, 1994). Information literacy, the ability to find and use information, is basic to student learning. Information literacy standards are to be taught as an integral part of curriculum content in science, social studies, language arts, reading, etc. To facilitate the identification of information literacy skills, a book icon follows each standard or objective within the curriculum document which has information literacy embedded within the

curriculum (Infolit, 2006). Information literacy is often described as a person's ability to effectively find and evaluate answers to questions using a variety of information resources (Kipnis, Frisby, 2006). The name "computer literacy" marks knowledge, abilities, skills, which the person needs to his job (Anderson, Klassen, 1981). The computer literate person understands how a computer works with information (Groundwater –Smith, Crawford, 1992). The computer literacy is a precondition on the development of the information literacy. Computer literacy usually refers to the ability to use a few commercial applications and touch-type smoothly. Computer literacy can be defined as "having a basic understanding of what a computer is and how it can be used as a resource". Requirements for computer literacy vary, but may include an understanding of the basics of hardware, computer systems and ethics as necessary skills (Csapo, 2002). We can to meet with the view, that computer literacy is a component of the information literacy. Full integration of information and computer literacy is advocated at various levels of education through the adoption of real-world assessment strategies, and through a critical pedagogy. These are necessary steps toward the development of independent learning, and ultimately, toward the establishment of a learning society (Andretta, 2006). There are some studies which discuss information and computer literacy of pupils, students, future teachers etc. (Branch, 2004; Bruce, 1998; Link, Marz, 2006; McCormick, 1992). Information and computer literacy is closely connected with information and communication technologies, because nowadays is put emphasis on the teaching with the using of information and communication technologies (ICT). The reason is that ICT make easier learning, better explain phenomenon and reality (Fančovičová, Prokop, 2006; Haláková, 2006). Some authors write that girls and women are on the lower level by the using of ICT (Adler, 1999; Reeves, 1997). Students use internet for the various information. For example, finding data to their homework, finding essays or finding information about their future work (Selwyn, Marriott, Marriott, 2002). ICT fills in traditional teaching methods like observing, manipulation with things, experiments. In these activities is very important to know use ICT and this develops computer literacy of all students.

Purposes of the study

In our contribution we would like to show the information literacy of high schools´ students. The aims of our study were:

1. To find out, if students use information and communication technology (ICT) in their everyday life and in the school.

2. What is the main activity of the ICT´s using?

3. What is the frequency of ICT use by students?

Our hypotheses were:

1. Boys use ICT in higher measure than girls.

2. The using of computers and internet is focused on the information's finding.

Methodology of Research

We used the questionnaire as a research tool. The questionnaire is the best method for mass inquiry of data (Bass, Pessemier, Lehmann, 2007). We gave the questionnaire for evaluation to two experts, who are employed in the making, using and evaluating of questionnaires, before sending them to schools. Questions in the information and computer literacy questionnaire (ICLQ) were concerned with the use of computers, internet, frequency of ICT use and the purpose of internet use. Questions were generally open – ended, but we offered possibilities too. There were returned 283 filled questionnaires from 320. The research was carried out on ten secondary grammar schools. There were represented by 5 regions and 9 districts of Slovakia. All schools have a similar equipment of ICT and access on the internet. The questionnaire was filled by students from first, second, third and fourth class. In the

sample there were 127 boys and 156 girls. Age of students ranged from 15 to 19 years. The research was done from April to June of 2005. We used Pearson chi - square test (χ^2), for finding of statistically significant difference at results between genders. The test is based on the measuring of differences of real frequencies in the contingency table cells compared with expected frequencies. The significance of the chi – square test is arising, when differences are greater. The value of chi – square test and the significance is dependent on the number of respondents. We used the experiences of author, who is interested in statistics (Katina, 2005).

Results of Research

In the first question, we asked students, where they use the computer. All possibilities are indicated in the figure 1. Next to this question, students could mark more possibilities. There is a satisfying thing, that only 2.82 % of students do not use computers. Most of the students use computer at home, nearly 90 %. More than 60 % indicated using computers in the school. Approximately, a fourth of students use the computer at friend's home and 27.11 % of students use computer in the library or internet cafe. These students, who have marked the possibility "other" wrote, that they use the computer at parents' place of work. We found the statistically significant difference at results between genders by the possibility "at friend" ($\chi^2 = 10.50$; p<0.01), in the account of boys.
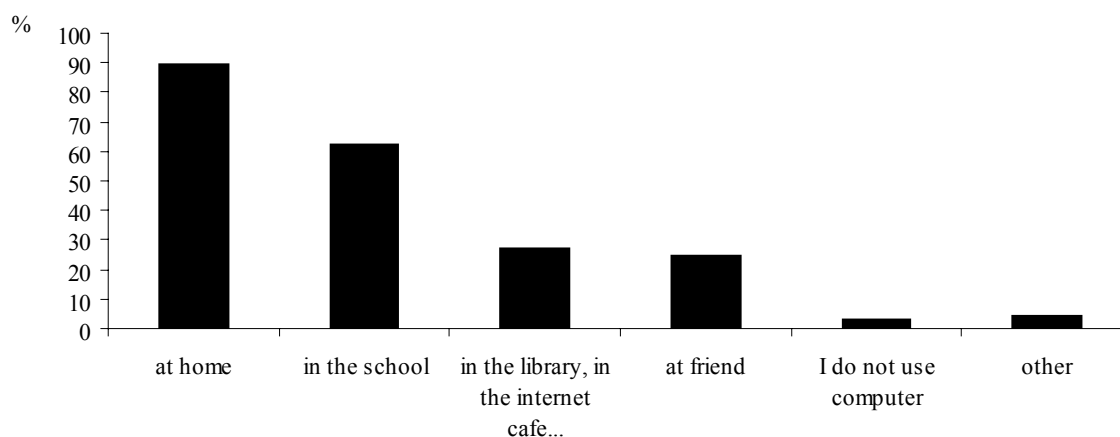

Figure 1.   **The percentage evaluation of the students´ answers, where they are using computers the most frequently.**

In the other item we were interested in when students are able to use the computer in school. Most, nearly 70 %, showed the possibility "after lessons". More than 60 % wrote that they can use computers during the teaching class. Nearly 40 % marked the possibility "during the interest club". Approximately 6 % of students can use computers in school during the weekend. About 1 % of students do not have the possibility of using computers in school.

In the next question we wanted to know where students use the internet. Most of respondents (68.89 %) marked the possibility "in the school". More than half of students showed that they use the internet at home. About 30 % of students wrote of using the internet in the library or in an internet cafe, a similar number of respondents marked the possibility "at friend". Nearly 7 % of students use the internet at parents' place of work. More than 3 % of students do not use the internet. We found a statistically significant difference at results (Table 1) between genders with the possibilities "at home" and "at friend" in the account of boys and by possibilities "in the school" and "in the library or in the internet cafe" in the account of girls.

Table 1. **Results of chi - square test by the findings of significant differences at results between genders in the individual items of question: "If you use the internet, write where."**

Possibilities	χ^2	df	p
at home	7.53**	1	0.006
in the school	4.17*	1	0.041
in the library, in the internet cafe ...	5.97*	1	0.014
at friend	7.96**	1	0.005
I do not use the internet	1.01	1	0.316
other	1.20	1	0.272

* statistically significant differences between genders $p < 0.05$
** statistically significant differences between genders $p < 0.01$

In the other item of questionnaire we were interested in how often students use the internet. Most students marked the possibility "every day" (30 %). Other possibility "two to three times a week" showed 28.25 % of all students, 22.22 % use the internet once a week and 16.30 % of students use the internet once or twice a month. Only 3 % of students do not use the internet at all. We found a statistically significant gender differences at results (table 2) by possibility "every day" in the account of boys. This means that boys use the internet more often than girls. The statistically significant difference at results was found by the possibility "once a week", too. It means that girls do not consider the internet as important as boys do, who are on the internet more often than girls.

Table 2. **Results of chi - square test by the findings of significant differences at results between genders in the individual items of question: "How often do you use the internet?"**

Possibilities	χ^2	df	p
every day	22.11***	1	0.000
twice to third times a week	1.22	1	0.278
once a week	3.93*	1	0.049
once to twice a month	2.79	1	0,095
I do not use the internet	1.40	1	0.239

* statistically significant differences between genders $p < 0.05$
*** statistically significant differences between genders $p < 0.001$

Another question was concerned with the possibility of internet use in school. This question was open-ended. More than three fourths of students showed the use of the internet "after lessons". More than half of respondents can use the internet during the teaching class. Approximately one third of all students use the internet during the interest club. Only 4 % of students wrote that they can use internet in school during the weekend and two students (0.74 %) showed, that they can not use the internet in the school at all. Another question was open-ended and we wanted to know what the purpose of internet using is most often. Most students, nearly 70 % use the internet for obtaining information. We found a statistically significant difference at results (table 3) between genders by this possibility, in the account of girls. It means, that from these respondents, who use the internet due to information, girls use the internet for obtaining information more than boys. The internet is used for communication by more than 45 % of respondents. Under the communication we included: chat, mail, ICQ, SMS. One fourth of all students use the internet for fun. Nearly 5 % use the internet by their requirement. More than 8 % of all students use the internet for downloading music, files and other things. We found a statistically significant difference at results (table 3) between genders, in the account of boys. A small amount (1.48 %) did not answer, indicating that they probably do not use the internet.

Table 3. **Results of chi - square test by the findings of significant differences at results between genders in the individual items of question: „What is the most often purpose of the internet using? "**

Answers	χ^2	df	p
communication	0.37	1	0.552
downloading	17.37***	1	0.000
information	5.35*	1	0.020
by the requirement	3.09	1	0.079
fun	0.32	1	0.565
do no answer	0.02	1	0.885

* statistically significant differences between genders $p < 0.05$
*** statistically significant differences between genders $p < 0.001$

Discussion

Following, there are three points from our survey: 1) most students use computers at home; 2) nearly all students use the internet; 3) students can use computers and the internet in their schools.

We found out that nearly all students use computers and the internet. An interesting point is that most of students marked the usage of computers at home but most of them also use the internet in school. It follows, that not all students, who use computers at home have access to the internet. This is caused by the fact that service for internet access is still expensive. In other countries the situation is different. For example, in Australia, 96 % of students have access to the internet on their computer at home (Oliver, Towers, 2000).

Our research suggests that many schools in Slovakia support the development of students IT skills. It is important, because many colleges require IT skills of new students. It is similar to the USA where 22 % of colleges and universities require information and computer literacy of new students (Davis, 1999). Karsten and Roth (1998) wrote that only specific computer skills enhance information literacy. Students can use the internet and computers in school most often after lesson.

From the results of our research is evident nearly all students have own PC. It is similar in Austria, where 94 % of all students have access to own PC (Link, Marz, 2006). We found 97 % of all students use the internet (most of them in the school). Link and Marz (2006) found a similar result - 94 % of students in Austria use the internet. These authors wrote that the main activity on the internet is communication (mail, chat …). We found that the main activity is the search for information.

Conclusion

Our research was focused on information and computer literacy of high school students. Our aims were to find out, if students use ICT, what their main activity is and what their frequency of ICT use is. We can state that information and computer literacy of high school students in Slovakia is good. Only a very small number of students do not use computers or do not have access to the internet.

We tried to verify two hypotheses. In the first case, we can confirm only part of the hypothesis. We found a statistically significant difference at results between genders in the account of boys, only in the use of internet. By the use of computer we did not find a statistically significant difference at results between genders. The second hypothesis was focused on verifying if the use of ICT is focused on information finding. This hypothesis can be accepted, because most of students (68.15 %) use computer and the internet for information searches.

Acknowledgements

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