

GLOBAL KIDS ONLINE SERBIA

Balancing between Opportunities and Risks: Results from the Pilot Study

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ABOUT THE AUTHORS

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EXECUTIVE SUMMARY

The emergence and rapid development of information and communication technology (ICT) has had a dramatic impact on children around the world. Digital media now occupy a central place in children's social lives and the competent use of ICT is becoming a precondition for children's inclusion in society and, later, the workforce. There is an urgent need for all countries to develop national and international evidence-based policy frameworks and guidelines for ICT. Several recent studies serve as useful bases for European and high-income countries (Livingstone, Haddon, Görzig, & Ólafsson, 2011; Livingstone, Mascheroni, Ólafsson, & Haddon, 2014).

UNICEF Office of Research-Innocenti, The London School of Economics (LSE), and EU Kids Online have launched an international research project, Global Kids Online (GKO). The goal is to develop a global research toolkit, building on the one developed by EU Kids Online, as a flexible new resource for researchers gathering evidence on children's use of the internet and the related risks and opportunities of being online. Serbia is one of the partner countries invited to participate in the project and UNICEF Belgrade Office invited the Institute of Psychology of the Faculty of Philosophy, Belgrade, to join the research team and conduct the pilot research.

Stakeholders recognise the significance of being a partner in the GKO project. Despite Serbia's readiness to respect children's rights and needs in this realm, and its desire to improve education and protect them from potential risks and online aggression, the country does not yet carry out systematic research in the field. By participation in GKO, Serbia has an opportunity to gain important insights, to exchange experiences and to use the results for creating effective policies.

The primary aim of the research was to pilot the qualitative and quantitative research toolkit developed by Innocenti and LSE. The quality of the methodology and the sample size allow us to gain some information about children's online practices and attitudes. Nevertheless, to produce a more reliable picture that would serve as the basis for policy recommendation, a larger, nationally representative sample would be


necessary. Besides information about child identity and resources (gender, age, family composition, socio-economic status, personal and social strengths and difficulties), the modular toolkit gathered information on children's internet access (place of use and devices for use), practices and skills (operational, information, social creative and mobile skills, online self-efficacy), opportunities (learning, community and civic participation, creative participation, social relationships, entertainment, personal information, online communication) and risks (meeting new people, online and offline aggression, exposure to sexual content, excessive internet use).

The preparatory phase consisted of communicating collaboratively with the partners, translating and adapting the instruments and documents, training interviewers, finalising the sampling process and making contacts with schools and future respondents.

The research included both qualitative and quantitative elements. The qualitative part of the study consisted of 8 focus groups, with a total of 35 students from four urban schools in Belgrade. Two focus groups were conducted with Roma children, two with children with special educational needs, two with 10-year-old children from a high-status elementary school and two with children from a high-status private secondary school. The quantitative element consisted of face-to-face interviews with 197 students (and 197 of their parents) from 16 primary and secondary schools in four cities across the country.

The piloting showed that the research toolkit is comprehensive and usable for intended purposes. The qualitative research protocol demonstrated its suitability for children aged 9–17, including children from marginalised groups and children with intellectual disabilities. Some revisions of the coding scheme were proposed in order to improve the validity and reliability of results.

The quantitative toolkit also proved useful and comprehensive. However, several changes were proposed in the wording of questions and in the possible alternative responses. Because the huge



difference in abilities and the differences in online practices between the youngest and oldest age group, we suggest that two versions of the questionnaire (for younger and older children) may be reconsidered.

The study confirmed the central role ICT has in children's lives, even for the youngest.

The age of going online is decreasing, and the majority of the youngest children went online for the first time during the pre-school period. Children go online from various devices and from various places. Children prefer devices they can use exclusively - the devices they own (mostly cell phones) – because of accessibility and privacy. They use the internet primarily for communication and entertainment, and then to seek information.

At the earliest ages, boys use the internet more often than girls, but this difference decreases with age. In the oldest age group (aged 15–17), when internet use is most frequent, girls use the internet more than boys.

Skills and knowledge increase with age: the greatest difference is between children aged 9–11 and older children.

For almost half of the students the internet does not serve as educational tool for school purposes. Children report that schools do not generally have consistent rules regarding internet use, nor do they give appropriate safety guidance.

Children generally perceive the internet as a place that includes both good and upsetting contents. These balanced or ambivalent views were especially visible during focus-group discussions. Children highly value the positive side of the internet while being aware of its 'dark' side. In the survey every third child reported some negative online experience during the previous year. Finding explicit sexual content is commonplace (two-thirds of children reported it), but is generally perceived as not especially upsetting. Even among the youngest children every third child stumbled upon explicit sexual content, which was more upsetting to younger children and girls.

Similarly, every third child reported being exposed to some kind of aggression during last year, although only 14 per cent said it had happened more than once


or twice. The majority of these episodes are related to online aggression. The level of face-to-face aggression stays approximately the same with age but the level of online aggression increases. Those more exposed to offline and online aggression are more prone to be aggressive offline and online. Children who spend more time online were more likely to be both aggressors and victims of aggression.

Somewhat less than half of the children have communicated with unknown people on the internet, and somewhat more than a half later met strangers. In other words, 30 per cent of children have met in person somebody first introduced online. Only nine per cent of them (five children) reported being upset by such encounter. Focus-group material showed that children make a clear distinction between meeting an unknown person online who is a friend-of-a-friend, their peer etc. and meeting someone older. Meeting an older person online is considered to be much more risky and potentially harming. Many of them prefer communicating online with people they already know. Meeting new contacts online and meeting new contacts offline are more frequent among boys and older children. Among the boys from the oldest age group, 60 per cent have met new online contacts offline.

Finally, an unrecognised risk emerged, related to piracy. More than half of the children had made pirate copies of movies at least once, while approximately one-third of the children had downloaded a cracked¹ video game or cracked software.

Private and mobile internet use, along with the relatively modest internet skills of parents, make it difficult for parents to mediate such use. Still, according to children and parents, a significant percentage of parents try various mediation techniques. Mediation decreases with the age of children, presumably because of greater skills of older children and parents' wishes to respect a child's privacy. Generally, we found high levels of trust between children and their parents. A great majority of the children (86 per cent) found it easy to talk with their parents about things that upset them in general and about what they do on the internet (77 per cent) and what upsets them online (68 per cent). Children are more reluctant to ask parents for help or advice,

¹ By cracking we mean attacking and penetrating security systems of software such that they could be used freely.



perhaps because they believe that their parents have less skill and experience. Some data suggest that a large proportion of parents are likely to invade children's privacy in order to check on their online activities.

It seems that, so far, schools do not use the potential benefits of the internet for educational purposes. Schools play only a minor role in teaching children safe online behaviour.

Differences in online practices and attitudes according to age were numerous and substantial; those between the youngest group (aged 9–11) and the rest were especially large. Gender differences were also frequent but in many cases interact with age: some gender differences decrease with age and some increase. Differences related to material status, except sporadic correlations with some online practices, were generally insignificant.

THE RESEARCH AND POLICY CONTEXT

Project aims and context

Global Kids Online (GKO) is an international research project launched by the London School of Economics (LSE), UNICEF Office of Research-Innocenti, Florence and the EU Kids Online research network. It is to some extent the continuation of international research organised in the period 2006–2011 by the research network EU Kids Online, which aimed to understand how children use the internet and what risks and opportunities they encounter. The research (published in 2010) covered 25,000 children aged 9–16 and their parents from 25 European countries.

The next step was to develop reliable methodology that would be globally applicable. Partner countries, including Serbia, were invited to take part in developing methodology and piloting instruments. UNICEF in Serbia invited the Institute of Psychology of the Faculty of Philosophy, Belgrade, to join the research team and conduct the pilot research.

Serbia took part in the Project in August 2015, when the Agreement was concluded by UNICEF and the Institute of Psychology. An interdisciplinary research team was formed with the following members: Dragan Popadić, psychologist (research team coordinator); Zoran Pavlović, psychologist, Dalibor Petrović, sociologist, Dobrinka Kuzmanović, psychologist, and Danijela Galović, psychologist and psychotherapist.

In the preparatory stage contacts were established with partner teams from other countries, and an Advisory Board was formed with representatives of the ministries of education and telecommunications, the Cyber Crime Combating Unit, the Safer Internet Centre Serbia and Libero (an NGO that promotes diversity through youth participation). Research instruments were translated and modified, after which the qualitative and quantitative research was conducted. The qualitative research took place from 25 November

to 24 December 2015, comprising eight focus groups with 35 students aged 10–17 from four Belgrade schools. The quantitative research, conducted from 7 March to 14 April 2016, consisted of interviews with 197 students aged 9–17, from 10 primary and 8 secondary schools in Serbia, plus 197 of their parents. More details of the sampling etc. are provided under section 3.2 (the research process).

The country context

The Republic of Serbia is a country of some 88,500 km² situated in south-east Europe. According to the 2011 census, Serbia's population is 7.187 million, of whom 83 per cent are ethnic Serbs. Serbia has a strategic goal to join the EU. It attained candidate status in 2012 and is now in the process of accession negotiations.

Key indicators

In line with global trends, the use of ICT in Serbia is growing fast. Surveys by the Statistical Office of Serbia² indicate a continuous increase since 2006 of the number of households possessing ICT devices (Figure 1). The same trend is shown in data on the number of individuals who use the internet and engage in e-commerce (Figure 2). Data indicate that one half of the internet users already use it for online shopping.³

According to the statistics presented by the International Telecommunication Union (ITU),⁴ internet use is higher in Serbia than the global average. Globally, internet penetration in 2014 was under 50 per cent (41 per cent for individuals and 44 per cent for households), whereas internet use in Serbia was 66 per cent for individuals and 64 per cent for households. However, this is significantly lower than in other European countries (74 per cent for individuals and 79 per cent for households).

² Without data from Kosovo under UNSC Resolution 1244

³

<http://webzrs.stat.gov.rs/WebSite/Public/PageView.aspx?pkEy=206>

⁴ <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

Figure 1: Possession of ICT in Serbia in 2006–2015: households

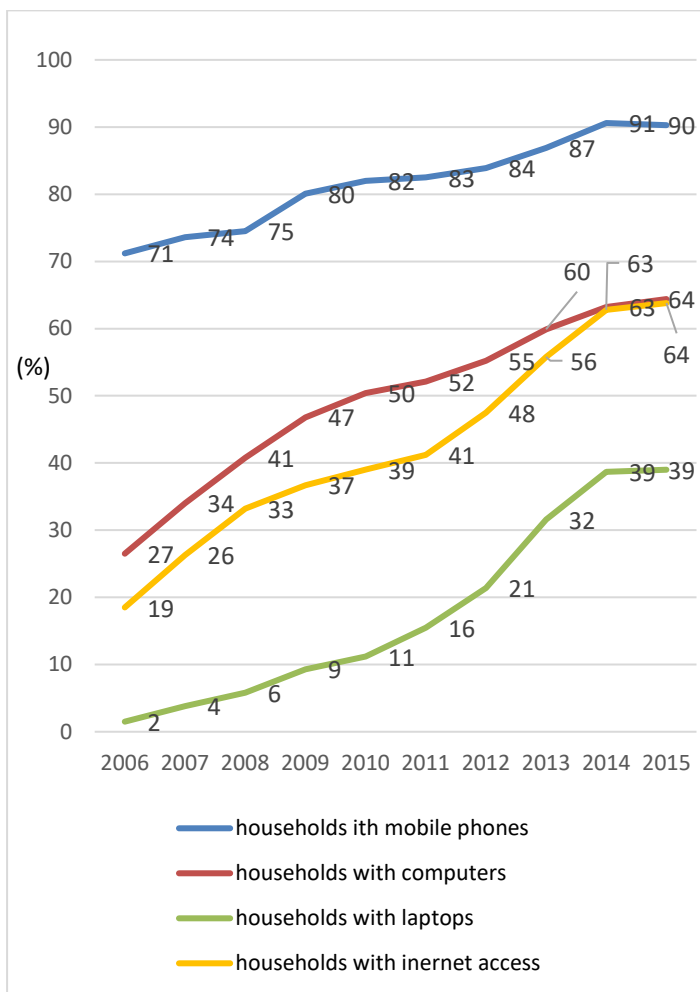
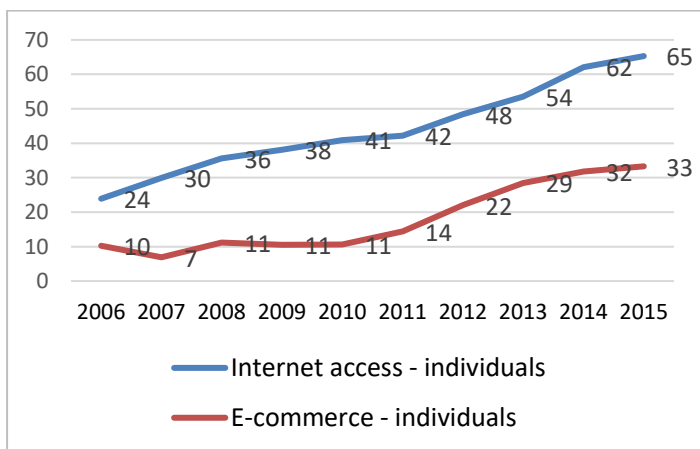


Figure 2: Access to the internet and trade via internet in 2006–2015: individuals



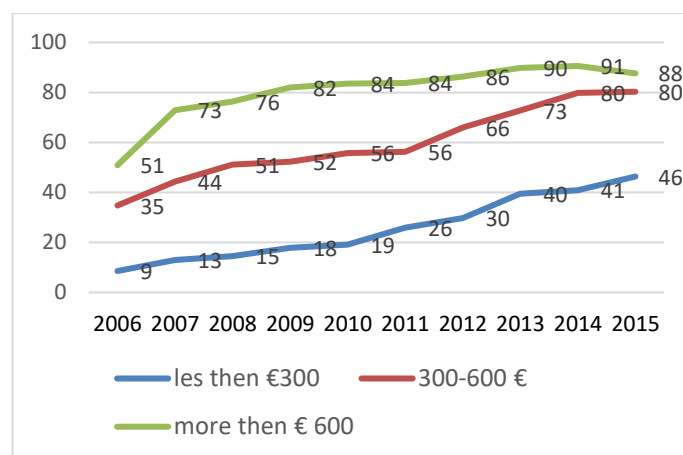
Internet use is conditioned by social and demographic

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<http://webzrs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=206>

factors, particularly a person's financial situation and level of education, but also by gender, age and employment status. The percentage of households with access to the internet is twice as high in households with an income above €300 per month than in households with a lower income (Figure 3). This difference decreases with time, since households with the largest incomes are close to the 'ceiling' of 100 per cent access. Access to the internet is increasing most rapidly among the poorest households: between 2010 and 2015, the level of internet access more than doubled in the group with the smallest income.⁵

Figure 3: Possession of internet in households depending on monthly income, 2006–2015

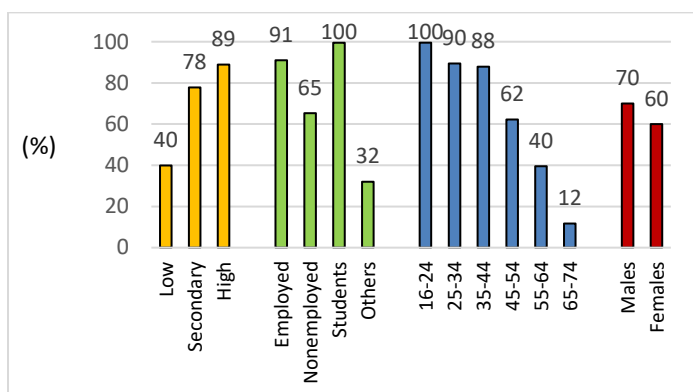


Internet use among individuals in respect of their level of education, employment status, age and gender are presented in Figure 4 (data from the Report of the Statistical Office of Serbia, which show the number of individuals using the internet in the previous three months). Internet use increases with level of education: the largest gap is between those with the lowest level and those with secondary and higher level of education. The number of users decreases with age, with a drastic and continuous decrease in people older than 40. Practically all employed individuals and students use the internet, but the percentage is significantly lower among unemployed and 'others'. Internet usage rate is 10 percentage points higher for men than for women.⁶

6

<http://webzrs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=206>

Figure 4: Internet users, by level of education, employment status, age and gender



Internet use among young people

Although there has been some research into internet use in Serbia since the beginning of the century (e.g. Golčevski & Milovanović, 2004; Hinić, 2014; Milovanović, Bakić & Golčevski, 2002; Petrović, 2013), the studies were not continuous, did not cover large samples and rarely included children. In view of the dynamic development of ICT and the importance of empirical recording as the basis for political measures, a problem pointed out in *The National Youth Strategy for the Period 2015–2025*⁷ appears to be particularly significant: there is a clear lack of comprehensive, systematic and continuous research on young people and following up indicators regarding youth policy.

One of the most recent and extensive pieces of research, which partially fills the gap, was conducted by the Belgrade Institute of Psychology in 2012 with sample of 3,786 students aged 10–18, 1,370 teachers and 3,078 parents (Popadić & Kuzmanović, 2013). The results confirmed that the internet plays an important role in children's lives. Even among the youngest students 83 per cent had access to the internet, 60 per cent on a daily basis. Students used the internet primarily for communication and entertainment. About two thirds of older primary school students and 84 per cent of secondary-school students were exposed to some form of risk on the internet in previous one year period. The significant correlation was detected between being a victim of traditional and of online aggression, as well as correlation between exerting traditional and online aggression. In addition,

significant correlation was established between victimisation and online aggression. Both parents and teachers on average accessed the internet less frequently and appeared to be less competent than students. The majority of students were not willing to ask them for help when they needed it.

Policy context and key stakeholders

EU member countries have acknowledged the importance of digital technologies for economic and social progress. They prepared *A Digital Agenda 2010–2020* for Europe, one of seven initiatives of Europe's economic strategy. Several strategic activities are stipulated to accelerate the development of ICT, which is considered a key issue for Europe's sustainable and inclusive economic progress.

The Serbian government has also recognised the importance of developing a digital society and concluded that the country lags behind the European average. Inspired by the EU document, Serbia set out its own Digital Agenda, which stipulated strategic goals and priorities, and set out the activities and policies necessary to develop ICT. The Agenda is primarily based on two documents: *Strategy on Development of Electronic Communications in the Republic of Serbia for 2010–2020* and *Information Society Development Strategy in the Republic of Serbia until 2020*. The *Strategy on Development of Electronic Communications in the Republic of Serbia for 2010–2020* was adopted by the government in 2010, and the action plan for its implementation was adopted in 2013. Since development indicators of the information society suggest that progress has been slow, the goal is to enable Serbia to reach the EU average. The strategy aims to encourage the development of ICT knowledge and skills, strengthen the role of these technologies in the education system; it should respond to challenges implied by ICT, such as new security aspects, endangering privacy, addiction to technology, insufficient inter-operability and the open question of protection of intellectual property.

The activities of the Digital Agenda are coordinated by the Ministry of Telecommunications and Information Society. In accordance with the Law on Ministries, the Administration for Digital Agenda was established as

⁷ <http://www.mos.gov.rs/wp-content/uploads/download-manager-files/Nacionalna%20strategija%20za%20mlade%20-%20SR.pdf> (in Serbian)

the administrative body within the Ministry of Culture, Information and Information Society.

Young people and ICT

Serbia pays special attention to young people and their personal and social empowerment. The 2015–2010 National Youth Strategy includes the goal of enabling young people to have adequate access to new technologies and the internet, as well as establishing comprehensive and continuing education of young people about safety challenges, risks and threats, and on safe behaviour.

The Strategy of Education in Serbia until 2020, adopted in 2012, which deals with establishing purpose, goals, directions, instruments and mechanisms to develop the education system, recognises the importance and role of new technologies in improving the educational system. However, no documents have yet been prepared to help articulate educational policy in this area. The goal of the strategy is to enable the benefits of ICT to be used in teaching and learning, and in various forms of online learning (electronic conferences, course blogs, discussion panels, exchanging information, electronic tests etc.). The action plan promotes new methods of learning, information technologies and e-learning, by enabling teachers to use the new technology.

In 2013 the National Education Council adopted the *Guidelines for Advancing the Integration of ICT in Education*.⁸ These include recommendations on strategy development, educational institutions and teaching practice. The goal is to improve the quality of education by encouraging the development of competence in teachers and students, and by modernising curriculums.

Regarding the policy of encouraging young people to use ICT, it is recognised that attention should be drawn to risks and online aggression. The 2015–2020 National Youth Strategy, as part of the strategic goal 'Improved Conditions for Developing Safety Culture of Young People', includes the activity 'supporting programmes that enable young people to recognise and react adequately to online aggression, i.e. aggression that is generated by application of

information technology'.

Dedication to preventing aggression and protecting children is reflected in numerous strategic documents. In the *National Action Plan for Children* (adopted in 2004), one of the priority goals is protecting children from all forms of aggression. This plan, together with the *General Protocol for Protection of Children from Abuse and Neglecting* (2005), presents the basis for all other protocols relating to the vulnerability of children in various institutions and contexts: for social protection institutions (2005), the educational system (2007) and the police (2007). In the *Special Protocol for Protection of Children and Students from Violence, Abuse and Neglecting in the Educational Institutions*, as well as in the *National Strategy for Prevention and Protection of Children from Violence*, adopted in 2008, digital violence is recognised as a new form of aggression manifested in the misuse of information technologies among children and against children: messages sent through electronic mail, short message service (SMS), multimedia messaging service (MMS), via websites, chatting, taking part in forums etc.

A significant and difficult future step is to articulate and implement (based on the strategic plans) educational policy in this area. Research into the application of ICT in schools in Serbia⁹ conducted in 2013 concluded that there were no clear strategic approaches to advance the role of ICT, there was no organised support in teaching (neither at the education ministry nor in schools). School equipment, the use and creation of digital teaching materials, and level of application of ICT in teaching varied from school to school and depended mainly on the enthusiasm and competence of teachers. The 2015–2020 National Youth Strategy pointed out that there is no systematic approach in establishing knowledge on young people, in following up indicators of the youth policy and in reporting – in other words there was a lack of comprehensive and continuous research.

⁸ http://www.nps.gov.rs/wp-content/uploads/2013/12/SMERNICE_final.pdf

⁹ <http://socijalnoukljucivanje.gov.rs/wp-content/uploads/2014/06/Istrazivanje-o-upotrebi-IKT-u-skolama-u-Srbiji-jun-2013.pdf>

KEY FINDINGS

Introduction

The results presented in this section are the product of a research process that lasted more than nine months and was based on both qualitative and quantitative methodology. Besides children, who were the main subject of our research, we also conducted interviews with their parents (the one who is more involved in the child's internet use), which gave a new dimension to our findings. For some questions, we were therefore able to compare children's and parents' answers (for instance, to determine whether there were discrepancies in estimates of internet use).

The aim of our study was to learn how children and young people (aged 9–17) in Serbia engage with the internet and digital technologies in their everyday lives. Our interest focused on several key topics, and our analysis is primarily based on responses to the most important (core) questions in children's interviews. However, when necessary, we broadened the analyses with optional questions. The tables containing all the questions (core and optional) and the results from interviews with parents are displayed selectively in this report.

The key findings are organised around four main topics. The first is *access and opportunities*, where we analyse children's use of the internet and digital technology in terms of time spent, frequency and location of use, learning, community and civic participation, creative participation, social relationships, entertainment, personal information, online communication and so on. We then pay attention to their *skills and practices*, with the emphasis on digital literacy, operational, information, social, creative and mobile skills, online self-efficacy etc. In the third part we elaborate the *risks* that the children encountered during internet use (meeting new people, online and offline aggression, exposure to sexual content, excessive internet use). Finally, we discuss *vulnerabilities and protective factors* (parents and school).

Most of the results are presented in terms of descriptive statistics. In the text or in the graphs the percentage of cases in particular categories are presented, usually broken down further across gender, age and material status. In cases where we want to highlight the correlation between particular scores, we use Spearman's rho.

Research process

As mentioned above, the study design included both qualitative and quantitative elements. The preparatory phase included discussing the research toolkit, adapting and translating research materials, making the sampling plan, choosing and training interviewers for the quantitative survey and organising the fieldwork. Before conducting the research, signed informed consent was obtained from children and parents, and the Ethics Committee of the Psychological Society of Serbia (which served as an external ethical reviewer) granted approval.

The qualitative survey included focus groups with students (three to six students per group). Eight focus groups with children from the general population (four groups), Roma children (two groups) and children with intellectual disabilities (two groups) were conducted from November 26 to December 24, 2015. In total, 35 students (19 girls and 16 boys) aged 10–17 participated in the focus groups. Students were sampled conveniently through schools (two primary, one secondary school and one special secondary school in Belgrade).

The main reason for including Roma children and children with intellectual disabilities was the fact that children from these minority groups are usually under-represented in quantitative surveys. Knowledge of their internet practices is therefore generally lacking. Besides, they are often the target of discrimination in Serbian society, so it was important to analyse whether there was anything specific in their online habits and practices which might help them overcome the obstacles in social interaction they encounter in the offline world.

Focus groups were facilitated by the three members of the Serbian research team and conducted on school premises. The focus group guide from the qualitative research toolkit was used. The focus groups' duration was 70–95 minutes.

The quantitative part of the survey included face-to-face interviews with children and their parents. Students were also sampled through schools. Students from 16 different schools (9 primary and 7 secondary schools) and four different cities (Belgrade, Nis, Kragujevac and Novi Sad) were chosen. The

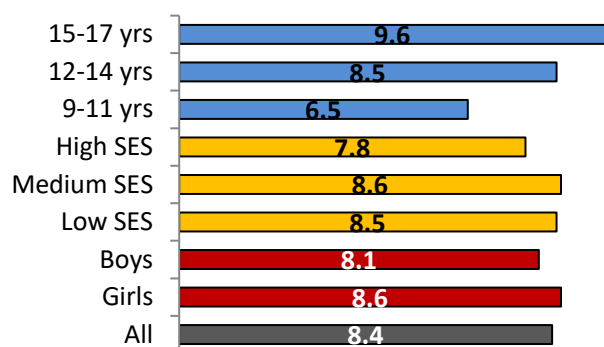
interviews were conducted on school premises by 34 interviewers during March 2016. Each interviewer interviewed, separately, six parent / child pairs (i.e. they conducted 12 interviews). Two different questionnaires, one for children and one for parents, were used. Both questionnaires included all the core questions from the toolkit, plus numerous optional ones and new questions. In total, 204 students and 204 parents were interviewed, but only data from 197 were used in the analysis (one interviewee did not use the internet and six students had already reached their 18th birthday). On average, the interviews with children lasted an hour (range 20–90 minutes), and those with parents lasted 30 minutes (range 15–69 minutes). (For more detailed information on quantitative research process and methodology.

Access and opportunities

First use of the internet

On average, children from Serbia start using the internet at the age of eight, with boys starting six months earlier than girls. A few children (2 per cent of the sample) said they started using the internet at the age of three. A few more (6 per cent) started at the age of 4 or 5; the oldest age at which children from our sample started using the internet was 13 (13 per cent). The largest number of children (20 per cent) started using the internet at the age of 10.

Figure 5: Average age when children first used the internet, by age, socio-economic status (SES) and gender



Note: Q: 'At what age did you use the internet for the first time?' N = 197

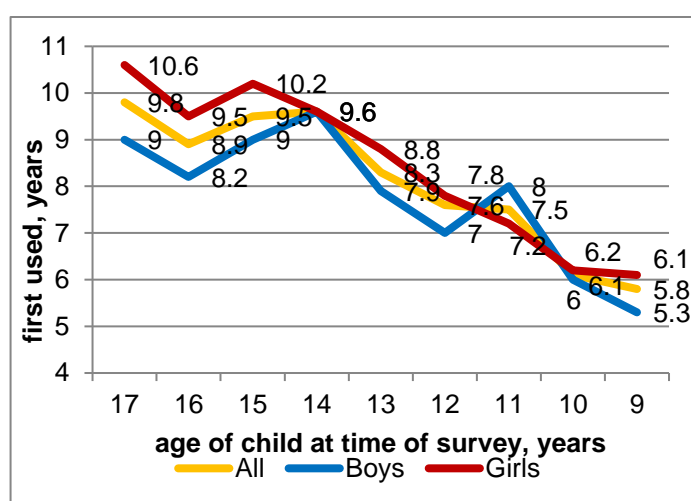
Frequency of internet use

Digital technologies and the internet are an inevitable part of the everyday life of young people who participated in this research. Bearing in mind that a criterion for choosing the sample was being an internet user, 92 per cent of the children reported using the internet daily or almost daily, 6 per cent at least every week, while only 2 per cent said they rarely used the internet. The largest differences in frequency of use were associated with different age groups – differences associated with socio-economic status and gender were smaller (Figure 7). Frequency of internet use increases with age: a quarter of the children aged 9–11 use the internet several times every day, compared to two-thirds of the children aged 15–17.

Children with high socio-economic status, on average, start using the internet slightly younger than children with medium or low status.

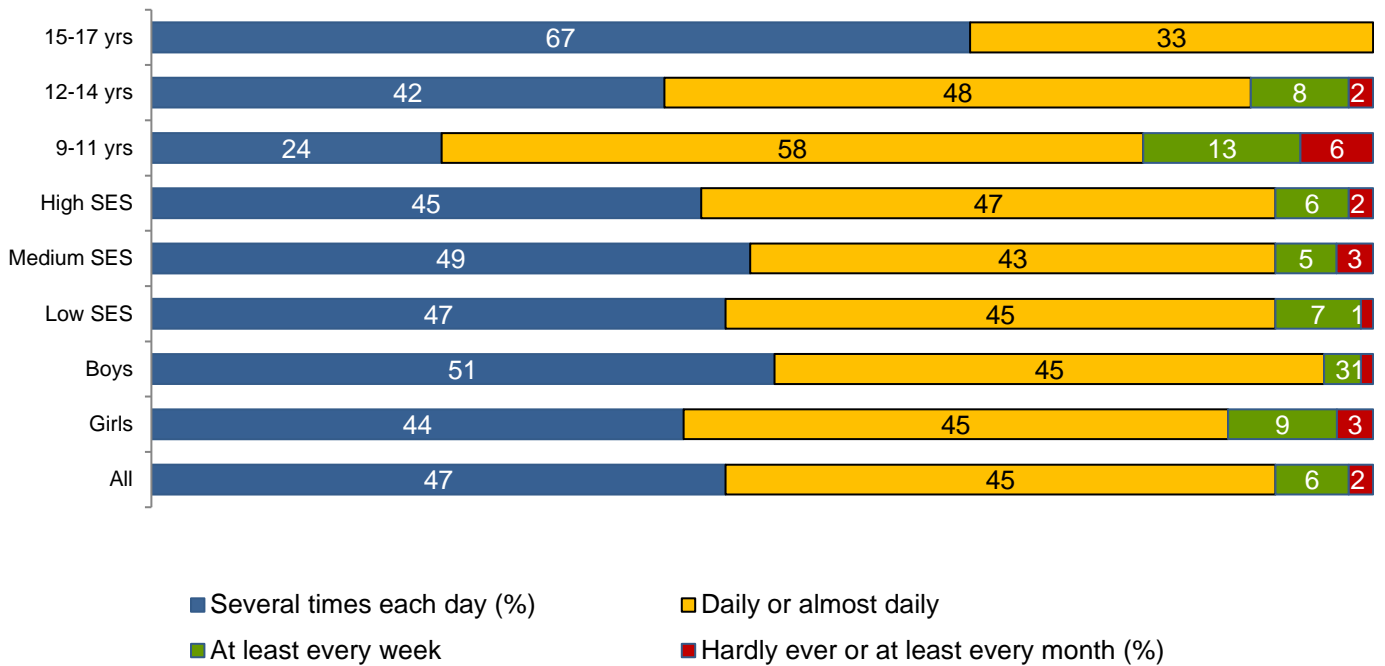
As it can be seen from Figure 6, the age when children first start using the internet is decreasing. The oldest children from the sample (aged 17) first started using the internet, on average, when they were almost 10, while the youngest (aged 9) started using the internet when they were almost 6. Boys started earlier than girls at all ages except at the age of 11.

Figure 6: Average age when children aged 9–17 first used the internet



Note: Q: 'At what age did you use the internet for the first time?' N = 19

Figure 7: Frequency of internet use (by age, socio-economic status and gender)

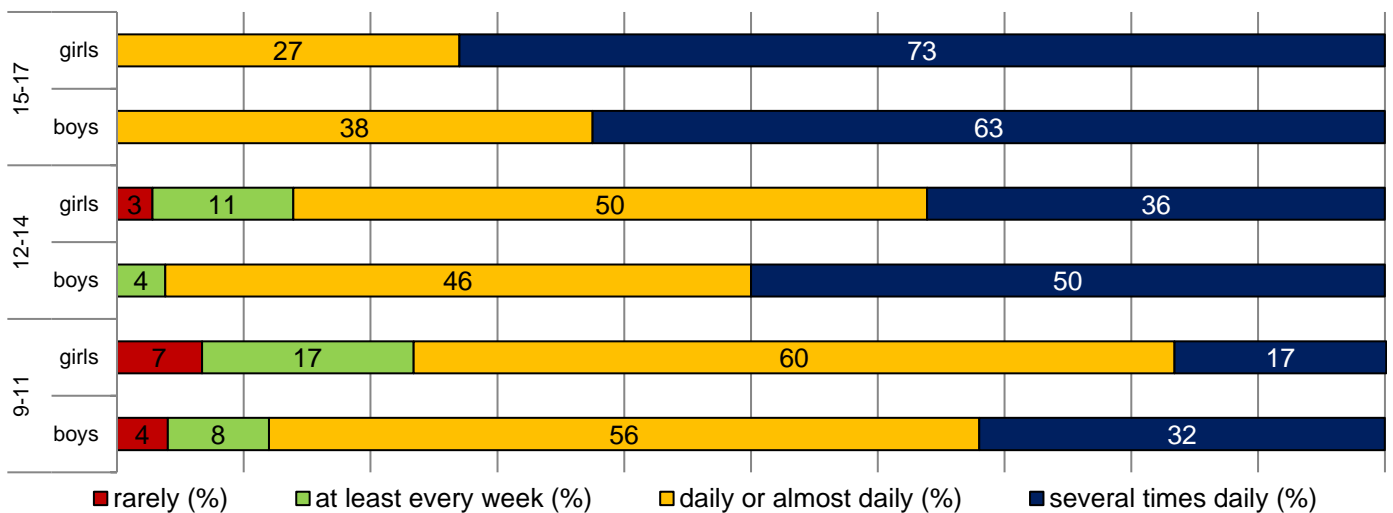


Note: Q: 'How often do you use the internet?' Valid Cases: N = 194

Boys not only start using the internet earlier, they also, on average, use it more often than girls (repeatedly during the day: 51 per cent of boys and 44 per cent of

girls). Boys use the internet more often when very young and in elementary school, while in high school (aged 15–17), when the use of the internet is the most intensive, girls use the internet more often (repeatedly: 73 per cent of girls and 62 per cent of boys) (Figure 8).

Figure 8: How often children use the internet, by gender and age



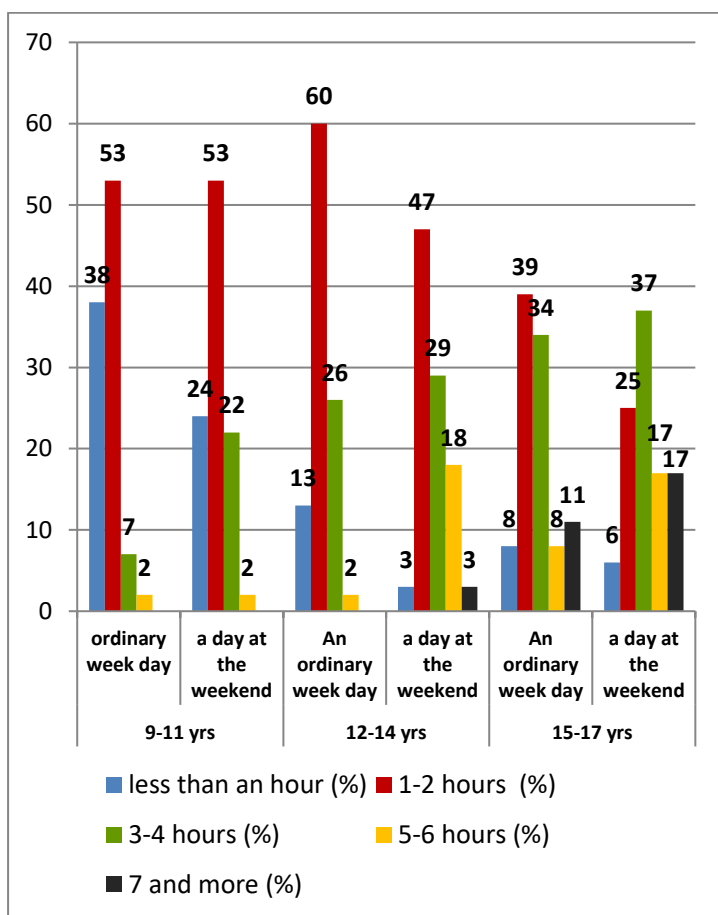
Note: Q: 'How often do you use the internet?' Valid Cases: N = 194

How much time do children spend on the internet?

During an ordinary weekday, the youngest children from the sample (aged 9–11) spend about 80 minutes per day on the internet (mostly out of school). Children aged 12–14 spend about two hours per day, while the oldest (aged 15–17) spend about three hours per day on the internet.

Figure 9 shows that children in all age-groups spend more time on the internet over the weekend than during the week.

Figure 9: Time spent on the internet – on an ordinary weekday and at the weekend



Note: Q: 'How long do you spend on the internet on an ordinary weekday?' N = 196

Time spent on the internet increases with age, on all days of the week.

During a typical school day, time spent on the internet also increases with age. Sixty-two per cent of the children aged 9-11 spend more than an hour on the internet, but this increases to 87 per cent at 12-14 and

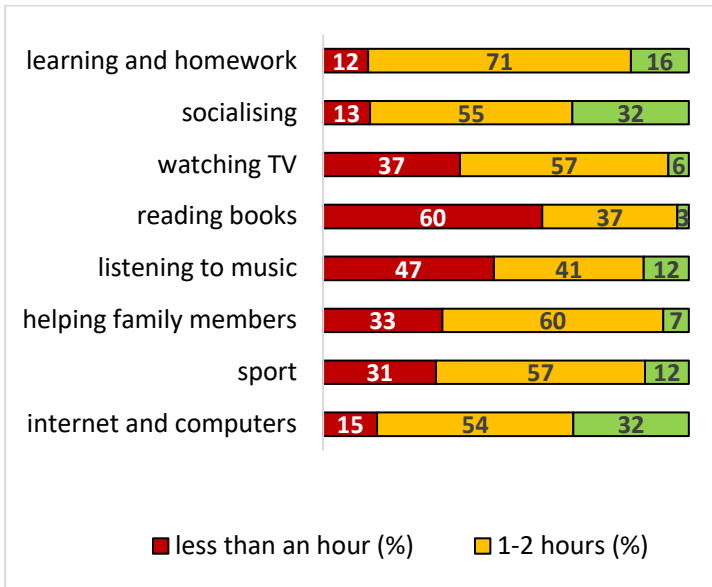
92% at 15-17. We should note that, among children aged 15–17, almost a fifth of them spend more than five hours on the internet, even during weekdays (when they have less free time than over weekends).

Over the weekend, most (77 per cent) of the youngest children spend two hours or less on the internet. On the other hand, half of the children aged 12-14 and more of two-thirds of children aged 15-17 (69 per cent) use the internet for 3–7 hours per day, while among high school children almost a fifth (17 per cent) spend more than seven hours on the internet per day.

There is little gender difference in the two younger age groups: boys and girls in the 9–11 and 12–14 age groups spend equal time online, both during weekdays and at weekends. But in the 15–17 age group, girls are heavier internet users than boys: 42 per cent of girls and 24 per cent of boys spend five or more hours per day online over weekends; and 21 per cent compared to 15 per cent do so during weekdays.

We asked children to estimate how many hours during an ordinary school day they spend on various out-of-school activities, including using computers and the internet. Overall, using the internet and computers, together with socialising with friends, account for the most hours of children's time (among those who use internet, but they are overwhelming majority) (Figure 10). The more time a child spends online, the less time he or she spends reading books (Spearman's rho = -0.17*) and the more time in socialising (0.14*) and listening to music (0.39**). There were no statistically significant correlations with time spent in learning (0.05), watching TV (0.00), helping family members (0.05) and sporting activities (-0.00).

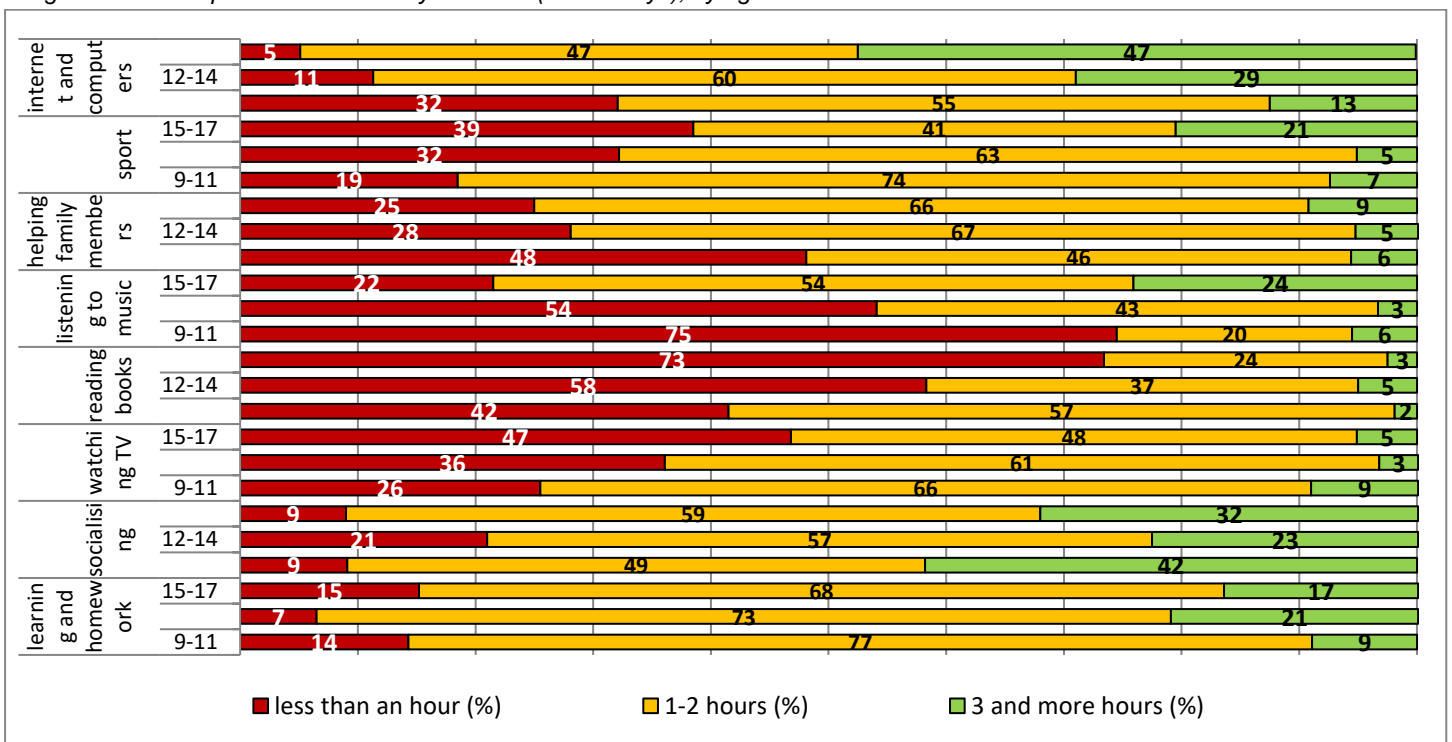
Figure 10: Time spent on various daily activities during school days



When these data are presented across three age levels (Figure 11), it becomes obvious that the use of the internet and computers increases with age more rapidly than any of the other activities. At age 15–17 it is far more popular than watching TV, reading books or taking part in sporting activities.

Note: Q: 'How many hours daily, during typical working day, do you spend in these activities?' Valid Cases: N = 187-197

Figure 11: Time spent on various daily activities (school days), by age



Note: Q: 'How many hours daily, during typical working day, do you spend in these activities?' Valid Cases: N = 187-197

Where do children use the internet?

With the increasing use of mobile and personalised technology, children have more options for accessing the internet. Table 1 shows six locations where more than half of the participants use the internet.

Table 1: Locations where children use the internet (%)

Percentage of children who say they use the internet at the following locations:	All	9-11 yrs	12-14 yrs	15-17 yrs
At school	56	21	48	86
At home	100	100	100	99
In the home of friends or relatives	82	73	82	88
In a public place (e.g. libraries, cafés, computer shops)	64	38	68	81
When I am on my way somewhere (e.g. on the street, in a bus or car)	56	45	50	68
When I am somewhere by myself	80	68	77	91
Average number of locations	3	3	3	4

Note: Q: 'How often do you use the internet on these locations?' Summated answers 'Rarely', 'At least every month', 'At least every week', 'Daily or almost daily' N = 197

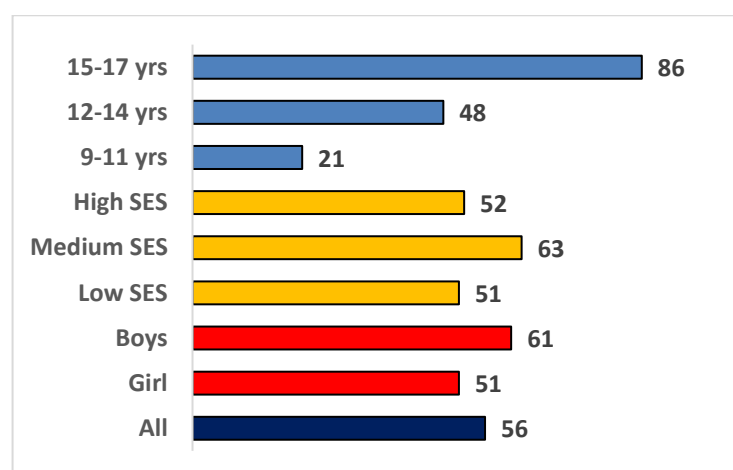
On average, children use the internet in three locations (from the offered six). A quarter of the children use the internet in only one or two locations, and a quarter of them in five or six. The older children use the internet more places, as do children with higher socio-economic status.

All students (except one) used the internet at home. However, boys use the internet more often at home than girls (88 per cent of boys and 73 per cent of girls use it at home every day or almost every day), older children more than younger.

On average, just over half of the students use the internet at school (but there are wide variations

according to age – only a fifth of those aged 9–11 do so, whereas 86 per cent of those aged 15–17 do so). Of those who use the internet at school, 53 per cent do so rarely (less than once in a month). In the youngest group, 7 per cent use it once a week or less, and 14 per cent of the children even more rarely. Although most of those aged 15–17 use the internet at school, for most of them this is not a daily activity: only 19 per cent of them every day or almost every day, 13 per cent use it at least once a week and 50 per cent use the internet very rarely. Note that the question was not formed so that you can easily conclude during which activities at school (during the lessons or not) they use the internet (Figure 12).

Figure 12: Percentage of children who use the internet at school (age, SES and gender)



Note: Q: 'How often do you use the internet in school?' Summated answers 'Rarely', 'At least every month', 'At least every week', 'Daily or almost daily' Valid cases: N = 196

What devices do children use to access the internet?

The vast majority (95 per cent) of children aged 9–17 go online using a smartphone. A personal computer (PC) or desktop is the second most common device (76 per cent), and nearly two thirds of children access the internet via a laptop or notebook (62 per cent) (Table 2).

Table 2: Devices through which children and parents access the internet

Devices	Children				Parents
	9-11 yrs	12-14 yrs	15-17 yrs	All	
Mobile phone that is not a smartphone	7	8	9	8	21
Smartphone	89	98	96	95	76
Desktop computer	73	69	82	76	88
Laptop or notebook computer	68	58	61	62	64
Tablet	68	52	46	54	35
Games console	16	22	21	27	6
Average number of devices:	2	2	3	2	2

Note: Q: 'When you search on the internet, how often do you use these devices?' Summated answers 'Rarely', 'At least every month', 'At least every week', 'Daily or almost daily', 'Several times a day' Valid cases: Children: N = 195-197. Parents: N=187-192

Table 2 also shows the percentage of parents who use various devices to go online. They are more likely than their children to use 'ordinary' mobile phones instead of smartphones. They also use desktop computers more and tablets less than children. It seems that they are less interested in having the latest devices for themselves than for their children.

The quantitative results noted above (that children go online mainly via mobile phones and PCs, and that tablets and laptops are less often used) were confirmed during the focus-group discussions. Children prefer devices they can use exclusively – the devices they own, which are mostly cell phones (each child has his or her own cell phone). Mobile phones

are preferred for two additional reasons: going online this way is very easy (wherever they are, they can connect) and because of privacy issues (they can go online when alone and be the only ones who know what is on their cell phones). They are mostly alone when going online and prefer it that way.

“The phone is somehow simpler and we can carry it anywhere, it's smaller and it's easier to work on it. I like it better in this way by fingers and not with the keyboard” (Girl, 12 years old).

Using a single device for accessing internet is rare among children. In order to access the internet, on average, children use two devices. The situation is similar with their parents, who also use, on average, two devices (Table 2). Table 3 presents the most frequent combinations of devices used by children.

Table 3: The combinations of devices children use to go online

What devices do children use?	%
Smartphone and desktop	20%
Smartphone and laptop	11%
Smartphone, desktop and laptop	10%
Smartphone	10%
Smartphone, desktop, laptop and tablet	7%
Smartphone, desktop and tablet	6%
Smartphone and tablet	6%
Smartphone, laptop and tablet	5%
Desktop	4%
Desktop and laptop	3%
Laptop	2%
Desktop, laptop and tablet	2%
Tablet	2%
Other combinations	12%

The most common combination of devices (20 per cent) used to access the internet is smartphone and

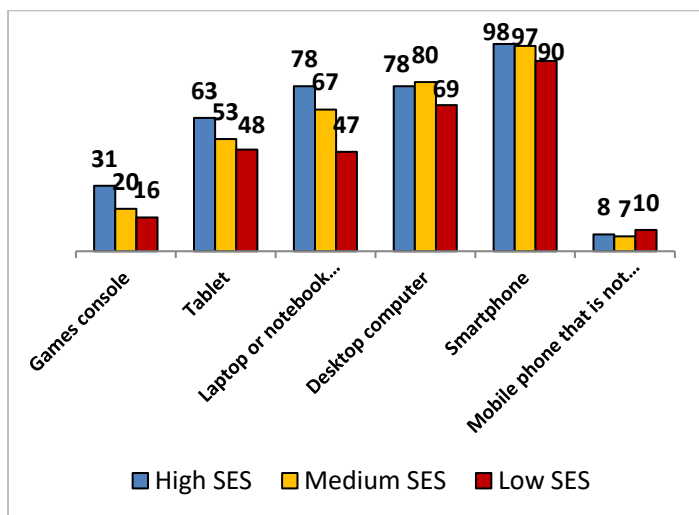
desktop computer. If a child uses only one device, it is most commonly a smartphone.

Asked whether any of the devices they use to browse the internet is a personal possession, 37 per cent of the children said that they have their own smartphone, 10 per cent have their own smartphone and desktop computer, 9 per cent have a smartphone and tablet computer, and 8 per cent have a smartphone and laptop.¹⁰ Ten per cent of children do not have a device of their own. Forty-four per cent said they had one device, 32 per cent had two, 11 per cent had three, 2 per cent had four and two children (1 per cent) said they had five devices.

Boys tend to have more devices than girls: 21 per cent of boys and 8 per cent of girls possess three or more devices.

Not surprisingly, children with higher socio-economic status possess larger number of devices (especially laptop computers, tablet computers and video game consoles (Figure 13).

Figure 13: Percentage of children who use following devices, by SES



Note: Q: 'When you search on the internet, how often do you use these devices?' Summated answers 'Rarely', 'At least every month', 'At least every week', 'Daily or almost daily', 'Several times a day' Valid cases: N = 195-197

Three-quarters of surveyed children use post-paid internet (monthly subscription), almost two-thirds of children (61 per cent) use free internet (in school, cafés, libraries etc.), nearly one-third (31 per cent) use

prepaid internet (e.g. at home, on their mobile phone etc.), and only 11 per cent of children pay for internet use (e.g. in a cybercafé or games room).

It is clear that Serbian children are increasingly accessing and using the internet from personal communication devices rather than home or school computers. Besides the fact that replacing computers with smartphones may lead to lesser quality of content accessed, this also means that children's internet usage cannot always be monitored by parents and/or teachers.

Children's online activities

We see that most of the children aged 9–17 used the internet every or almost every day, that they spend a lot of time online (especially older children), and that they access it from various places and devices. This leads to the question: what do children do online?

During the individual interviews, we showed children a list of activities which could be performed online (without specifying where they could be performed), and asked children to grade each activity (on a five-degree scale) according to how often they did it during the past month.

¹⁰ For all the other combinations of the devices, the number of children is smaller than 5%.

Table 4 shows the percentage of children who carried out the activities from at least once per month to several times each day.

Table 4: Children's online activities in the past month (gender and age)

Percentage of children who have:	All	Boys	Girls	9-11	12-14	15-17
I watched video clips (e.g. YouTube)	95	95	95	83	100	99
I learned something new by searching online	87	91	86	76	89	97
I visited a social network site (e.g. Facebook, Instagram, Snapchat)	84	87	82	57	92	97
I used instant messaging (e.g. Viber, WhatsApp)	79	80	78	63	87	85
I talk to family or friends who live further away (e.g. Skype, Viber)	77	74	80	75	80	76
I used the internet for schoolwork	73	74	72	52	79	85
I played online games	71	84	60	86	63	67
I posted photos or comments online (e.g. on Facebook or a blog)	70	71	69	36	81	86
I checked out what things cost by looking online	56	62	51	27	63	72
I helped someone else who needed or wanted to go online	54	60	48	28	58	68
I used the internet to help somebody else	50	54	45	36	44	63
I looked for the news online	50	53	48	20	51	72

I played games with other people online	45	68	25	50	40	46
I looked for health information for myself or someone I know	45	47	43	14	43	68
I used the internet to talk to people from places or backgrounds different from mine (nationality, religion, skin colour etc.)	41	44	38	20	36	60
I participated in a site where people share my interests or hobbies	40	45	36	18	36	58
I looked for information about work or study opportunities	39	47	32	16	34	59
I looked for resources or events in my local neighbourhood	32	32	31	16	23	49
I browsed for things to buy	32	40	25	12	30	47
I posted videos or music created by someone else	22	26	18	13	15	34
I got involved online in a local organisation or charity	13	13	13	5	8	22
I discussed political or social problems with other people online	11	14	8	5	5	19
I created my own video or music and uploaded it to share	11	20	3	9	10	14
I visited a chatroom to meet new people	9	11	7	5	8	11
I created a blog or story or website online	8	10	7	4	10	10
I participated in a commercial site (e.g. to support or promote a	8	9	8	2	10	12

product)

I got involved online in a campaign or protest	6	8	5	2	5	10
I signed a petition online	6	9	4	0	2	14
I used the internet to join a civic, religious or political group	2	3	0	0	2	3
Average number of activities:	16	17	15	12	16	19

Note: Q: 'How often have you done these activities during the last month?' Summated answers 'At least once in a month', 'Daily or almost daily', 'Several times a day' Valid cases: N = 193-197

The number of activities children perform on the internet ranges from 1 to 29. On average, children perform sixteen activities, but the age differences are prominent – the oldest children perform nearly twice as many activities on the internet as the youngest children.

As it can be seen from Table 4, children use the internet most frequently for fun, communication and finding information. The most popular activities are: watching video clips (95 per cent), learning new things (87 per cent), visiting social networks sites (84 per cent), exchanging instant messages (79 per cent), communicating with people physically distant (77 per cent), using the internet for schoolwork (73 per cent) and playing online games (71 per cent).

“I watch the foreign news, because I like to see how a country is looking at a situation and how other country is looking at the same situation. Because there are always two sides. For example, America can see something differently and Russia may see something differently. For example, in the books of history it depends on who the publisher is, in one, somebody was to blame for the First World War, and in the another book, someone else is to blame for the war. Because of that, I have several applications for news, but not our news. Ours are nothing special to me” (Girl, 16 years).

Children seek various types of information on the internet: half of them read the news, 45 per cent look for health information, 40 per cent about their interests and hobbies, 39 per cent search for information on further education or jobs, and 32 per cent of children seek information on local events or what is happening in neighbouring countries.

“The fact that everything is available to us is a bit sad for me, and honestly, we use it (the internet) for stupid things: we watch funny clips, and this is not productive. I can find out about so many things, to see them, and I do not use it for that purpose” (Girl, 15 years).

The data indicate that children use the internet mostly during their leisure time, very often searching for information. They are rarely creators of internet content: 22 per cent of the participants posted a video clip or music made by someone else, 11 per cent create a video or music and uploaded it to share, while only 8 per cent made their own blog or story or website online.

“It was funny: I was talking that I had some health problem and they asked me if I had visited doctor, I said no, I had visited the Internet” (Girl, 15 years).

Even the oldest children show only modest levels of social activism on the internet. Some (13 per cent) use the internet to participate in a local organisation or charity, 11 per cent discuss current affairs, and 6 per

cent say they have joined an online campaign or signed an online petition. The least popular of the 29 internet activities was to join a civil, religious or political group (2 per cent).

Boys have a slightly wider range of online activities than girls, and gender differences are large (in favour of boys) in almost all the activities. The only activity more popular with girls is conversation (on Skype, Viber.) with family members or friends who live far away.

As children grow older, they participate more in all the internet activities except playing games, where younger children are more engaged than older ones. Almost 86 per cent of children aged 9–11 play games on the internet, while only about two thirds of the children aged 12–17 do so.

Focus group discussions provided a richer and more complete picture of children's internet activities to complement the results from the questionnaire.

Children described searching the internet for a range of information related to their interests and hobbies. Search topics included celebrities, places to visit, animals, sports, music, films and games. Younger and older children have different interests.

Girls more often search for content related to hair, makeup, flowers, dance and animals, and boys search for content related to sport and gaming (e.g. they visit YouTube to see new posts of gamers, they visit forums to learn how to be more successful in a game, and so on).

In the lives of young participants (aged 9–11), games take an important place, and this is their favourite internet activity. Children usually play games individually (82 per cent), but also in a group (61 per cent), networking with others (including people they know and strangers).

“I started playing video games when I was six. First I had Nintendo, then I got Wii, followed by X-box and PC games. Then I started collecting them. As my dad is a huge video games fan, we play them together and just hang out. Sometimes it's the only way for us to spend time together” (Girl, 16 years).

Girls play the following games: My talking Angela, My talking Tom, Minecraft, ZigZag, 'makeup games', while boys play GTA 4 and 5, God Of War 3, Counter Strike, Minecraft, Millionaire City, chess etc.

Girls and boys prefer different video games, but both of them (boys more usually) play games with violent content (e.g. monsters, vampires, blood, brains, killing, cutting, car theft, bombing). The possibility of using educational games in a school context is rarely mentioned.

The qualitative research also included two special focus groups – Roma children and children with special educational needs (IQ below 80). There appears to be nothing peculiar or specific regarding any of the topics discussed above among Roma children and children with special educational needs, compared with children from the general population. The fact that they may be members of an under-privileged or specific population of children does not seem to affect their online activities: gender and age seem to be more important determinants of their online practices. It is encouraging to see that children who in the offline world suffer discrimination because of certain characteristics do not suffer discrimination online. It is unclear whether this is because the characteristics are unrecognised or because they are shown to be unimportant. In this sense, the online world offers them more opportunities and better treatment than their everyday surroundings.

“Sometimes, as no one speak in this school our language, I type something on YouTube into Romanian and hear our voice, and that's nice, I can understand all” (Roma boy, 12 years).

Education and the internet

Asked whether they use the internet at school, more than a third (38 per cent) of children answered that they do not. However, this overall figure obscures the fact that internet use in school increases with age. Among children aged 9–11 only 17 per cent use the internet at school; among those aged 12–14 half of them (53 per cent) use the internet; and among those aged 15–17 almost everybody (95 per cent) did so. However, when we asked the students (in another question) how often they use the internet in various places (including school), almost 48 per cent said never, and 32 per cent said rarely. These differences may result from different understanding of the

questions, since it is not specified whether the case refers to 'school' internet or the internet on personal devices (children mostly use it on their mobile phones) in school, or what is the purpose of the use (for school work or for fun).

Table 5 shows the percentages of children who use the internet for school-related activities. Note that all percentages are calculated in relation to the percentages of children who said that they use the internet in school (60 per cent of the children from the sample), and not in relation to the overall number of children.

Table 5: Activities related to schoolwork (at school and outside school)

Percentage of children who say that use the internet for the following activities at least every month:	At school	Outside school
Making presentations	39	62
Writing things	49	56
Making pictures	36	56
Practising something I am learning (e.g. maths or a language or music)	40	61
Checking out information on the school website	19	21
Doing group work with other students	37	46
Chatting online at school	56	84
Communicating with teachers (e.g. submitting homework or asking a question)	20	18
Contributing to a school blog or online discussion	3	5
Average number of activities:	3	4

Note: Q: 'How often do you use the internet for these activities when you are in school / out of school?' Summated answers 'Rarely', 'At least every month', 'At least every week', 'Daily or almost daily', 'Several times a day' Base: All children who use the internet at school (N=117)

The first thing to note is that children perform all the activities (apart from the communication with teachers) more often outside school than in the school context.

Among nine offered activities, chatting is the most popular one on the internet (both in and out of school), especially with older children. In school, chatting takes place with: 9 per cent of children aged 9–11, 45 per cent of children aged 12–14 and 68 per cent of children aged 15–17; out of school, chatting takes place with 67 per cent of children aged 9–11, 78 per cent of children aged 12–14 and 91 per cent per cent of children aged 15–17.

Making presentations, writing various things, practicing at home the things they learned in school, and group work with other students are performed by 40–60 per cent of the students. However, children perform these activities very rarely (from once per month to once per week); very few children do them every day or almost every day.

Approximately one fifth of the children communicate with their teachers via the internet, and the same number find out about school activities via the website. Only a few children (3 per cent in school and 5 per cent out of school) use the internet to participate in the school blog or in internet discussions (it is prescribed by law that all schools in Serbia must have their own website, but they do not have to have a platform for studying).

According to a survey recently conducted¹¹ by Serbia's Ministry of Education in 56 primary schools (which involved 1,014 final-grade students), more than one third of students have never used the internet in school, and more than three quarters have never used a platform for school learning. Particularly disturbing is the finding that nearly half of the students (47 per cent) said that their school has a platform for learning, but they do not use it. Only 14 per cent said they use a platform for learning at least every month, 7 per cent at least every week, and 1 per cent answered that use such platform daily or almost daily.

There are few studies about teachers' competence in the use of ICT in teaching. When it comes to initial teacher training, there are no compulsory courses in ICT, nor are there courses in applying educational technology in teaching or instructional design at most

of Serbia's teacher training colleges (NPS, 2013).

Half of the teachers in Serbia assess themselves as digitally incompetent (5 per cent of them do not use computer or the internet, 45 per cent know only basic things); the other 50 per cent assess their digital skills as very good and excellent (Popadić & Kuzmanović, 2013). Overall, teachers lack the knowledge and skills to integrate technology into the educational process. Teachers mostly use the internet in a traditional way, and are unable to use the potential of social media (widely used by students) for collaboration and co-construction of knowledge.

According to the 2013 OECD/TALIS survey (*Teaching and Learning International Survey*, which involved 3,857 teachers from 191 elementary schools in Serbia), less than half of teachers (46 per cent) had participated in professional development activities related to ICT skills for teaching in the last 12 months. More than half (52 per cent) answered that they need (moderately or very much) professional development in the field of ICT skills for teaching. Teachers who had attended professional development activities related to ICT more often reported that their students used ICT in a classroom than teachers who had not attended such training (the difference was statistically significant) (OECD, 2014).

The number of activities in school varies from zero to eight. One child in five does not perform any or performs only one of the offered activities during school hours. The average number of activities of school children increases as they grow older: from 1 activities at age 9–11 to 3 activities at age 15–17.

The number of activities out of school goes from zero to nine. Every tenth child does not do any or does only one of the offered activities out of school. The average number of internet activities in the 'out of school' context increases with children's age: the group aged 9–11 do an average of 3 activities, the group aged 12–14 do 4 activities, and the group aged 15–17 do 5 activities. Data from qualitative research reveals that the children often use the internet to avoid serious and creative work (by reading digested versions of texts,

¹¹ The survey was conducted in May 2016. The results are still unpublished, but are available on the official website of the Ministry of Education: <http://www.mpn.gov.rs/wp-content/uploads/2016/06/Istrazivanje-racunari-i-internet-rezultati-29.5.2016.pdf>

copying and plagiarising others' work etc.). From their conversation we have an impression that many teachers and parents tend to ignore this or, they may uncritically praise any use of computers for school activities.

“Whenever we have for homework to write something, at least in my class, everyone is all day on the internet, on Facebook, finding what is the best text depending on the topic. Then they copy this and bring it” (Boy, 15 years old, Special school).

To conclude, even for educational activities connected to school learning, children do them more often out of school than in the school context. As mentioned above, schools do not encourage internet use. Even children who go to elite schools (an elementary school in the city centre and a private high school) and have regular access to the internet at lectures, do not (according to statements made during focus-groups interviews) use the internet to the appropriate extent (notebook computers received for free are said to be left at home, with children taking them to school perhaps only one day per week).

Opportunities

More than two-thirds of children (68 per cent) agreed (answers 'fairly true' and 'very true') that there are many things on the internet that are very good for children of their age. There were no significant differences linked to age, gender and socio-economic status.

Things on the internet that are, according to the participants, good for children and young people their age can be categorised as follows:

Educational content: educational websites (e.g. Wikipedia), online courses, books, encyclopaedias and dictionaries, translators (e.g. Google translate), applications for studying (e.g. maths and foreign languages), educational games, homework, driving tests, manuals etc.

“When I do not have a book, I type on the internet, for example, Tom Sawyer and I read there, I do not have to buy a book in vain... And sometimes, I watch the movie, so that I do not have to read the whole book...” (Boy, 11 years old).

“On the internet, we can search for all the things we need for school, and we cannot find in the books” (Girl, 9 years old).

Communication with the others: free communication (Viber, WhatsApp, Skype), possibility of communicating with physically distant persons, possibility of meeting other new and finding old friends etc.

“Meeting and spending time with new people on social networks” (Boy, 15 years old).

“I can talk with friends and cousins who live on the other continent” (Boy, 15 years old).

“Since we have some lectures on the web site, we have a group of our class on Facebook, so we can talk about school there” (Girl, 17 years old).

Access to information: speed and availability of information, different kinds of information, large amounts of information.

“You can find everything on the internet” (Boy, 15 years old).

“The internet is like a book without the cover, we can search for the information, we can have fun when we have a bad day!” (Boy, 13 years old).

“I can find whatever I want” (Girl, 17 years old).


Fun, hobbies: movies, music, cartoons, video clips, websites with sports content, websites with funny and entertaining content, video games etc.

“I like to play the video games the most” (Girl, 10 years old).

“I like to watch the pictures of my pet on the internet” (Girl, 10 years old).

“I adore Youtube, I like to watch funny things” (Girl, 16 years old).

Practical information: the use of various applications (e.g. public transport, control of the work of processor, text translation, navigation), finding advice, user manuals for various items etc.

A series of overlapping circles in various colors (blue, purple, red, grey) are positioned in the top right corner of the page.

*“Workshops on social networks, announcing the events, promoting various things...”
(Boy, 16 years old).*

“How to dust the computer, how to light the paper with a flashlight, to make food, to install the program...” (Boy, 16 years old).

Skills and practices

Almost 79 per cent of boys and 63 per cent of girls think that they know more about the internet than their parents/carers (answers 'fairly true' and 'very true'). One third of the children aged 9–11, three quarters of the children aged 12–14 and almost all the children aged 15–17 agreed with this claim. The gender difference is pronounced in the lowest age group (50 per cent of boys compared to 14 per cent of girls) but disappears among those aged 15–17 (95 per cent of boys and 97 per cent of girls).

Children estimated their digital skills on a four-degree scale (for a total of 15 specific skills), i.e. they were describing specific things they can do on the internet. As digital skills were not measured directly in this research but according to children's self-evaluation, the results tell us more about children's self-confidence than about the true level of their digital skills.

One fifth of the children (19 per cent) say they have all (15 skills) or almost all (14) of the listed skills (answers 'fairly true' and 'very true'). The figure is almost twice as high (38 per cent) if the answer 'a bit true' is also taken as indicator of at least partial skill. Competence increases with age. In the lowest age group, 20 per cent of children say they possess 10 or more of the 15 listed skills; by age 12–14, the number rises to 61 per cent; 77 per cent of the group aged 15–17 possess 10 or more skills (Table 6). The boys estimated their digital skills more highly than the girls did.

Table 6: Estimated number of internet skills by age (%)

	Age			Total	
	9-11	12-14	15-17		
No. of skills	0	4	2	1	
	1	5	1	2	
	2	2		1	
	3	5	2	2	
	4	12	2	4	
	5	11	2	4	
	6	11	5	2	6
	7	14	10	7	
	8	7	6	9	8
	9	9	13	8	10
	10	7	13	9	10
	11	5	16	10	11
	12	4	8	11	8
	13	2	8	14	9
	14	2	10	18	11
	15		6	15	8
Average		6	10	12	10
Total N		56	62	79	197

Skills on smartphones and tablets are even greater. Of

10 listed skills, 80 per cent of the youngest age group have at least 4 skills, by 12–14 practically all children (94 per cent) have at least 7 skills, and in the oldest age group half of them have all skills (Table 7).

Table 7: Estimated number of skills of using smartphones and tablets by age (%)

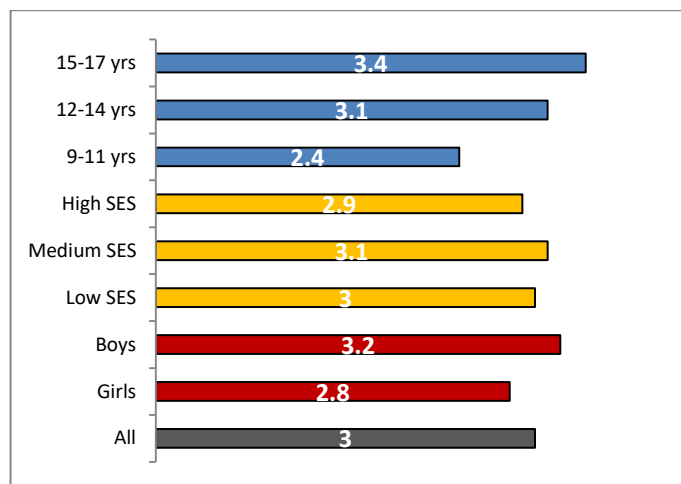
	Age			Total
	9-11	12-14	15-17	
No. of skills				
0	9			2
1	4			1
2	4			1
3	4	3	1	2
4	21	2		7
5	7		1	2
6	11	2	1	4
7	16	13	9	12
8	11	23	16	17
9	7	32	24	21
10	7	26	47	29
Average	5	8	9	8
Total N	56	62	79	197

Digital skills are divided into five groups: operative (four claims), informative (three claims), social (two claims), creative (three claims) and skills of mobile device use (three claims). The answers were coded in following way: 'not true' = 1, 'a bit true' = 2, 'fairly true' = 3, 'very true' = 4.

Here we first show how the children estimate their digital skills as a whole (overall average score), and then how they estimate specific groups of skills.

Figure 14: Children's digital literacy averages for different

ages, socio-economic status and gender groups

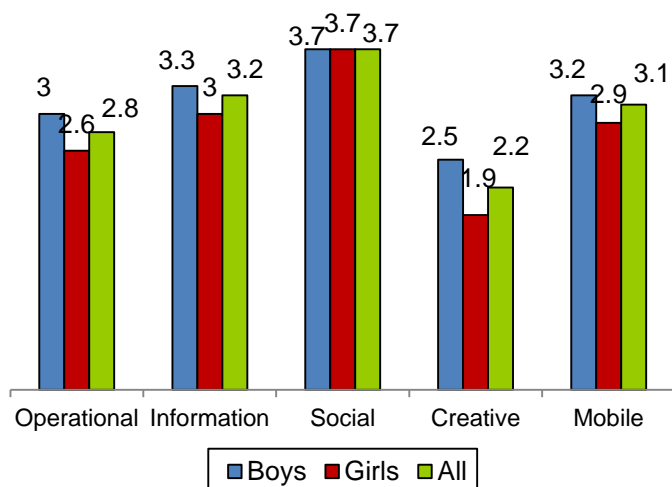


As shown in Figure 14, children's digital skills are, by their own estimation, high: the average score is as if, for all skills, children answered that it is 'fairly true' that they have them. The boys feel more digital competent than the girls, at all ages. There is positive correlation between the time spent on the internet and the self-assessment of digital skills (Spearman's rho=0.46**).

Age differences are noticeable: older children have higher estimated digital skills than younger ones: 46 per cent of those aged 15–17, compared with only 2 per cent of those aged 9–11, belong to category of those with high digital skills.

Children are most confident about their social skills, followed by their information skills, mobile skills and operational skills – creative skills come last. When talking about four out of five digital skills, boys feel more competent than girls (there is no difference in estimation of social skills) (Figure 15).

Figure 15: Children's digital literacy skills averages for gender groups



Both boys and girls estimate their **social skills** as the best developed (average score 3.7). Almost 92 per cent of children think that they know what information should be shared on the internet with the others, and 94 per cent know how to remove someone from their contact lists, on social networks, for example.

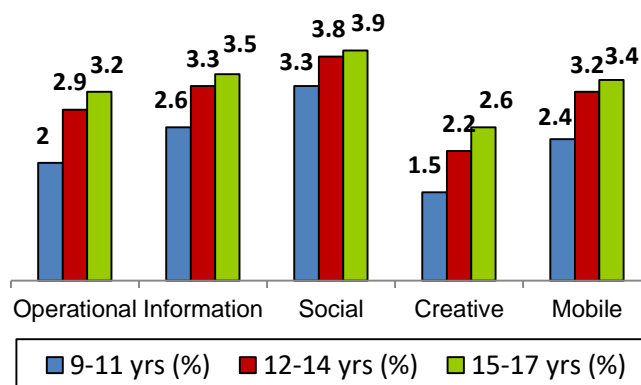
Information skills are on second place (average score 3.2): 85 per cent of children say that they can easily find a website they visited earlier, 78 per cent that they can easily choose the best keywords for internet browsing, while 65 per cent of children can easily check if the information they found on the internet is correct.

The **skills of mobile device use** are in third place (average score 3.1): 95 per cent of children know how to install application on mobile phone, 59 per cent know how to keep track of the expense of using a mobile phone application, while 56 per cent know how to buy via mobile phone application.

Operative skills are in fourth place (average score 2.8): 88 per cent of children, according to their own statements, know how to save a picture they found on the internet, 77 per cent know to apply the privacy rules on social networks – 80 per cent of boys and 74 per cent of girls (73 per cent of all children use social networks every day), 33 per cent of children know to use some program language (40 per cent of boys and 27 per cent of girls), 33 per cent of children know to upload some content on YouTube (60 per cent of boys and 32 per cent of girls).

According to the evaluations of kids, their **creative skills** are the weakest (average score 2.2): 47 per cent know how to post a video or music they made themselves on the internet (58 per cent of boys and 38 per cent of girls), 35 per cent know how to make something new from either video or music they find on the internet (46 per cent of boys and 29 per cent of girls), while 34 per cent of children know what kind of licences are applied in the internet content (41 per cent of boys and 27 per cent of girls). Boys estimate their creative skills to be better than girls (the difference is statistically significant).

Figure 16: Children's digital literacy skills averages for different age groups



For all digital skills, there is tendency that older children evaluate them to be higher than younger children. The increase is particularly steep between the youngest group (aged 9–11) and the rest. Although the comparisons between skills are not reliable, the data suggest that the social skills are more developed than the creative skills.

Risks

When using the internet, children are exposed to a range of risks, from online bullying and unwanted sexual content and messages to the acquaintances with new people over the internet. Therefore, one of the main issues of children's internet use concerns these potential risks.

Exposure to upsetting content

In this part of the survey, we were primarily interested in finding out what causes distress among children using the internet. Some of the most common children's answers from an open-ended question on this subject are as follows:

- Mocking at photos, disturbing messages
- Social network gossiping, video clips showing murders or violence
- Threats, posting photos, violence, mocking, insults...
- Video clips full of violence and bad words; websites with the similar content
- The pressure of talking to someone they don't want to talk to, someone who is persistent in having a conversation; a strange person asks them to meet face-to-face or sends them pictures they do not wish to see
- They are forced to accept friendship requests from the people they don't know; to post someone's photograph on their Facebook; to write something about someone without their permission...
- They are annoyed by the people who are telling them all sorts of things or ask them to come to a certain place...

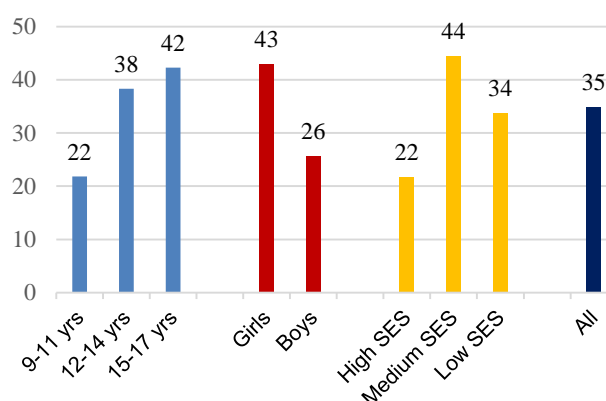
However, regardless of the fact that almost every child recognises and is able to describe content on the internet that might upset their peers, two thirds of them say they haven't experienced anything that would upset them while using the internet in the last year. On the other hand, it is disturbing that every third child in the past year faced some form of content or event on the internet that upset them.

“Sometimes, my friends threat one another and they arrange a fight and go fight each other. For example, some friends from school get in a fight over the internet and

they insult each other when they go home or come to school” (Girl, 15 years old).

As presented in Figure 17, a personal feeling of distress resulting from internet use increases with age. At this point, it is worth remembering that older children communicate with each other via the internet far more often than younger children (by using instant messaging or social networks), which makes it more likely that they will be offended or exposed to aggression. Moreover, far more girls feel upset because of something they saw on the internet than do the boys.

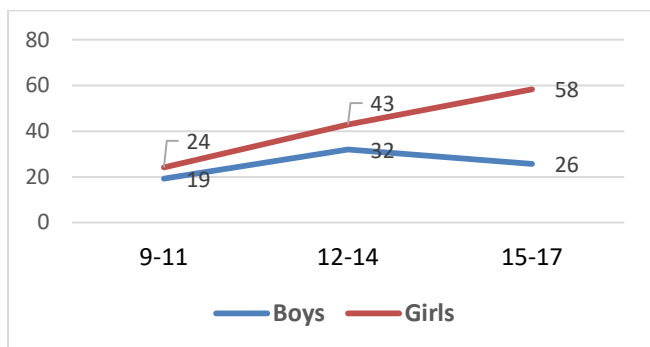
Figure 17: Percentage of children upset by online experiences



Note: Q: 'In the PAST YEAR, has anything happened online that bothered or upset you in some way?' Answers 'Yes'
Valid cases: N = 186

As Figure 18 shows, boys are less upset than girls at all ages, and among the oldest group of boys there is decline in feeling upset. Since there is no reason to assume that the oldest boys are less exposed to potentially upsetting content, the declining trend may be caused by a change in emotional reaction towards such material (or a decline in readiness to admit it).

Figure 18: Percentage of children upset by online experiences, by gender



Note: Q: 'In the PAST YEAR, has anything happened online that bothered or upset you in some way?' Answers 'Yes'
Valid cases: N = 186

It is important to add that, of the children who state they were upset about something on the internet, most of them (65 per cent, i.e. 21 per cent of children in the overall sample), were describing one or two experiences in the last year. The other third (35 per cent, i.e. 12 per cent of the overall sample) reported these experiences on a monthly basis. In other words, for the majority of the children these experiences are rare. They reflect the fact that the internet does include a lot of disturbing content, which is obvious from the following example:

"I love horses, everyone knows that. I was searching some pictures for my wallpaper and stumbled on a gruesome picture of a man cutting a horse" (Girl, 10 years old).

Many children (39 per cent) who faced these or similar situations say that the last time it happened to them they felt a bit upset at that moment, but a larger number (56 per cent) felt fairly or very upset. In these cases, children mostly confide in their peers (64 per cent) and parents (49 per cent). Choice of confidant changes with age – younger children tend to confide in their parents while older children confide in their peers. This reflects the process whereby peer groups gradually take over the family's role of a referent group as children grow up. It is interesting that the girls are much more likely to confide in their parents than boys (girls 56 per cent; boys 38 per cent), which might be interpreted as resulting from the patriarchal upbringing of boys in Serbia (where boys are explicitly and implicitly expected to be tough and deal with problems on their own). Teachers are rarely perceived as confidants: only three children (5 per cent) confided in

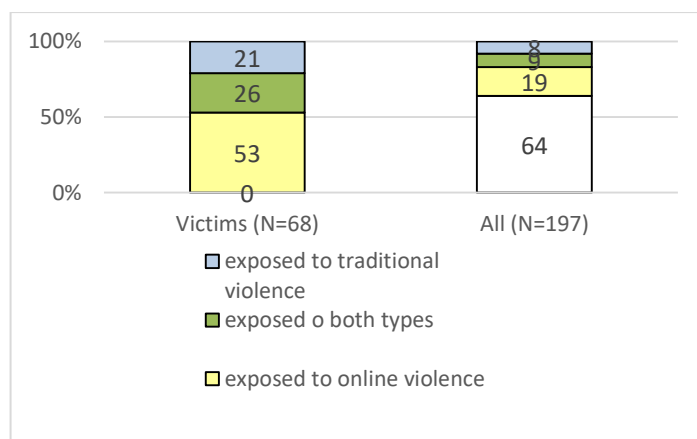
them. Finally, 13 per cent of the children (9 out of 67) said the last time it happened to them they didn't tell anyone.

Exposure to aggression

Similar to the data on personal feelings of distress, around one third of the children (36 per cent) state they were treated in a hurtful or nasty way in the past year, either on the internet or face-to-face. Boys and girls were equally exposed to this kind of treatment, as were children of different financial status, whereas the oldest children experienced it more often (40 per cent) than the youngest (29 per cent). Nearly half of those children (47 per cent) say they were exposed to this kind of treatment in person, 79 per cent say they were exposed to online aggression, and a quarter (26 per cent) say they experienced both forms of aggression (Figure 19). Children reported being more exposed to online than traditional forms of aggression, primarily over social network sites (SNS) (57 per cent), followed by instant messaging (21 per cent), SMS (mobile phone text messages) (14 per cent), phone calls (9 per cent) and online gaming (9 per cent).

Since previous studies found that traditional (offline) aggression was more prevalent than online aggression (Popadić & Kuzmanović, 2013; Popadić, Plut & Pavlović, 2014), we are inclined to attribute this reversal to the questions' frame of reference and wording. Perhaps various forms of traditional aggression should also be explicitly mentioned among the options, or perhaps there should be two separate questions, one about forms of online aggression and the other about forms of traditional aggression.

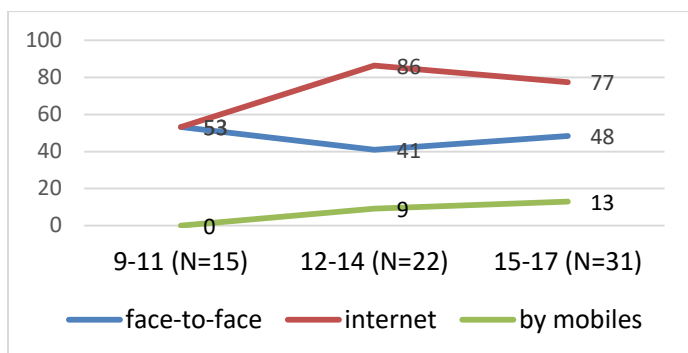
Figure 19: Percentage of children exposed to online and traditional forms of aggression



We also tried to distinguish online aggression via mobile phones (by phone calls or SMS) and online

aggression via the internet (for this occasion we labelled it as internet aggression). Among the youngest age group, the same percentage of children are exposed to face-to-face aggression and to some form of internet aggression. In the older age-groups, the level of face-to-face aggression stays approximately the same but the levels of two forms of online aggression increase (Figure 20).

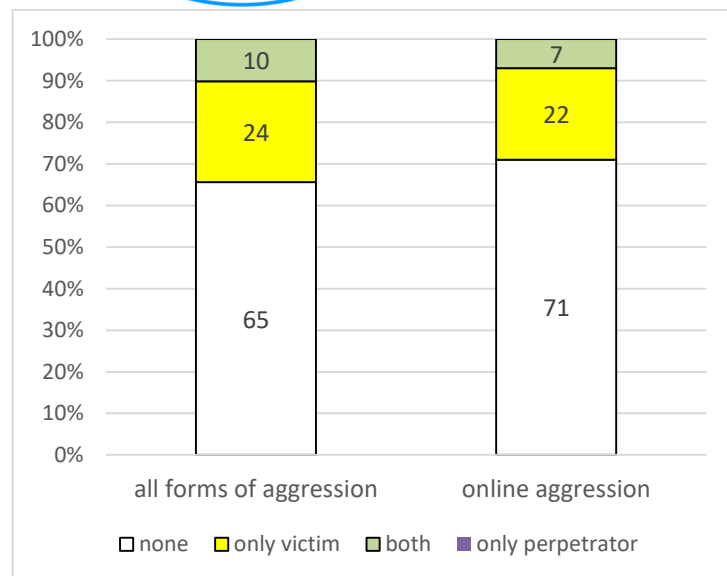
Figure 20: Percentage of children exposed to different forms of aggression by age



Note: Q: 'If somebody treated you in a hurtful or nasty way, how did it happen?' Face-to face: Answer 'In person face-to face' Internet: Answers 'On a social networking site', 'On a media sharing platform', 'By instant messaging', 'In a chat-room', 'In an online game' By mobiles: Answers 'By mobile phone calls', 'By messages sent to me on my phone' Base: Children who report being treated in hurtful or nasty way in past year (N = 68)

It seems that being aggressive and being victimised are connected. On a general level (concerning any form of aggressive behaviour), among those who said that in the past year nobody had treated them in a hurtful or nasty way, only one said that last year they had treated someone in a hurtful or nasty way. But among those who reported being exposed to aggression, 30 per cent reported that they themselves had been aggressive to someone last year. Similarly, among those who were not exposed to online aggression (via mobile or internet) only one out of 141 admitted exposing someone else to digital aggression; among those who said they had been victims of digital aggression, 23 per cent also admitted that they themselves had treated somebody in hurtful way.

Figure 21: Relation between aggressive behaviour and victimisation



Note: For all forms of aggression, victims were those who answered 'Yes' to question: 'In the past year, has anybody treated you in nasty or hurtful way?', and perpetrators were those who answered 'Yes' to question: 'In the past year, have you treated anybody in a nasty or hurtful way?' For online aggression, victims were those who reported to be exposed to at least one of seven listed forms of online aggression, and perpetrators were those who reported to behave in at least one of seven listed forms of online aggression. Base: N=197

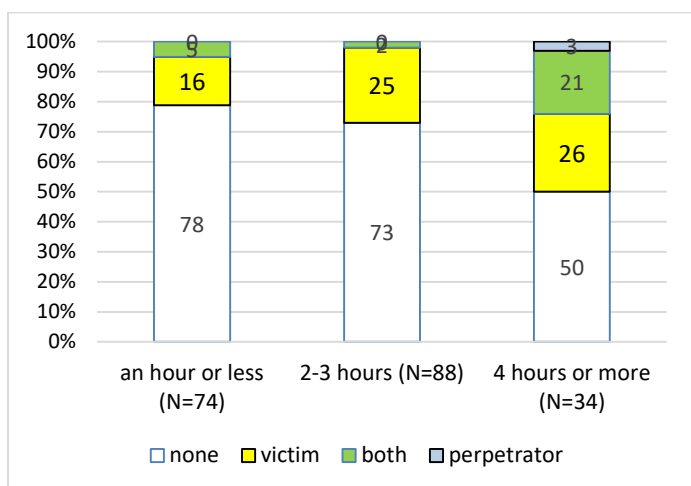
Taken together, it seems that children are not ready to see themselves (or at least to report it) as aggressors only; maybe all of them would be ready to explain their own aggressive behaviour, either online or offline, as a reaction to the aggression of others.

The focus group discussions showed that, as a reaction to online experiences, children often express emotions regarding negative experiences, claiming that they did affect them in some way, that they were bothered, sad, afraid etc., but no extreme distress or abuse was registered. When they encounter something unpleasant online, children are relatively active in trying to solve the problem. They use their internet skills to, for instance, block people, remove comments or posts, or even shut down their profile. They often report a problem to administrators. Although peers are an important source of help, the main sources of social support are still parents. Children rely on them, follow their instructions regarding online safety and allow them some sort of control and monitoring of their online activities.

Children who spend more time online were more likely to be both aggressive and victims of aggression. If we

group them according to time spent on the internet during schooldays (this proved to be a more discriminative measure than global estimation of internet use), we can see that among those who spent an hour or less online, the great majority report no experience of online aggression and say that they do not practise online aggression on others. But among heavy users (who spent four hours or more online every day), half of them reported being involved in aggressive interaction: 26 per cent as victims only and 21 per cent as both victims and perpetrators and 3 per cent as perpetrators only (Figure 22).

Figure 22: Time spent on the internet and involvement in online aggression



Note: Q: ‘How much time do you spend on the internet during a typical school day?’ For online aggression, victims were those who reported to be exposed to at least one of seven listed forms of online aggression, perpetrators were those who reported to participate in at least one of seven listed forms of online aggression towards others, while not being themselves exposed to any listed forms of online aggression. In the category “both” are those who were exposed to at least one form of online aggression and participated in at least one form of online aggression towards others. N = 196

We don’t think that heavy users are more prone to be involved in aggressive interaction or that being online predisposes somebody to aggressive interaction. Perhaps aggressive interaction while online is equally frequent, but with more time spent online the probability is higher. Also, perhaps being online longer leads to more intensive social interactions with others and these interactions more frequently contain aggressive episodes.

Exposure to sexual content

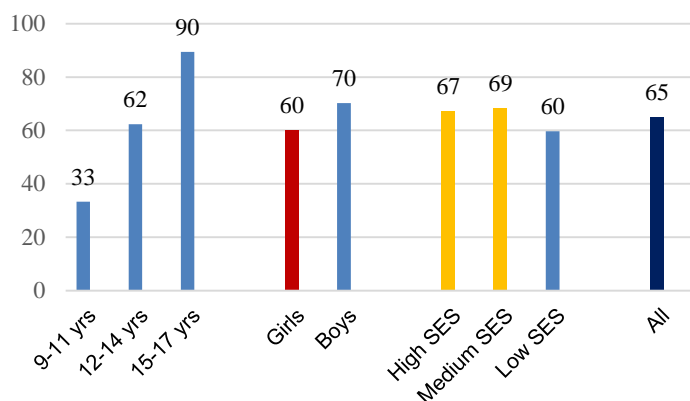
One of the most alarming problems in children’s internet use is the widespread distribution and availability of explicit sexual materials. We wanted to explore how often and in what ways children access such content, whether because of its widespread availability or because ease of communication encourages children to share sexual messages, photographs and videos or even to participate in sexual activities over the internet.

The results confirmed our assumptions about the widespread availability of explicit sexual content, since nearly two thirds of the children (65 per cent) confirm having seen such content on the internet. As shown in Figure 22, exposure to sexual content increases with age: among children over 15, only one in ten has not been exposed to such content in the past year. More disturbing, as much as one third of the youngest children (36 per cent of boys and 31 per cent of girls) have seen explicit sexual content on the internet at least once. Here is an example:

“I was on Instagram and I clicked on a comment and it was so funny, so I wanted to see what other people had to say and I clicked on a link and suddenly naked women popped up” (Boy, 10 years old).

In line with EU Kids Online findings, somewhat larger numbers of boys than girls were exposed to sexual content. This difference is statistically insignificant, but if we take into account the frequency of such experience, the difference becomes significant: of girls who have seen such materials, half of them (48 per cent) have seen it just once or twice and only 2 per cent on daily basis. For boys, the respective figures are 29 per cent and 11 per cent.

Figure 23: Percentage of children who have been exposed to sexual content on the internet

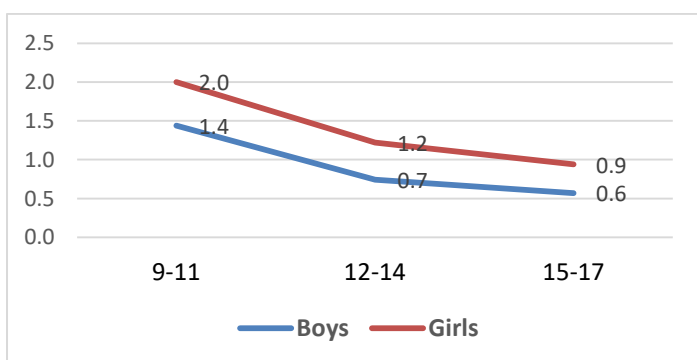


Note: Q: 'In the past year, have you seen, at least once, some content that was obviously sexual?' Answer 'Yes' N = 191

The fact that most children (56 per cent) felt upset after these situations tells us they were not prepared to be exposed to sexual content. Not surprisingly, the youngest children were the most upset, of which 61 per cent state they were fairly or very upset. On the other hand, older children were less upset, with just under half of them stating they were not upset at all after seeing such content (49 per cent and 47 per cent for the two older age groups). A significantly larger percentage of the girls (71 per cent) state they felt upset in these situations than the boys (43 per cent).

Such considerable percentages of children who are upset can be a concern, but it seems that their level of upset is not too high. If we score the level of upset from 0 (not at all) to 3 (very upset), the average score of upset is 1 (which corresponds to the answer 'I was a little upset'). The average score by age and gender is shown in Figure 24.

Figure 24: Average upset by sexual content, by age and gender



Note: Q: 'If you have seen images of this kind, how did you feel about what you saw?' Answers: 0 = 'I was not at all upset'; 1 = 'I was a little upset'; 2 = 'I was fairly upset'; 3 = 'I was very upset' Base: All children who have seen sexually explicit content last year (N = 121)

Except in the youngest group, children's main reaction is, on average, a slight upset. We want to add that the alternatives imply that the child stumbled upon such kind of content unintentionally and that it can cause only various level of upset. However, many children, we suppose, were searching for such material and their emotional reactions may be positive.

"A friend of mine went to this site and I told him, Find me some games, Happy Wheels or something like, I told him so and he said I'm going to type three Xs, he opened the browser Google chrome, he typed free XXX porn dot com, entered into something, he told me, close your eyes, turn around, it will be something, you'll see a surprise, when I turned around he started it and women started screaming" (Boy, 11 years old).

Children come in contact with sexual content mainly by pop-ups and commercials (by pop-ups on the internet 63 per cent), over SNS (58 per cent), over TV (48 per cent), by video sharing (39 per cent) and photo-sharing platforms (24 per cent) and finally, by accessing adult websites (15 per cent). Although we did not investigate which websites with sexual pop-ups children have encountered, there are reasons to believe that some of these pop-ups fall under unintentional exposure and accordingly can produce stronger discomfort among children.

Taking into account that the internet is an important channel of communication, it is no surprise that a certain number of children did receive messages containing some form of sexual content.

"A man sent me a message on Facebook saying: 'Hello, [name], I hope you have Skype so we can talk and do some stuff.' I think that man is gay" (Boy, 13 years old).

Such experiences in the last year were reported by 13 per cent of the children, primarily by the oldest group (17 per cent). More than three quarters of the children who received unwanted sexual messages expressed some level of disturbance as a result of those messages, while only 22 per cent said they were not at all upset by the messages. Girls and younger children

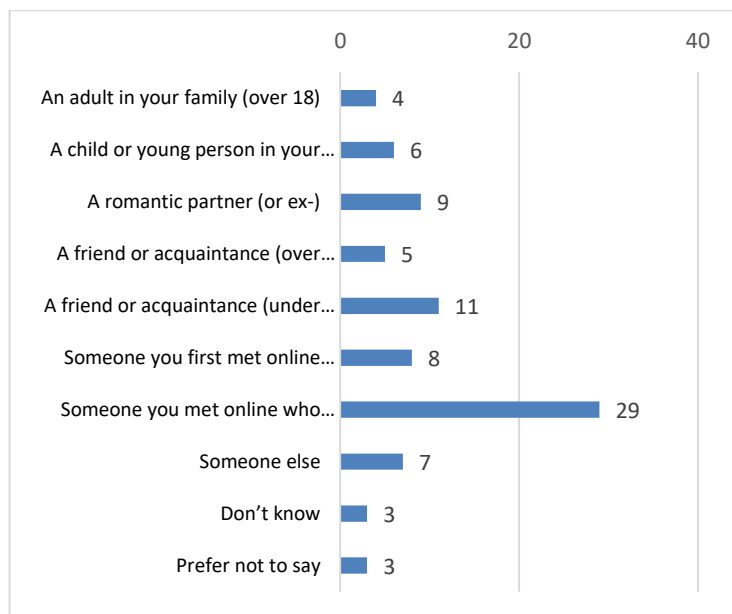
are more likely to feel upset after receiving unwanted messages with sexual content, but since the number of the children with such experiences in our sample is relatively small (24 children), further analysis would be unreliable.

Compared to those who came in contact with unwanted sexual messages, smaller percentages were asked to share intimate details of a sexual nature (12 per cent); to do something of a sexual nature (9 per cent) or send a photograph or a video with their intimate parts (10 per cent) (these questions were excluded in the interviews with children younger than 11). Overall, 16 per cent of children aged 11–17 reported one or more such requests. Of these 25 children, 17 were girls and 8 were boys; 16 were aged 11–14 and 9 were aged 15–17. Five of them reported one such incident, and the rest reported two or more incidents of this kind. Overall, they reported about 58 such proposals.

Children were asked who made these unwanted sexual requests. For each of the four types of request, a child could check one or more options from the list of ten options (see Figure 25). If the answers ‘Don’t know’ and ‘Prefer not to say’ are put aside, 79 persons were mentioned overall. Figure 25 shows that in equal number of cases sexual proposals were part of conversation with someone known to child and someone the child first had met online. We would add that if someone is over 18 it does not necessarily mean that s/he is much older than the child, because some of the children are aged 16 and 17.

We should bear in mind that the questions about sexual messages referred to unwanted communication of this type, so we do not know how frequent are the exchanges of sexual messages that children do not find undesirable. The fact that only eight children admitted that they had sent some sexual message during last year means either that such communication among them is extremely rare or that they are reluctant to speak about it.

Figure 25: Persons who made unwanted sexual requests



Note: List of 85 specific answers given by 25 children who confirmed that during the past year they received at least one of four listed kinds of unwanted sexual proposals

In the focus groups, children were probably embarrassed to speak openly about their experiences of sexual content on the internet. Almost no one admitted watching pornographic videos or pictures of himself/herself, but it was widely voiced that ‘there is a lot of it out there’, and many said that they know someone who watches such content. Numerous children encounter sexual content online – mostly pictures of naked women – but this, they claim, happens accidentally. They see it in pop-ups on web pages they visit; sometimes they are lured by a friend to ‘see something’, or they are simply tricked – they click on a link thinking it is something different. The reactions of younger children to this kind of internet content are quite specific. They somehow know that it is a big issue (without exception, they refer to ‘bad pictures’, ‘ugly things’, ‘those things’ etc.) but one gets the impression that they do not fully comprehend the meaning or what all the fuss is about.

Meeting new people

Another serious risk children face nowadays is the possibility of meeting new people on the internet. Since the internet is an integral part of children’s communication, this kind of open conversation can lead to establishing a connection with people who are normally inaccessible to children (in terms of age, social status, where they live etc.). Unlike

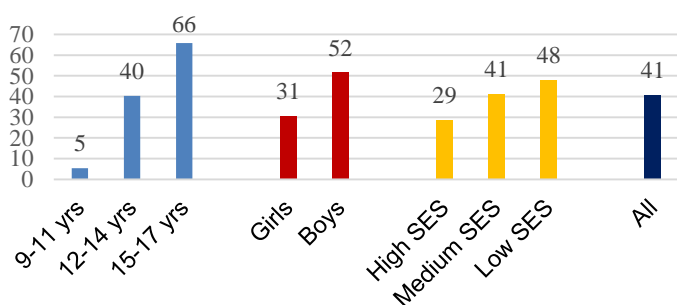
acquaintances in real life, who result from the child's social context (common friends and acquaintances, going to the same school, living in the same neighbourhood), online acquaintances are not necessarily determined by these structural factors.

Such acquaintances may be potentially dangerous people who have not been recognised or restricted by the community, and a child may be incapable of dealing with a potentially dangerous situation after establishing a new friendship over the internet.

We can conclude that a considerable number of children in Serbia have communicated with new people on the internet (41 per cent). These are primarily older children, more often boys than girls – material status plays a minor but interesting role (Figure 26). When it comes to making new contacts on the internet, children up to 11 years old are the most cautious: only 5 per cent of them state they have established a contact with someone new on the internet, while children over 15 are the most open to establishing such contacts (two thirds of them state they had such an experience). As expected, boys are more inclined to risky behaviour on the internet: more than half of them had met new people online, compared to less than one third of the girls.

Regarding children's material status, it appears that children with the highest financial status are the most cautious about meeting new people online. This might be caused by the fact that the youngest children in our sample were those with the highest material status, but we checked this possibility and found the same relation of socio-economic status and cautious behaviour at all ages.

Figure 26: Percentage of children who met new people online



Note: Q: 'Have you ever had contact on the internet with someone you have not met face-to-face before?' Answer: 'Yes' Base: N = 197

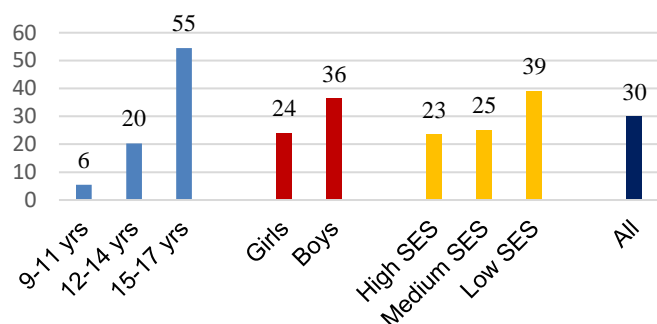
When it comes to searching and adding new contacts online (which is a potential source of risk), most children are not inclined to such behaviour (two thirds of them never do it and 26 per cent do it very rarely). Boys are less careful than girls: 58 per cent of them never do it compared to 71 per cent of the girls. It is similar with children's age when it comes to adding new contacts. The youngest are the most reserved (86 per cent of children aged 9–11 never do it) compared to just over half of the older children who never do it (58 per cent of those aged 9–11 and 56 per cent of those aged 15–17).

Unlike contacts established with new people on forum sites or while playing video games (which are often accidental or superficial and tend to remain virtual), contacts transferred from the virtual to the real world are potentially much more dangerous.

The data in Figure 27 shows this happens quite often. In the overall sample, three out of ten children met a person in the offline world whom they first met online. As with meeting new people online, the oldest children are the most open to this kind of experience.

However, although only three of the children aged 9–11 met someone face-to-face who they had previously met online, this data is upsetting because it shows that it does happen. It is unlikely that the youngest children would be able to recognise the potential risks of such meetings or to have a getaway strategy if they found themselves in a dangerous situation. On the other hand, an important element of older children's socialisation is making new friends and broadening their social circle, so it is understandable they meet internet acquaintances in person quite often (more than half of the children over 15 – 62 per cent boys and 46 per cent girls – have transferred an acquaintance from the virtual to the real world at least once).

Figure 27: Percentage of children who have met someone offline that they first communicated with online

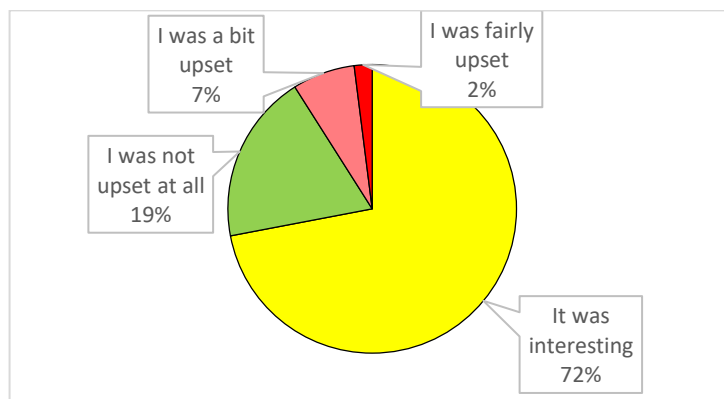


Note: Q: 'In the PAST YEAR, have you at least once met anyone face to face that you first got to know on the internet?' Answer: 'Yes' Base: N = 191

Of those who said that they had had contact online with someone they had not met face-to-face before (N = 80), 60 per cent reported they had met someone face-to-face that they first got to know on the internet. (Nine of 111 of those who previously said that they had not contacted new persons online, reported in the next question that they had met such a person face-to-face). The frequency of meeting virtual friends in real life is smaller – nearly half the children with such experience met face-to-face with just one or two people in the last year (45 per cent), while an additional 23 per cent state they met three or four people. This means that a quarter of the children who have met virtual friends in real life did it five or more times in the last year.

We asked children who had met online acquaintances face-to-face how they felt on that occasion. Although meeting 'online strangers' may be potentially upsetting and although in public discourse these encounters are associated with danger and disappointment, the children's answers show that such encounters were quite different for them. Of 57 children with such experience, only 5 of them said they had been upset (a bit or fairly upset – nobody chose the option 'very upset'), 8 said they had not been upset at all, and 30 described such an encounter as interesting (Figure 28). It seems that children who decide to meet 'online strangers' are careful to recognise and avoid potential danger. For the great majority it was an interesting experience: only a small minority experienced harm from such encounters.

Figure 28: Emotional reactions to face-to-face encounters with online strangers



Note: Q: 'If you met anyone face to face that you first got to know on the internet, how did you feel about it?' Base: Children who said they met someone face to face that they first got to know on the internet (N = 57)

The new contacts established by children over the internet usually (for 78 per cent of children with such experience) came from within their social context, i.e. their wide circle of acquaintances and friends of friends.

On the other hand, a significant number (46 per cent) met face-to-face a person outside their wider social circle of relatives and friends, which arouses concern in terms of children's exposure to risks.¹²

Those (five children) who said that the offline meeting upset them were asked about the age of the person they had met. Three said they met someone about their own age, one girl met an older teenager, and one girl met an adult. Of course, because of the very small number who answered the question, no inferences can be made.

When it comes to gender, it is understandable (considering that many safety warnings describe cases of girls and women being victimised) that girls of all age groups are far more cautious when meeting online acquaintances face-to-face. This is obvious from the following quote from a girl in a focus group with high school students.

"A man did an experiment, he wanted to see if the girls would meet him and he opened a Facebook profile. He was chatting with

¹² The total of these percentages exceeds 100% because there are children with both experiences.

some girls that were twelve, thirteen and fourteen years old. He was like, 'I'm new in the neighbourhood and I want to meet some friends, can we meet?' So, they said they could and that their parents were going to a restaurant, and he said he would come and pick her up. I wouldn't dare to go out like that! So, she went and there was this man in a van. It was the man she was talking to online and her parents, but they were masked so she wouldn't recognize them. So, she got in the van and they started pulling her and shoving her and she got really scared and started screaming. So, they took off their masks and started yelling at her about how she got the idea to go out and meet a stranger like that" (Girl, 16 years old).

However, regardless of the potential risks, most children (seven out of ten) are not worried about possible negative outcomes of meeting new people face-to-face, while the rest of the children are only a little worried before these meetings.

Not surprisingly, girls are somewhat more concerned than the boys (38 per cent versus 25 per cent), while differences in age and financial status do not affect the level of concern when planning a face-to-face meeting. The finding that the majority of the children are not concerned before going to such a meeting tells us that this way of getting to know someone is becoming normalised among children, but it also tells us that children have their own strategies for lowering the potential risks of meeting new people face-to-face (meeting with their peers or people with friends in common etc.).

The qualitative results are consistent with the quantitative research. Several children talked about their experiences of communicating with new people online. Primarily, it happens on social network sites where children often receive friendship requests from new contacts. With the youngest children it usually happens while playing games online, since most of them children do not have a social profile and do not use such platforms.

Still, the children can tell the difference between two categories of strangers: those who are somehow a part of their wider social network (mostly their peers, who are often acquaintances of their acquaintances), and those who are much older and are not connected

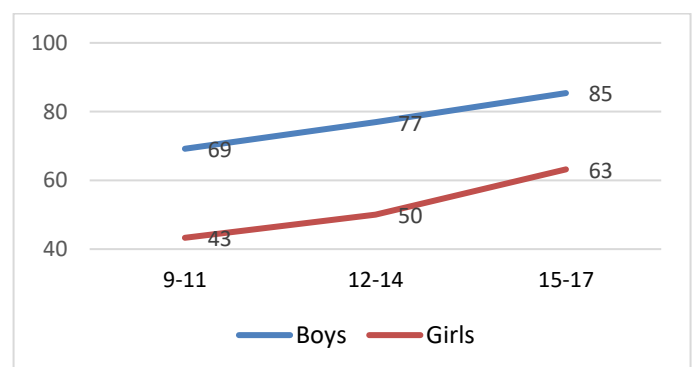
to their life. The possibility of meeting new people outside a child's social context is considered very risky and is usually avoided.

Exposure to other risks


Among other potential risks, children point out computer viruses (37 per cent of all children), password theft (10 per cent) and unauthorised use of personal data (7 per cent). It is interesting that those with the lowest financial status point out the problem with computer viruses more often (49 per cent of children with low SES), which might be explained by the poor equipment and antivirus software these children have access to.

Another risk for children is the common and widespread use of cracked video games, pirate software and the unauthorised downloading of movies and music from Torrent sites. Our results show that more than half of the children (51 per cent) downloaded a pirated movie at least once, while almost half of the children (45 per cent) watch unauthorised copies of movies that their parents download from the internet. Around a third of the children downloaded a cracked video game (34 per cent), cracked software (29 per cent), or cracked a video game on their own using instructions found on the internet (27 per cent). Boys and older children are far more often involved in these activities than are girls and younger children. Overall, two thirds of children reported at least one case of piracy, and such practice increases with age, especially among boys (Figure 29).

Figure 29: Percentage of children reporting at least one case of piracy, by age and gender



Note: Percentage of children who reported doing at least one of 5 listed cases of piracy. Base: N = 197



The focus group discussions showed that children often download music, software and games from the internet, probably by unauthorised copying (e.g. Torrent files). For these purposes some of them visit non-secure webpages, encounter all sorts of pop-ups and cause computer malfunctions due to computer viruses etc.

In our society computer piracy is widespread despite being unsanctioned. Software such as Windows 8 or Microsoft Office, or games like FIFA 16 or DVDs with copied movies can be bought cheaply on the street (for less than two Euros). Various research showed that piracy levels in Serbia are around 60–70 per cent.

According to the BSA Global Software Survey for 2015, the general level of piracy in Serbia (67 per cent) is among the highest in Central and Eastern European countries, with exception of former Soviet Republics (the overall worldwide rate is 39 per cent, and 29 per cent in the EU).¹³ The Serbian Tax Administration inspection for 2011–2015 revealed that only 39 per cent of companies in Serbia used legal software.¹⁴ In these circumstances the risk related to such practices is not the risk of penalty but the possibility of picking up viruses or malware. Of course, there is a risk that children might develop a lax attitude towards plagiarism and breaking social and legal norms in general.

¹³ http://globalstudy.bsa.org/2016/downloads/studies/BSA_GS_S_US.pdf

¹⁴ <http://www.poreskauprava.gov.rs/sr/ot-nama/softver/legalnost.html>

Vulnerabilities and protective (enabling) factors

The vast majority (89 per cent) of children who participated (93 per cent of boys and 86 per cent of girls) have a profile on social network sites. In the group of children aged 9–11, 70 per cent have a profile (although the lower limit for most of the services they use is 13), rising to 95 per cent in the middle age group and 98 per cent among the oldest children. Among those who possess a profile, 22 per cent of children have high socio-economic status, 41 per cent have medium and 37 per cent low status.

About 90 per cent of children from the sample have 1–5 profiles on their websites for social networking or playing games, a third has only one profile, a third has two or three profiles, and a quarter has 4–5 profiles.

Children have profiles on the following social networks: Facebook (85 per cent), Twitter (12 per cent), Instagram (54 per cent) – there are considerably more girls than boys on this social network (65 per cent compared to 43 per cent), Snapchat (13 per cent) – also more popular with girls (17 per cent compared to 8 per cent), YouTube (14 per cent) – more popular with boys (18 per cent compared to 10 per cent), Google+ (4 per cent), Tumblr (3 per cent), and MySpace and Flickr (1 per cent).

Facebook is the most popular social network: almost two thirds of them (64 per cent) use this profile the most frequently. A fifth of the children (21 per cent) most frequently use Instagram, 1 per cent of them YouTube and Tumblr, and 13 per cent use other networks or websites (the most frequently mentioned are those for communication: Viber, WhatsApp, and Skype).

More than half of the participants (47 per cent of boys and 64 per cent of girls) say that the content of the profile they use can only be seen by their friends, i.e. that their profile is private. A quarter of the children have a partially private profile, which means that friends and friends of friends can see their profile, while a fifth of children have a public profile (which means that anyone can see their personal data). Younger children protect the privacy of their personal data less carefully – a third of the children aged 9–11,

a fifth of the children aged 12–14 and only 14 per cent of the children aged 15–17 have a public profile.

According to the focus groups conversations, we can conclude that children care about the privacy of their personal data on the internet and that they rarely share them with others. They are aware that the internet is public space, which disturbs most of them.

“I realised that Facebook is a stupid thing because you can post a photo and the whole world can see it... I do not like the fact that people post private photos and then all the people on Facebook can find out and make fun of them when they see them in the street... and this is how violence starts” (Boy, 16 years old).

Most children have a photo on their profile where their face is on public display (85 per cent) and a surname (83 per cent). Fewer children post their phone number on their profile (17 per cent of boys and 6 per cent of girls) and address (12 per cent of boys and 3 per cent of girls). Age differences are not significant.

Almost 93 per cent of children aged 9–11 and 85 per cent of those aged 12–14 who have online profiles have put false personal information on their profile. This is understandable because almost all social networks have a lower age limit for the use: children are forced to hide their own age if they wish to open a profile.

“I lie about the age only in the games, because some of them are not allowed to children younger than 18. But, they are not dangerous, there is a bit of blood, brains and so on, but nothing important and awful.... then, I say that I am above 18 and download them!” (Girl, 16 years old).

Parental mediation

Parents are expected to be key mediators in children's internet use. However, in contrast to the common process of socialisation where the younger learn from the older, many parents have lower level of digital literacy than their children. This digital divide between parents and children limits their role as mediators of children's internet use.

This part of our research looked at how much children rely on their parents regarding different aspects and

issues of internet use, and how much parents actively mediate their children's internet use. We interviewed both children and their parents, which allowed us to compare their answers and draw conclusions about differences in their respective viewpoints.

In the first part of this chapter we analyse children's and parents' answers to individual questions. In the second part we analyse scores computed from groups of answers.

The results of earlier focus groups discussions revealed that Serbian parents have a very important role in the lives of their children, regardless of the children's age. In this role, regarding mediation of their children's internet use, they tend to be rather passive – they talk with their children and warn them of potential risks etc. In other cases, they show more initiative: they actively monitor children's online activities and react when something bad happens (report it to the school authorities, administrators etc.). It can be said that children trust their parents' mediation techniques and feel comparatively secure when parents are on their side.

“I think that when you have a problem you should always tell your parents about it, because if you listen to somebody else then you are in deeper trouble. If you tell the parents right away, it is ‘ok, you have done something new it will be prevented’ and that’s the end of it” (Girl, 16 years old).

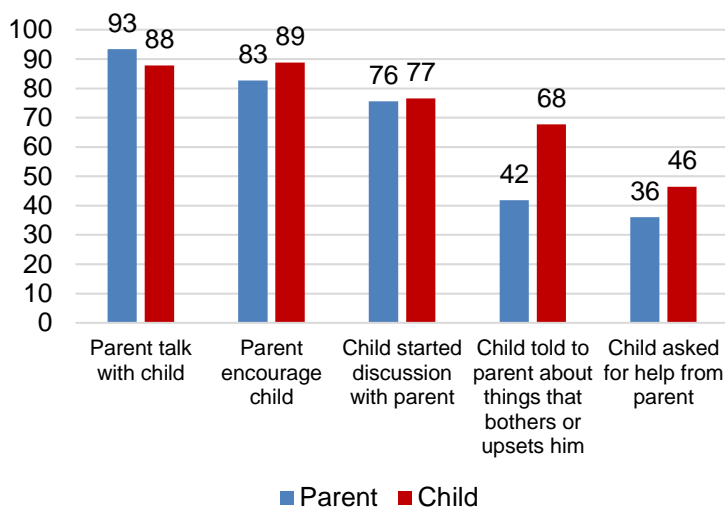
These findings were corroborated by the survey, which showed a high level of trust between children and their parents. Most of the children (86 per cent) found it easy to talk with their parents about things that upset them in general. This circle of trust is, to some extent, transferred into the parent-child interaction regarding the child's internet activities (Figure 31).¹⁵ The level of parent-child interaction and agreement in answers is particularly high in the case of the first two questions (which referred to discussing and encouraging internet use).

The highest level of agreement in parent-child pairs is visible in answers to the third question (child started discussion with parent), although a quarter of the

¹⁵ Here we have to add a methodological note. Although the parents and children answered the same questions, the answers were formulated differently. Parents were given two answers (yes or no), while children were offered multiple answers (never, hardly ever, sometimes, often and very

children never initiate discussion on their internet activities. A greater discrepancy in responses can be observed in the two questions related to the specific help that a child might seek from a parent. The difference is especially noticeable in answers to the question about upsetting internet content. The number of children who said that they told their parents about it was significantly higher than the parents' answer on the same subject. The first logical explanation would be that a child spoke with the parent who did not participate in the interview, although we insisted on interviewing the parent who is more involved in the child's internet use. The other cause may lie in the fact that, compared to boys, girls were more likely to give socially desirable answers: 78 per cent of the girls said that they talked with their parents about unpleasant and upsetting internet material, compared to 56 per cent of the boys, but the parents' answers to the same question did not reflect this margin (44 per cent of girls' parents and 39 per cent of boys' parents said that their children talked to them about things that have or might bother/upset them online).

Figure 30: Parent's evaluative mediation of the child's internet use, according to child and parent



Note: Percentage of children's answers 'Rarely', 'Sometimes', 'Often', 'Very often' and parents' 'Yes' answers to corresponding questions Base: children: N = 192-197; Parents: N = 194-197

Responses are similar across all age groups, although there is a slightly greater tendency of older children to

often). Children's answers were recoded for the sake of comparability ('never' was recoded to NO while the other four answers were recoded to YES).

talk to their parents about things that have or might bother them online. This is probably related to the fact that older children use the internet more often and are thus more exposed to the unpleasant and upsetting situations online.

“My dad had set my Gmail. I asked him to install Viber and he installed WhatsApp for me” (Girl, 16 years old).

“I made both profiles for my mom. No, I made Facebook, Vuk [brother] made Instagram, so I know password and have access to what interests me. I have access to mail and everything, and I check it all for her because she is not interested” (Girl, 15 years old).

When it comes to asking for help, we learned through focus groups discussions that children readily do this.

If they do not know how to do something, they certainly know someone who does. There is always a brother, a sister, a relative, a neighbour, or a friend who helps when necessary. On the other hand, both qualitative and quantitative findings revealed that children are disinclined to seek parents' help. Both parents' and children's answers show that less than half of the children ask their parents for help with an online task. The reason is probably a higher degree of digital literacy in children: despite their obvious desire to help, parents are often unable to help children solve online problems. That is probably one of the main reasons why the oldest children are the least willing to ask their parents for help (57 per cent of those aged 9–11; 44 per cent of those aged 12–14; 41 per cent of those aged 15–17 ask parents for help). Girls are more likely to ask for parental support (55 per cent of girls, compared to 37 per cent of boys), while their parents' answers do not differ as much in that respect (40 per cent of girls' parents and 32 per cent of boys' parents said that children asked for their help).

The discrepancy between children's and parents' answers in this case can also be explained by the same reasons cited in the previous question – perhaps to give socially desirable answers.

If we look for the correspondence not between average estimations but between estimations of a child and his/her parents, we see that the child and his/her parent gave the same answer in 84 per cent of cases if

asked about talking together about what the child is doing online. When asked whether the child told the parent about something that had bothered him on internet or whether he asked for help from parent, the parent and the child gave the same answer in less than 60 per cent of cases.

The next set of questions addressed parents' **evaluative mediation** of children's internet safety. Evaluative mediation implies that communication with the child aims to help the child to evaluate and interpret the internet and its content. Evaluative mediation includes suggestions on how to use the internet safely, talking about what to do if something online bothers or upsets the child, helping the child when something is difficult to do or find on the internet, and explaining why some websites are inappropriate for children.

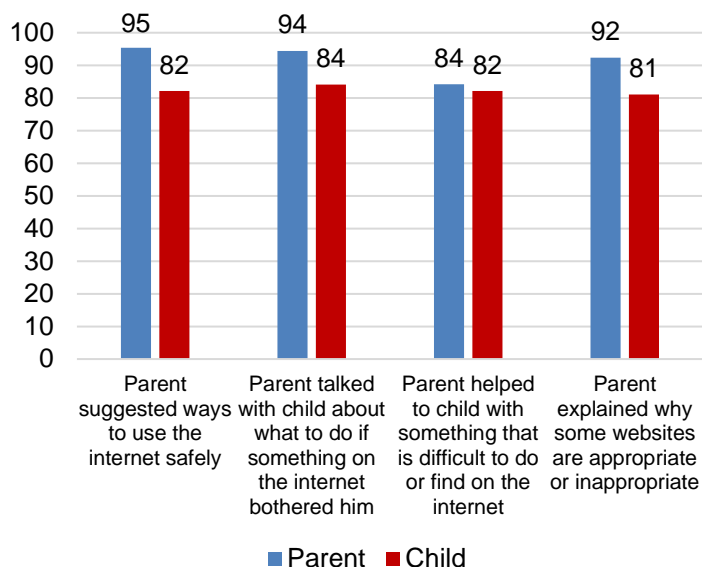
Children's and parents' views coincide when it comes to this question and, based on the responses of both groups, parents are very concerned for the online safety of their children (see Figure 31).¹⁶

“In the beginning they told me not to post too many of my photos, stuff like where I was and who I am, because, for example, if I posted my seaside photos, then someone might see that and rob our house in our absence. There were such examples. But I don't have the need to share and post photos, so I don't do that” (Boy, 15 years old).

Generally, parent's estimations of their evaluative mediation are somewhat higher than the children's estimations of the same activities. The highest level of correspondence between average parents' and children's answers was observed in the statement that a parent had helped their child with difficulties on the internet. This is probably because both the parent and the child can recall a specific occasion when the parent had provided their child with such assistance.

¹⁶ Based on all answers except 'never'.

Figure 31: Parent's evaluative mediation of the child's internet safety, according to child and parent



Note: Percentage of children's' and parents' answers 'Rarely', 'Sometimes', 'Often', 'Very often' Base: children: N = 195-196; Parents: N = 195-197

For other questions the discrepancy between average answers of parents and children was approximately 10 per cent, with parents being more likely to over-claim than their children. It seems that parents are either more concerned for their children's safety or that they simply tend to present themselves in this light during interviews. However, we can conclude that both parents and children are concerned about children's online safety and that they regularly discuss this issue.

We can also try to see the correspondence between the estimation of the child and his parent. Seen in this way, in approximately four-fifths of cases the child and his/her parent gave the same estimation (in Yes-No categories) about parental evaluative mediation.

The youngest children (aged 9–11) are the most dependent on their parents' suggestions: 89 per cent of them asked for recommendations on safe internet use, compared to 89 per cent of those aged 12–14 and 72 per cent of those aged 15–17. A similar regularity can be detected in parents' explanations of why websites are good or bad. Again, parents'

mediation is required most for the youngest and is least necessary for the oldest children. However, this does not apply to discussions about unpleasant and upsetting online contents, as parents discuss these issues with children aged 12–14 more than they do with younger and older children (92 per cent of those aged 12–14, compared to 80 per cent of those aged 9–11 and 81 per cent of those aged 15–17).

As we said earlier, this is probably because children aged 12–14 are in the period of life when they start to enhance their internet communication, hang out online more often and generally explore and search different online content. This makes them more sensitive to online aggression than the youngest children, who do not use the internet as much. Also, children aged 12–14 are more vulnerable than older children, since the latter are already familiar with disturbing online content and know how to cope with it.

Regarding gender differences, girls are much more subject to parents' mediation when it comes to this issue. Apart from the usual concerns over potential sexual exploitation of girls, girls may be perceived as being less familiar with internet technology, online platforms, computer programs, and therefore as less able to protect themselves.

The second kind of mediation strategy is **restrictive mediation**, consisting of parental control over children's activities. We asked children and parents whether the child can do each of eight listed activities¹⁷ at will, only with parental permission or never.

Parents are most restrictive when it comes to the use of webcams, which indicates an awareness of safety risks and possible misuse of this device (Figure 33). Parents least supervise the downloading of music and films, probably because children do not need to be sitting in front of the computer throughout the process. Surprisingly, perhaps, the majority of parents do not oversee the use of social network sites, although they are often designated as a source of online risk by the media.

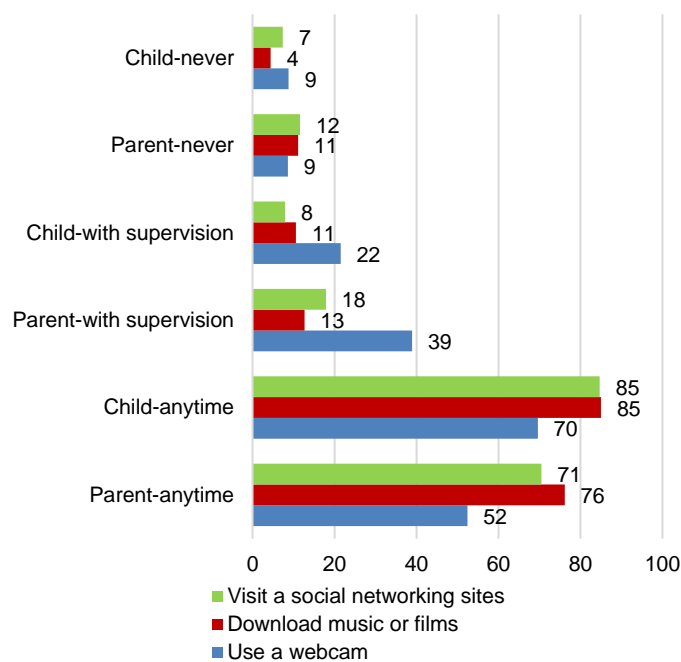
¹⁷ The listed activities were: using a webcam; watching video clips; downloading music or films; playing games with other people online; visiting a social networking site; visiting a chat room; using instant messaging; putting (or posting) photos, videos or music online to share with others.

“I asked my mom if I could have a profile on the Instagram and she said “No”, because starlets post their photos there. My sister has had a Facebook profile since she was six” (Girl, 10 years old).

Parents may perceive supervision of the use of social network sites as an invasion of their children’s privacy, especially in the case of older children. However, this finding might also indicate that parents trust their children.

Interestingly, there are some systematic discrepancies between parents and their children in the sense that all three of their answers in the Figure 33 exhibit the same degree of inconsistency. It may be that children presented their parents as more liberal than they actually are, or that the parents presented themselves as more restrictive than they really are. We can also assume that parents are more aware of their restriction practices than children, who tend to forget them. But the difference is most likely a result of the social desirability effect. Presumably some parents exhibited a tendency to present themselves in a favourable light, not least because they were interviewed in their children’s school.

Figure 32: Parents’ restrictive mediation of the child’s internet use, according to parent and child



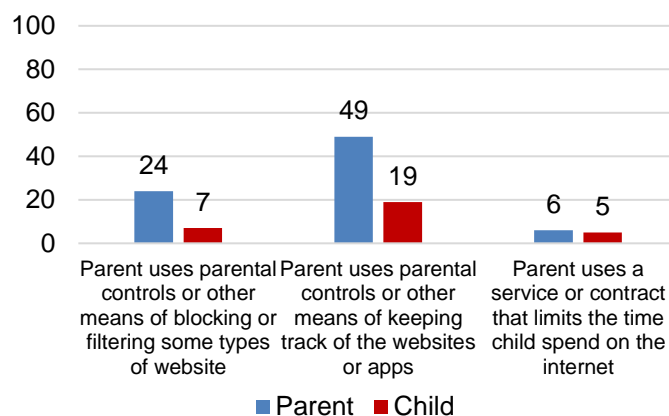
Note: Percentage of children’s and parents’ answers ‘Never’ on corresponding questions Base: children: N = 180-189; Parents: N = 194-196

Girls are more supervised than boys when using webcams and social network sites, which is not unexpected, given that (according to focus group discussions) girls are more exposed to online sexual abuse than boys. There are no notable gender differences in the case of downloading films. Parents actively mediate younger children’s use of the internet much more than they do for older children, who are almost without supervision. All children over 15 are allowed to download films and music whenever they choose, and 95 per cent and 90 per cent of them are free to visit social network sites and use webcams, respectively. Conversely, only 46 per cent of the youngest children can use the webcam whenever they want, 56 per cent can download music and 62 per cent can visit social network sites without restrictions.

The third mediation strategy is **technical mediation**, which uses technical (software) devices to control children’s internet use. We asked both parents and children whether the parents use any of the following: parental controls or other means of blocking or filtering some types of website; parental controls or other means of keeping track of the websites or apps the child visits; a service or contract that limits the time the child spend on the internet.

The data presented in Figure 33 show that technical mediation is not a common strategy and that significant numbers of children do not know that their parents use these means of control. We want to add that, since these technical means are rare in our society, it is possible that parents and children answered without fully understanding the questions.

Figure 33: Parent’s technical mediation of the child’s internet safety, according to parent and child

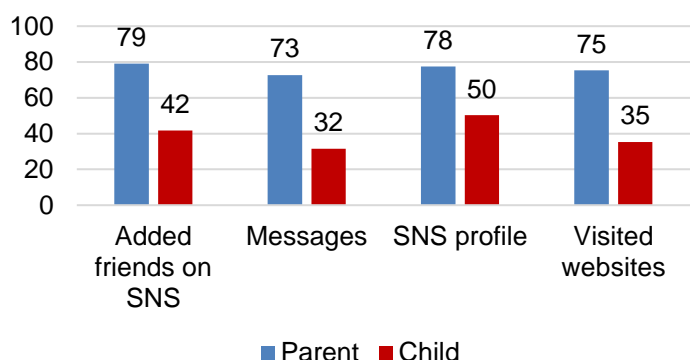


Note: Percentage of children’s’ and parents’ answers ‘Yes’ Base: children: N = 197; Parents: N = 196-197

The fourth kind of parental mediation we called **parental surveillance**, which is where parents monitor their children's online activities. We asked how frequently a parent checks the following activities: which friends or contacts the child adds to his/her social networking; messages in his/her email or other app for communicating with people; his/her profile on a social networking or online community; which websites s/he visits.

Three quarters of parents (Figure 34), on average, are in the habit of checking on their children once they finish using the internet. According to parents, they monitor all four listed activities approximately equally frequently. According to children, their parents try to monitor their activities on social network sites more than their messages and websites.

Figure 34: Parent checking a child's online activities afterwards, according to parent and child



Note: Percentage of children's and parents' answers 'Rarely', 'Sometimes', 'Often', 'Very often' Base: Children: N = 195-196; Parents: N = 197

Comparing the answers of the child and of his/her parent we wanted to see whether their answers about the same thing is the same or different. We found that for all four activities, the correspondence between children's and parents' answers is only around 50 per cent, which means that here is no correlation between them at all. We can illustrate this discrepancy between the children's and parents' reports about parental monitoring of websites visited by their child (Table 8).

Table 8: Parents' and children's assessments of whether parents check which sites children visit

Q for parent:		'How often do you check which sites your child visits?'		
Q for child:		Never	At least sometimes	Total of parents
'How often do your parents check which sites you visit?'	Never	20%	45%	65%
	At least sometimes	5%	30%	35%
	Total of children	25%	75%	100%

Note: Base: Children: N = 196; Parents: N = 197

A child and his/her parent gave the same answer in only 50 per cent of cases: in 20 per cent of cases both parent and child say that parent never check which sites the child visits, and in 30 per cent cases both parent and child say that parent at least sometimes check the child's visits. In 5 per cent of cases the parent says that s/he never check his/her child's visits but the child believes contrary. The most frequent cases (45 per cent) are those where the child believes that his/her parent never checks which sites he/she visits but the parent admits that s/he does it sometimes.

Judging by the discrepancies between parent-child answer pairs, an average of 50 per cent of the parents who supervise their children seem to do it secretly. This conclusion is based on the fact that the majority of children are completely oblivious to the fact that they are subject to parental supervision. Still, one should not overlook the probable social desirability effect. It is possible that parents wanted to present themselves as more caring and cautious than they actually are, bearing in mind the purpose of our research. On the other hand it is also possible that children wanted to present themselves as more independent than they actually are.

Therefore, we can assume that the actual truth regarding the extent of online supervision lies halfway between parents' and children's' answers.

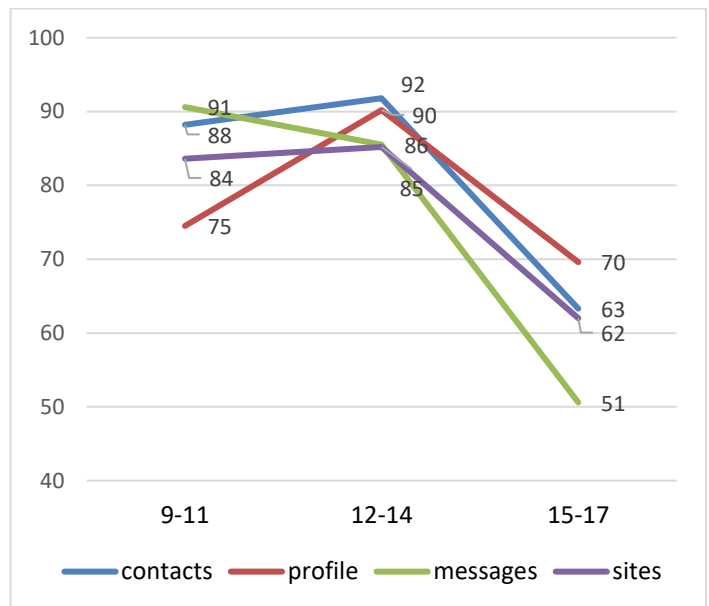
“My mom told me ‘You can do secretly whatever you want, but sooner or later I will find out about it and it’s up to you whether you tell me or not.’ Ever since I got my internet profile in the fifth grade, my mom has had the password and checked it regularly. Now she trusts me and doesn’t do that anymore. But I tell my mom everything, anyway. I even told her when I started dating my first boyfriend” (Girl, 16 years old).

However, if we consider parents’ answers to be more credible, this is further confirmation that parents are actively safeguarding their children on the internet. Parents are fully aware of the risks associated with children making online contacts since the majority of them (79 per cent) check newly added friends on their children’s social networking profiles.

As was expected, a somewhat smaller proportion of parents check the social network profiles of their children as well as the websites they visit but, perhaps surprisingly, a large proportion of parents invade their children’s privacy in online communication by reading their messages. On the one hand this is understandable since some parents are probably in fear of the internet, primarily due to an uncritical highlighting of its ‘dark side’ by the media. Besides, textual communication may reveal problems that children might have but do not want to share with their parents. Still, one of the consequences of this invasion of privacy may be distrust between parents and children. In the future, due to the improved ‘online hiding’ skills of their children, this may result in parents’ complete loss of insight into their children’s online activities.

Additional statistics (not presented in the report) reveal that the parents oversee boys’ and girls’ activities equally. Surveillance decreases for the highest age group (Figure 35).

Figure 35: Parents’ surveillance of children’s online activities (parental responses)



Note: Percentage of parents’ answers ‘Rarely’, ‘Sometimes’, ‘Often’, ‘Very often’ Base: N = 197

Scores of child’s and parent’s reports of four kinds of parental mediation

We had two sources of information about parental mediation: self-reports of parents and reports of children. From both groups of answers we can compute scores for four parental mediation strategies. (We must bear in mind that the number of questions for all kinds of mediation, as well as the range of the alternatives, were not the same.)

Intercorrelation of mediation strategies

Correlations of scores of different kinds of parental mediation show that parents who practise one kind of mediation are likely to practise other kinds of mediation as well. These correlations are somewhat greater among scores based on parents’ assessments than those based on children’s assessments (Table 9).

Table 9: Correlations between different kinds of parental mediation

	Parents' reports			Children's reports			
	eval uati ve me diati on	tec hnic al me diati on	rest ricti ve me diati on	eval uati ve me diati on	tec hnic al me diati on	rest ricti ve me diati on	
tech nical medi ation	0.35**			tech nical medi ation	0.27**		
restri ctive medi ation	0.40**	0.31**		restri ctive medi ation	0.43**	0.22**	
pare ntal surv eilla nce	0.51**	0.50**	0.32**	pare ntal surv eilla nce	0.41**	0.38**	0.38**

Note: Correlations are Spearman's rho ** significant at the 0.01 level Valid cases: Parents: N = 182-197; Children: N = 152-196

Correlations between parents' and children's reports

How much do the measures based on parents' reports and measures based on children's reports correspond? As shown in Table 10, there are statistically significant correlations between them, but they are far from perfect. With the exception of restrictive mediation, correlations are medium, at around 0.30.

Table 10: Correlations between child's and parent's reports on various kinds of parental mediation

Correlation of child's and parent's report of...	
Evaluative mediation	0.31**
Technical mediation	0.30**
Restrictive mediation	0.62**
Parental surveillance	0.26**

Note: Correlations are Spearman's rho ** significant at the 0.01 level Base: N = 164-196

Although the correlations are statistically highly significant, they would be expected to be higher, because these questions are factual ones. The correspondence between child's and 'parent's attitudes or feelings need not to be high, but we expect that the correspondence between child and parent in their answer whether something happened or not should be higher. From the methodological point of view, these data warn that it is not all the same what will be the source of information about parental mediation.

Possible causes of the discrepancy may lie in different wordings of possible answers for children and for parents, and because the alternatives offered ('rarely', 'sometimes', 'often', 'very often') describe subjective impressions rather than objectively defined categories. If this is the case, agreement as to whether something happens or not will be greater than agreement about how frequently something happens. Correlations should increase if we compute scores from the dichotomised answers (where all degrees of frequencies are coded as 'Yes'). However, when scores are computed in this way the correlations stay exactly the same.

Correlations with age and gender

We investigated the dependence of four types of parents' mediation on children's age and gender by two-way analysis of variance. Instead of the detailed report we present here only the statistical significance of the factors (Table 11).

Table 11: Influence of child's age and gender on types of parental mediation

		Significance of F		
		Age	Gender	Age x Gender
Parents' self-reports	evaluative mediation	0.000	0.212	0.794
	technical mediation	0.104	0.841	0.676
	restrictive mediation	0.000	0.044	0.390
	parental surveillance	0.000	0.814	0.626
Children's reports	evaluative mediation	0.000	0.000	0.074
	technical mediation	0.263	0.146	0.339
	restrictive mediation	0.000	0.411	0.892
	parental surveillance	0.000	0.013	0.262

The table shows that the extent of parental mediation depends primarily on the children's age – all types of mediation decrease with the children's age. The exception is technical mediation. The role of gender differs depending whether we rely on parents' or children's reports. One-way analyses of variance show that in the case of evaluative mediation and parental surveillance the significant difference is between the oldest age group (15–17) and the younger groups, both for children's and parents' reports, and that in the case of restrictive mediation significant differences exist between all age groups.

According to parents, restrictive mediation is somewhat higher for girls than for boys and another types of mediation are equal. According to children's

reports, girls are more exposed than boys to evaluative mediation and parental surveillance. For all types of mediation there is no age x gender interaction, which means that the relation between mediation and gender is the same in all age groups.

Correlations with parents' digital skills

We were interested in the degree to which parents' mediation is related to their digital skills. Parents' digital skill was computed from their answers to questions about 14 listed skills on computers and mobile phones.

Parents' digital skills are correlated with parents' reports of their use of various kinds of mediation but not equally for all kinds of mediation nor for all age groups (Table 12).

Table 12: Correlations between a parent's digital skills and kinds of parental mediation (assessed by parents)

	All (N=197)	9-11 yrs (N=56)	12-14 yrs (N=62)	15-17 yrs (N=79)
Evaluative mediation	0.41**	0.44**	0.33*	0.36**
Technical mediation	0.24**	0.34**	0.38**	0.00
Restrictive mediation	0.22**	0.08	0.28*	0.04
Parental surveillance	0.31**	0.35*	0.19	0.24*

Note: correlations are Spearman's rho * significant at the level 0.05 ** significant at the level 0.01

Restrictive mediation (controlling various children's activities) does not demand parental skill and is least connected with parents' digital skills. However, almost the same level of correlation is found between parent's digital skills and technical mediation (which does presuppose certain digital skills).

The greatest correlation is with evaluative mediation (giving advice or suggestions about online behaviour and safe internet use). More knowledgeable parents are more ready to speak with children about safe ways of using the internet. This is yet more proof that digitally competent parents are an important factor in raising responsible but self-confident young internet

users.

The connection between parents' digital skills and their mediation strategies looks different if we use children's reports as the source of information. In this case, the correlations are much weaker. On the whole sample, the more skillful parents apply only evaluative mediation more frequently than less skillful parents, and such relationship exists only among children aged 9–11 (Table 13).

Table 13: Correlations between a parent's digital skills and kinds of parental mediation (assessed by children)

	All (N=197)	9-11 yrs (N=56)	12-14 yrs (N=62)	15-17 yrs (N=79)
Evaluative mediation	0.21**	0.36**	0.03	0.11
Technical mediation	0.01	0.12**	0.11	-0.22
Restrictive mediation	0.12	0.02	0.08	-0.14
Parental surveillance	0.12	0.14	0.01	0.11

Note: correlations are Spearman's rho * significant at the level 0.05 ** significant at the level 0.01

School mediation

Focus groups revealed that school has a comparatively minor role in terms of encouraging children to make the most of the internet and avoid unsafe online behaviour. Schools occasionally organise awareness-raising events or use school-based networks to communicate with students, but schools' handling of children's online activities appears to be unsystematic.

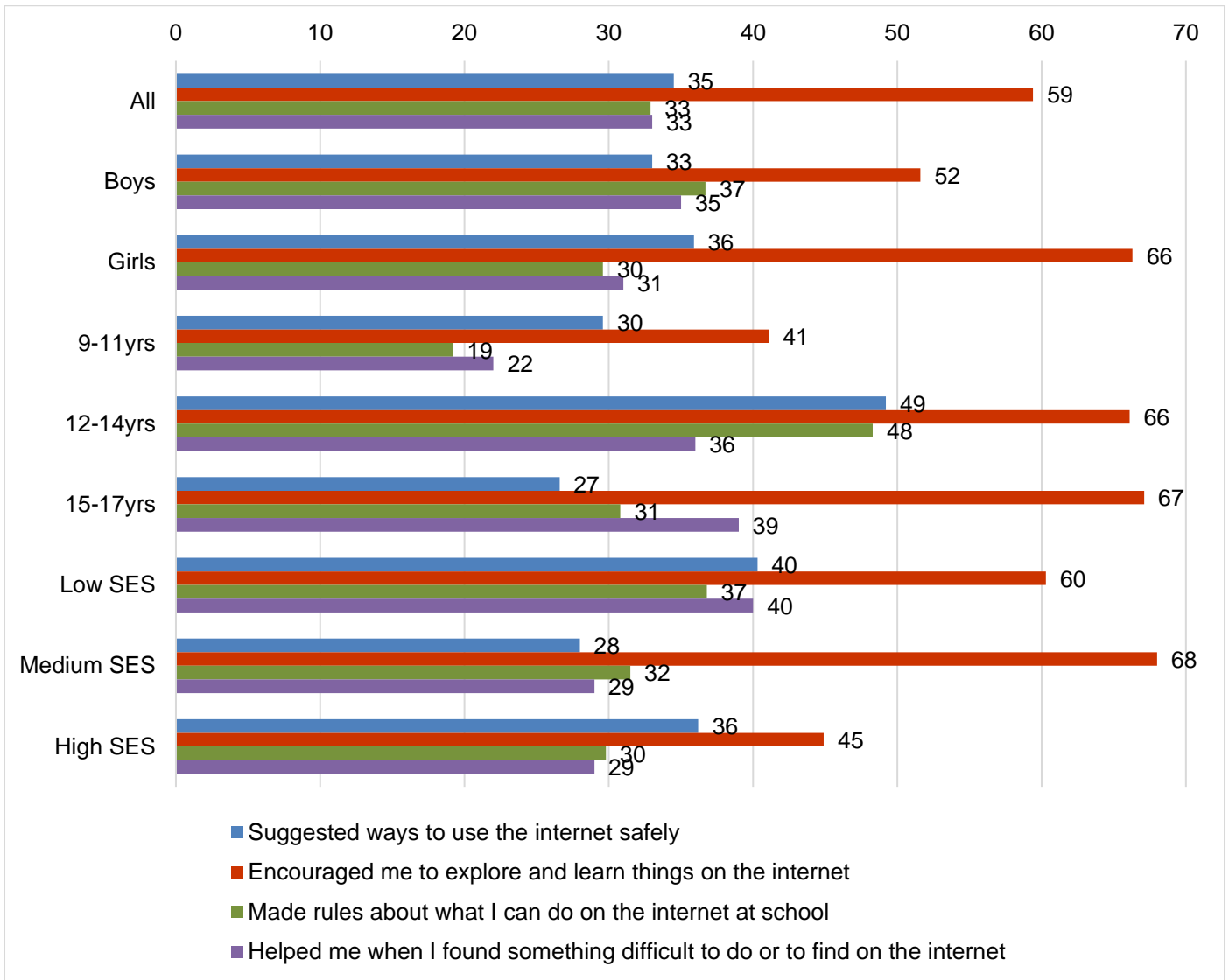
“Recently we had a lecture about internet safety at school. It was funny how many things they didn't mention, like some really scary things. Many things were covered and also many were not - the scary ones. They probably did not want to frighten us” (Girl, 16 years old).

Survey results confirmed this pessimistic finding (Figure 37). Around two thirds of the children have not received any safety guidance from their teachers and do not have to comply with any rules or restrictions regarding the use of internet at school. Moreover, although the majority of the children said that teachers encouraged them to use the internet for school work

and learning, this was not the case for more than 40 per cent of the children. Even fewer (22 per cent) said that teachers encouraged them to collaborate via the internet during school assignments. Although some schools in downtown Belgrade provide their pupils with personal laptops, it is clear that the internet is not an important resource for teachers in Serbian elementary schools, at least from the children's perspective. Furthermore, since Belgrade is the capital and thus more developed than any other city in the country, we can assume that using the internet for educational purposes is even less common in other parts of Serbia.

Interestingly, around a quarter of the youngest and the oldest children stated that they received safety guidance at school regarding the use of the internet, compared to half of the group aged 12–14. This last group is more often faced with restrictions regarding using the internet in school than the older and younger age groups. It seems that teachers pay more attention to this age group because they feel that the older ones are already savvy internet-users and are, in many cases, superior to their teachers in terms of digital skills. The youngest are probably considered less vulnerable because they do not use the internet as often and it is perceived that they do not practise unsafe online behaviour as much as the older children. Many Serbian fifth graders (aged 12) sign up for an optional course in ICT which gives them ample opportunity to learn about internet safety.

Figure 36: Teachers' evaluative mediation of the child's internet use and safety, according to child



Note: Percentage of children's answers 'Sometimes', 'Often', 'Very often' Base: N = 188-197

The children aged 9–11 are the least encouraged to use the internet for educational purposes (41 per cent), compared to the group aged 12–14 (66 per cent) and the oldest children (67 per cent). This is probably because some teachers find it pointless to encourage the youngest children to use the internet for educational purposes since they seldom or never use it. Interestingly, girls were found to be encouraged to learn things on the internet more than boys. Since the survey sample comprises boys and girls who attend classes together it is not likely that teachers pay more attention to girls than boys. It could be that, once again, girls gave socially desirable answers, but it is perhaps more likely that the answers were influenced by the fact that, on average, the girls in our sample did

better at school than boys, and were therefore more interested in learning and researching new things.

Restrictions regarding the use of mobile phones are stringent in all age groups. Almost all children (97 per cent) said that they are not allowed to use phones for calls or texting in class (92 per cent) and that phones must be turned off in class. Gender, socio-economic status and age differences are not significant, except for the rules about using the internet at school, where the youngest ones are more likely to confirm the existence of these rules than the older one

Children's perception of the internet

No doubt for the most of the children who participated in this research the internet is part of their surrounding from their birth. As they say (unlike their parents, who consider the internet to be 'wow'), the internet is a usual ('normal') thing for them. As a virtually unlimited source of information, the internet is a major good thing for Serbian children. For some of them, no improvements should be made, for it is good enough as it is. They think that nowadays certain things can only be found on the internet. Even if they can be found elsewhere, searching for them online is by far the easiest and fastest way. The internet is used for learning new things, pursuing one's interests, communicating with friends who live far away etc. All of these would for the most part be unattainable if there were no internet. In a sense, the internet is being increasingly taken for granted. Children see it as something they have grown up with or as an integral part of their lives, an aspect of their 'natural' environment.

"We grew up with the internet. I mean, the internet has always been here with us. The grown-ups are like 'Wow the internet appeared', while it is perfectly normal for us" (Boy, 15 years old).

However, the internet is not necessarily perceived as a positive social phenomenon and children are well aware of its 'dark side'. There is an often-heard argument that there is too much of everything on the internet. Some go further, claiming that there is too much negative material and content online. Children often argue for some sort of control, even censorship of online content to protect kids and keep them from coming to harm. Some of them think that those who manage websites they are most interested in (like Facebook or YouTube) should select and control things that are posted online. They should judge what is good and what is bad and act accordingly.

Children suggested that for them some of the internet's negative aspects are: they can meet fake friends on the internet, they are more aggressive than they used to be, they go out less than they used to, they do sports less than they did, some arguments start online and continue in real life, they look up to some internet models etc.

"It would be better not to use the internet so long, not to use it all day. My brother is on the Internet all day, from morning to evening, and when you ask him anything he says he does not know" (Girl, 15 years old, Special school).

High-school girls participating in a focus group conversation said that they feel a kind of internet addiction, as if they are driven to do things online that they would not do otherwise.

"We do not have choice....now, if we do not have Face or Instagram we do not know what is happening around us... who does what... we would not be able to know..." (Girl, 15 years old).

"And, then I decide one day I want to shut down Face, I got fed up with everything and I do not want anyone to know. And then again, tomorrow, I am so glad that I have Face and so many friends and that I can talk to someone via this things because this is a kind of connection" (Girl, 16 years old).

When asked how they would feel or react if there were no internet, most children say they would miss certain things (videos, music, communicating with others) but it seems they would not be missed too much. Many of them say that they would go out more, have more time to read, play etc. It is safe to say that most of them can imagine life without the internet.

This attitude may be the consequence of media hype about the 'dark nature' of the internet where children are seen as particularly vulnerable. For example, the stereotype picture of teenagers hanging out together silently, staring at their mobile phones, is often uncritically reproduced through the media as the ultimate proof of alienation. The media pay little attention to scientific research showing that children are not less sociable than previous generations and findings that explain the changes in their communication patterns as a consequence of ICT. More interestingly, it seems that children themselves introject this stereotype picture served by media and use it to explain their own behaviour.

"I think it would not be hard for me, because when I closed Face I had more time and I had what to do. Now I think I would feel much more comfortable. I used to say I would like the network to turn off. I became

addicted, but perhaps I might be better off with the network turned off, I'd feel more comfortable. I would have a circle of friends around me with whom to hang out and that's it" (Girl, 15 years old).

"Without the internet we would not have so much pressure. No more: I have to see it, did he sent it to me, I have to answer... We wouldn't worry. Really, we would have things that are essential, family and to learn something" (Girl, 16 years old).

"I wish I didn't belong to the generation born into the age of the internet, I wish I'd been born earlier" (Girl, 16 years old).

The children themselves notice changes in their behaviour.

Almost a third of the girls and the same number of boys said that there was at least one occasion when they did not eat because they were online (as they grow older, more children report this: 9 per cent of children aged 9–11, 21 per cent of those aged 12–14, and 39 per cent of those aged 15–17 mention this).

A significant number of children come into conflict with family or friends because of time spent on the internet (55 per cent of boys and 40 per cent of girls, with 10 per cent of girls very often starting this kind of argument).

"If you're too long on Facebook mom asks what is so much fun here and then you go to talk and then she says, 'This is ridiculous'" (Roma girl, 14 years old).

Apart from time spent, content can be problematic too. Children and younger boys say that their parents often uninstall violent video games and forbid them to play because there is 'only killing, nothing else' and because they are afraid that children will become violent.

"Everybody play GTA.... those who love shooting... and then we lose our minds and we start attacking people, we start fighting with everyone" (Boy, 10 years old).

By their own estimation, almost half (46 per cent) of high-school children worked less hard at school because of time spent on the internet.

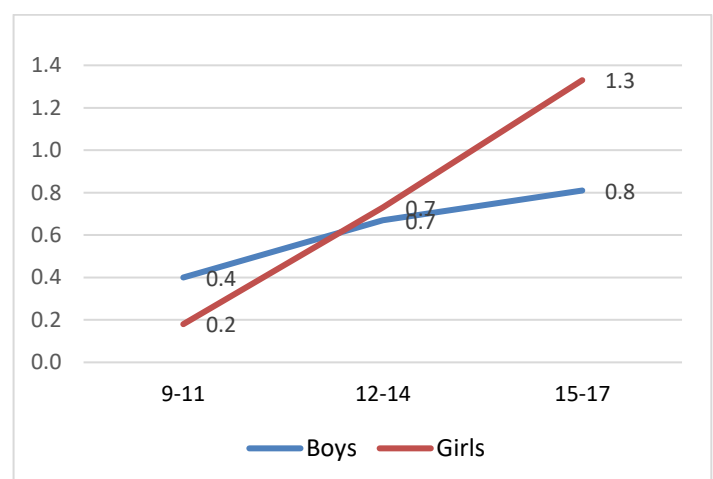
Many children estimate that their problems arise as a

direct consequence of unrestrained internet use (almost 47 per cent of the oldest children and 20 per cent of the youngest ones think like this, more often girls than boys). Some children consider that time spent on the internet is a waste of time.

"It kills our time while we are at school and at home, we hang out too much online" (Boy, 16 years old).

Six items in the questionnaire were intended to indicate some level of excessive or compulsive internet use ('I have gone without eating or sleeping because of the time I spent on the internet.' 'I have experienced conflicts with family or friends because of the time I spent on the internet.' 'My grades have dropped because of the time I spent on the internet.' 'I have tried unsuccessfully to spend less time on the internet.' 'I think the amount of time I spend on the internet causes problems for me.' 'I feel I have to check my device to see if anything new has just happened.'). Scores computed from the six items shows good reliability (Alpha = 0.85 for the whole sample). While at ages 9–11 and 12–14 boys and girls show symptoms of excessive internet use in equal (and small) measure, among those aged 15–17 girls have higher scores of excessive internet use than boys (Figure 37).

Figure 37: Excessive internet use score by age and gender



Note: Excessive internet use is score computed from 6 items, with possible range from 0 to 4. N = 197

Excessive internet use was significantly positively correlated with the time spent online, but not strongly enough to treat them as the same (Spearman's rho = 0.40**). Generally, both measures correlated positively with various indices of a child's emotional and social problems, but correlations of excessive internet use

were more noticeable (Table 14). Both excessive internet use and time spent online were not correlated with acceptance of the statement 'I usually have a good time when I am online'.

Table 14: Correlations of excessive internet use and time spent on the internet with emotional and social problems

	Excessive internet use	Time spent on the internet
Perceived lack of family support	0.19**	0.02
Feeling of discrimination	0.17*	-0.14
Problems with peers	0.17*	0.15*
Emotional problems	0.43**	0.20**
Conduct problems	0.46**	0.37**
Estimated well-being	-0.44**	-0.21**

Note: correlations are Spearman's rho *significant at the level 0.05 **significant at the level 0.01 Base: N= 187-197

The observed correlation between time spent online and some indicators of emotional and social problems, although small, deserves further inspection on a larger sample and with additional questions. The influence can be hypothesised in both directions. Some children with emotional and social problems may see the internet as a shelter from frustrations and negative feelings in the offline world. Alternatively, specific aspects of internet use may cause negative feelings. One way to glimpse possible influence was to correlate various indicators of emotional and social problems with the frequency of specific activities on the internet.

The results, too extensive to be fully presented here, show that signs of negative well-being were unrelated with most specific activities and were most connected with the frequency of visiting social network sites and posting photos and comments online. If we speculate on these meagre data, it could mean that some children with problems in face-to-face communication tend to shift to online communication but repeat the same inadequate communication pattern there. It could also mean that giving too much weight to one's relations on social network sites can have negative consequences, perhaps through the mechanism of social comparison, or pressure towards conformity, or

fear of rejection etc. In both cases, it is not the use of internet *per se* that is connected with negative well-being but the way the internet is used.

“My mom honestly says I'm better without a phone, I behave nicer. Frankly I think it is so when I get home and do not use it whole afternoon. Otherwise, we see some information that annoys us, and we are nervous after that. I honestly think it would be better without the phone, at the beginning it would be difficult, but we will get used to it. And without the Internet more generally, it would be kind of fun, because all would happen in real terms. All would be happening live” (Girl, 15 years old).


Reflections and lessons learned

The whole research process went well and was well accepted by all those who were involved in it. Both students and parents recognised the importance and relevance of the research topic, and were motivated to participate. The stakeholders we contacted recognised the significance of the project and offered their help. Especially important was help received from the Serbian Ministry of Education, Science and Technological Development, whose opinion and support played a key role when school authorities were deciding whether to participate.

The qualitative toolkit proved to be an excellent resource for research aims. The focus group guide is comprehensive, covering diverse topics in a balanced and flexible way; there were no notable omissions in terms of relevant topics and themes. However, specific challenges that arose during focus groups suggest that there is room for improvement in the qualitative toolkit.

One challenge related to the duration of focus groups. Covering all the relevant topics proved time-consuming (which is especially problematic for younger children), so we suggest that, instead of applying the same guide to children of all ages, it would be better to introduce a differentiation between core and optional questions in the qualitative toolkit. It would allow for shorter focus groups interviews (for example, by using only core questions), as well as further probing on particular themes when necessary (by using optional questions).

Also, the coding scheme provided proved insufficient. It is mainly risk-oriented, which makes it impossible to cover in more detail the opportunity side of internet use



or to fully differentiate between themes related to risky behaviours (e.g. between mediation and preventive coping). We therefore adapted the scheme by introducing new categories relevant to the topics discussed (e.g. access, digital ecology). In order to fully standardise the research procedure and to enable valid cross-national comparison and comparable data, some revisions in that regard will be needed.

The quantitative toolkit was also very useful. The list of core questions covers the main aspects of children's online behaviour and there is plenty of opportunity to balance and adapt the questionnaire through careful selection and inclusion of optional questions. We adapted it for the Serbian situation by including optional questions to probe contextually relevant topics and by introducing questions related to other important issues such as piracy, unauthorised copying etc. However, improvements could still be made.

Changes in question formulation, formatting and modifying the list of alternatives to the existing questions were needed to capture the nuances in children's answers. The list of alternatives offered seemed somewhat biased in some cases (e.g. only the

'negative' experiences when meeting in person someone first met online); in other cases only a very rough estimation is required (e.g. whether child has one or more profiles on social networks); the meaning of 'Do not know' and 'Prefer not to say' answers was sometimes ambiguous and confusing (e.g. if a child does not know how to do something online, he/she should often choose the option 'Untrue of me' instead of 'Do not know'). Also, comparisons of children's and parent's estimations of frequency of behaviour is more reliable if their estimations are given on scales like 'once a week', 'daily' etc. rather than on less specific scales like 'rarely', 'sometimes', 'often' etc.

Quite a few children and parents were unable to understand some of the question, words used and specific terms (e.g. 'hacked', 'programming language', 'privacy settings' etc.). This meant that interviewers frequently had to rephrase questions or use better-known terms, particularly with younger children. This suggests that, given the differences in abilities and in online practices between younger and older children, different versions of the questionnaire for different age groups (9–11 and 12–17) could be reconsidered.

CONCLUSIONS, KEY RECOMMENDATIONS AND LOOKING AHEAD

Since the research had two goals - first, to test the applicability of toolkit and whether alterations are needed and second, to gather information on online communications and attitudes of young people, our conclusions and recommendations are also divided into two sections. The first concerns methodology and the second relates to the data we obtained.

Methodology of investigation

Qualitative research

Our work showed that qualitative research could provide detailed and significant data. For the focus groups, children who were usually under-represented in samples were selected. On one hand, we interviewed children from an elite primary school and an elite private grammar school, whose parents were of above average socio-economic status and whose schools were equipped with ICT for school activities. On the other hand, we interviewed underprivileged children - members of Roma population and those from a special school for children with intellectual disabilities. The guidelines for focus groups contained all the significant issues that could be processed within the time available and the discussion was interesting for children in all of the groups.

Based on the experiences with focus groups, several changes of coding scheme are proposed for using in future studies. Some area codes should be more precisely defined and there needs to be clearer differentiation between some of the topics/themes (primarily between preventive coping and mediation). Also, the coding scheme and the list of themes should follow more closely the shift made from earlier (more risk-oriented) group discussions to an approach that focuses more on opportunities and positive aspects of digital ecology. If focus groups are to be organised with parents or teachers, a revised coding scheme adapted for these groups and purposes should be made. Since there is a pronounced difference in online practice between younger and older children (in terms of things children do online, how closely parents

monitor their online activities etc.), the introduction of different focus-group guides – for younger (9–11 years old) and older children could be considered.

Classifying themes/questions into core and optional groups might also be useful.

Quantitative research

This consisted of interviews with children and their parents. The list of questions was long and varied, but interviewing was interesting and proved feasible within the specified time limit. However, we have several suggestions.

- Bearing in mind the age difference between the youngest and the oldest children (which affects their intellectual capabilities, concentration and motivation, as well as their internet use and knowledge) a special version of the interview should be made for younger children. This is especially important in view of the fact that these issues should be discussed with even younger children in future.
- Standard questions about how often children go online and how long they stay there are losing their value. In the recent past, having internet access used to imply sitting in front of a computer or laptop and not carrying out any parallel activity. But now, since smartphones are the most popular means of accessing the internet, it is difficult for children to estimate how long and how often they spend online. Indeed, objectively this question no longer has a distinct meaning. In our opinion, such questions should be supplemented with additional indicators such as, 'How often do you check your mobile phone and notifications / feeds / profiles on Facebook?' 'How many SMSs do you exchange daily?' 'How long during the day are you unavailable?'
- It would also be useful if questions related to making contacts and socialising could establish the nature of these experiences more reliably. This would make it easier for researchers to separate risky activities from ordinary communication, and to differentiate between unpleasant / traumatic experiences and those that are neutral or pleasant / strived for.
- Furthermore, comparison of offline and online aggression and risks would require asking more explicitly about both (preferably by separate questions) and making a clearer distinction between them.

- We added questions on piracy to our questionnaire, and this addition proved useful.
- The questionnaire for parents could be broader: it would be useful to include questions on parenting practice, as well as on whether they observe any

Information about children's practices and attitudes

In terms of providing insight into children's practices and attitudes, the qualitative and quantitative investigations proved to be complementary. Discussions in focus groups indicated a high level of similarity between all children: their preoccupation with the internet and computers (which are most often used to establish social relations, except with youngest children who use it more often for games), and their occasionally ambivalent attitude towards the internet (especially older children from our sample). They are aware of the advantages of constant connection, and of the burden that such connection entails.

For the detailed picture we rely mainly on the results of the quantitative research. Since this included checking and further modification of a proven research procedure, and since the sample was diverse and reasonably large, we believe that the data we collected present valid and reliable insights into the current situation, habits and attitudes of young people and their parents towards the digital world.

However, we also note that our conclusions are limited by the fact that the research itself was the secondary purpose (the primary purpose being to pilot the methodology) and by the fact that our sample was not only non-random, but also too small for complex analyses. We hope that it will be possible to conduct research in Serbia on a much bigger sample based on the tested and improved toolkit.

In general, the results confirm the picture obtained in similar research, which shows that the situation in Serbia is similar to that in developed countries of Europe and the world. For children who use the internet, it is an important part of their lives. Each generation of children starts to use internet earlier than the previous one. While among children older than 12, almost no one used the internet before going to school, most children now aged 9 and 10 started to use internet before going to school. This change can

changes in their children related to using ICT.

- We added a group of questions for interviewers themselves and propose that this list of questions becomes part of the toolkit as a form of quality control of research process.

be attributed to the appearance and wide availability of tablets and smartphones.

Children usually spend several hours per day on the internet, and the internet becomes predominant compared to other everyday activities as children grow older. Among secondary school students, one fifth of them spend at least five hours per day on the internet, even on schooldays. Older children spend longer on the internet than younger children, and they use it in various ways. Generally speaking, boys use the internet more than girls, and this difference is more noticeable in the youngest age-group. In the oldest age-group, when the internet is used most often, the situation is reversed, with girls spending more time on the internet than boys.

Children go online in various locations (of all possible locations, school is used least for internet use). The main device for connecting to the internet is a smartphone, but the majority of children go online from several devices. Many children access the internet in a manner which enables them to be online, if they wish, on any occasion, without supervision.

The internet is used above all for communication. Other uses (in descending order of popularity) are for entertainment (playing games, watching video clips, TV series, movies, listening to music, etc.), getting information, and for social engagement. Children themselves admit that they often use internet in a way which is not productive. The focus group with children with intellectual difficulties and with Romas showed that these groups have no specific differences compared with children from the general population. The internet encourages and extends communication and exchange within existing offline social networks and helps their spread to people who would like to join that network. The main role in that have social network sites (Facebook in the first place) which become widespread already at medium age (12-14 years). The vast majority of children have one or more online profiles, and they spend most of the time communicating on social networks. There is significant peer pressure to take part in online social networks,

because non-members of these online networks may be excluded from offline social networks.

Children are aware of both good and bad sides of the internet. Every third child reports having seen some form of internet content or event that upset him/her in the previous year. At all ages boys report feeling less upset than girls, and among the oldest group of boys there is a decline in feeling upset – differences are probably due to change in emotional reaction towards such material and not in the content itself. Nearly two thirds of the children report having been exposed to explicit sexual content, and the incidence increases with age. Younger children and girls are more often upset by such content. The methodology does not, however, allow distinctions to be drawn between accidental / unintentional exposure and intentional exposure. For older children, such experience may be the result of their online sexual exploration and does not necessarily have a disturbing effect on them. Approximately 10 per cent of children aged 15–17 (younger children were not asked such questions) said they had received explicit sexual messages and invitations to various kinds of sexually related activities. It is unclear what proportion of their communication related with sexuality belongs to 'unwanted sexual experiences' and what to intended (possible pleasant) online sexual exploration.

Communication with new people and meeting them is seen as one of the major risks of online communication, not only by adults but also by children themselves. Despite being aware of such risks, around 40 per cent of children had communicated with strangers online during the previous year, and more than half of them later met somebody offline who they had not known before, which means that every fourth child has met somebody first introduced online. The great majority described such experience as interesting, and only nine per cent were upset by such encounters. Both meeting new contacts online and meeting new contacts offline are more frequent among boys and older children. Among boys from the oldest age group, 60 per cent have met new contacts offline after a first encounter online.

Around one third of the children report that they were treated in a hurtful or nasty way in the past year, and the majority of them mentioned various kinds of digital harassment. Aggressive behaviour and exposure to aggression proved to be connected, on the general level and in the realm of online aggression as well.

Those who admitted that they had been aggressive towards someone or had exposed someone to online aggression belong, almost without exception, to the group of those who themselves were victims of these forms of aggression. Connection is found between offline and online aggression.


One form of online risk – unauthorised copying and sharing digital products – is considered quite normal in our society and it turned out to be common among children and their parents. Two thirds of children had done at least one of these activities in the previous year and among secondary school students the number rose to 75 per cent.

Finally, a finding that deserves attention and further verification is the positive correlation between the time spent online and emotional / behavioural problems, and negative correlation with estimated well-being. It is important to investigate both possible directions of such influence. We found some indications that the important factor is not mere time spent on the internet but the kind of relations they have on social network sites.

The huge potential of online communication can be used (and the risks avoided) if children have adequate skills and knowledge. Children have a high opinion of their digital skills. The majority of them (even every third child of the youngest age group) believe that their knowledge is better than their parents'. Such opinions are more frequent among older children and among boys.

One fifth of children say they have all or almost all of the 15 skills listed in the questionnaire (this percentage is almost twice as high if the answer 'a bit true' is taken to indicate at least partial skill). Competence increase with age. While among those aged 9–11 only one in eight have more than 10 of the skills, among the oldest group two thirds of them claim to have more than 10 skills. Skills on smartphones and tablets are even greater, especially among children aged 12–17. Boys estimated their digital skills more highly than girls did.

Children are most confident about their social skills. Other digital skills, in decreasing order of children's confidence, were skills related to information, skills for using their mobile phones, operational skills and, finally, creative skills.



In view of the fact that children start to use the internet at younger and younger ages, and that they use mobile and personal devices, it is necessary to develop their digital competences systematically from the beginning of mandatory education, or even earlier, at pre-school age.

Overall, age differences in online practices and attitudes are numerous and substantial; those between the youngest group (aged 9–10) and the rest are especially large. Gender differences are also frequent and in many cases interact with age: some gender differences decrease with age and some even reverse. Material status, except for sporadic correlations with some online practices, is generally insignificant.

Parents should and could play more important role in increasing the safety and competence of their children. Answers given by parents (which are not presented in the report) indicate that the popular perception of them as ‘digital immigrants’ (Prensky, 2001) is outdated: the majority of them daily and for years (many of them probably since their childhood) use the internet and are competent to help their children. Nevertheless, it appears that many parents either do not use mediation techniques or rely above all upon ‘spying’ on the online activities of their children.

Children’s answers indicate that ICT is not sufficiently integrated into the school system. For almost half of the children, the internet is not systematically used in school. This is partly because schools are poorly equipped and partly because school staff lack digital literacy. School should be encouraged (perhaps compelled) to integrate ICT into the curriculum and extracurricular activities. The precondition for this is adequate infrastructure which would enable teachers to use ICT in their activities and provide students with free access to computers and the internet on school premises. ICT competencies should be part of the competence standards for teachers. Generally speaking, school should have more significant role in developing digital literacy and in using internet in the curriculum.

It is encouraging that, in our experience, the stakeholders share our opinions and the expectations set out in this report. Access to the internet, digital literacy and safety online are listed as national policy priorities, and representatives of government institutions (from the Ministries to schools) realise the benefit of continuous research in this area and are willing to use the results in implementing public policies.

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