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RESEARCH ARTICLE

Online safety awareness of elementary school students from Croatian rural and urban areas

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Objective: To examine the factors related to the use of internet and the awareness of online safety among students from one elementary school in a village and one in a city.

Participants and methods: Participants in the research (n=119) were first to fourth graders attending "Braća Ribar" Elementary School in the village of Posedarje (n=53), and "Šimun Kožičić Benja" Elementary School in the city of Zadar (n=66). An 18-item questionnaire in Croatian was created and distributed among participants.

Results: Six (11.3%) students attending school in the village and 16 (24.2%) students attending school in the city were not sufficiently informed about what the Internet is and what purposes it serves. Students from urban area were better informed about the concept of personal data compared with students from rural area (71,2% vs. 47.2%, *P*=0.038). There was no statistically significant difference with regard to other aspects of online safety.

Conclusion: Elementary school students from rural and urban areas know what the Internet is and frequently use different Internet applications. However, they still lack awareness and proper understanding of online safety. Results from this study highlight the need for an appropriate educational intervention.

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Introduction

At the end of 2017, the number of mobile phone subscriptions in the world exceeded the world's population (Organisation for Economic Cooperation and Development [OECD], 2017). Time spent online by ten-year-old users increased from 40 minutes in 2012 to 120 minutes in 2015, plus three hours each weekend (OECD, 2019). This means that children live significantly faster lives online than their physical maturity allows them to (Schmidt & Cohen, 2014). Students use the Internet as their main learning, communication and en-

tertainment tool. On the Internet, children can talk to whomever they want, search for whatever content they want, and act however they want, all without adult surveillance (Tapscott, 2012).

The correlation between children's knowledge about online safety and how they use social media is unclear (Macaulay et al., 2020). Macaulay et al. (2020) have shown that children may know how to protect themselves online, but they lack objective knowledge of how to keep themselves safe from the dangers lurking on the Internet. Nowadays, students aged 7 to 11 (first to fourth grade elementary school students) can disclose their personal data in different ways, for instance by playing computer games that require them to enter personal data. Parents should be discovering the Internet together with their children, and they should negotiate the rules for Internet use (Gračanin, 2019).

Changes in parents' attitudes towards children using the Internet/technology, as well as towards the issue of online safety, are the result of generational changes (Baby boomers, Generation X, Generation Y and Generation Z). Baby boomers are the generation of people born between 1946 and 1964. They largely received information through television and telephone. Generation X is the generation born between 1965 and 1976, namely the generation that "invented" the Internet, and is nowadays focused on the media. Generation Y is the generation of people born between 1977 and 1994. Members of Generation Y are also called "Millennials". They are tech-savvy and prefer email communication over face-to-face interactions. In addition, they are active in the virtual world, virtually connected to online media, and they use the Internet through a variety of digital devices (Tapscott, 2012). The youngest generation making up the world today is Generation Z, consisting of all those born after 1995; therefore, it can be assumed that members of Generation Y are the parents of Generation Z children (Tapscott, 2012).

Teachers are one of the first people children talk to about their problems. Consequently, teachers have the ability to help children with their problems related to using the Internet, as well as about how they can protect themselves online. This primarily refers to data security and the safety of those who use such data (Lekcija_Sigurnost na Internetu, n.d.). Many threats exist online, such as spam, viruses, Internet scams and malware, and every child should be aware of these threats. Even though we can find the number of online safety rules, it is debatable how many people even know such rules exist. Therefore, the aim of this research was to examine the awareness of online safety of students from one Croatian city and its nearby village according to different predictors/factors or sociodemographic or education variables.

Participants and methods

The participants in the research were first to fourth graders of "Šimun Kožičić Benja" Elementary School in the Croatian city of Zadar (n=66) and "Braća Ribar" Elementary School in nearby village of Posedarje (n=53, total of 119 participants). Of the 66 participants in the city, 21 were first-graders, 14 second-graders, 16 third-graders and 15 fourth-graders, while of the 53 in the village, 17 were first-graders, 6 second-graders, 15 third-graders and 15 fourth graders.

For the research purposes, a questionnaire consisting of 18 questions was created, with 17 closed-ended questions, and one open-ended question (**Appendix 1**). We obtained consent for the children to participate in the study from the teachers, the principals of both elementary schools, and the parents. The questionnaire was approved by the Ethics Committee of the School of Humanities and Social Sciences in Split, File No. 2181-190-00-1-19-0008. The survey was created by a master's student (A.B.) and reviewed by her mentor (S.T.). The calculation of the sample size was not made in advance. Research data from paper-based questionnaires were collected physically in the period from January to March 2019. The collected data were processed in Excel, and the χ^2-test was performed. Specifically, descriptive statistics (percentages of the responses) were used for 10 questions and the χ^2-test was used to calculate the results. A statistical significance was set at α=0.05 ($P < 0.05$).

Results

A total of 119 students participated in the research. Of them, 44 (37.0%) used their computer from one to more than three hours a day, and 88 (73.9%) used their cell phones from one to more than three hours a day. YouTube was used by 57 respondents (64.8%).

Most students (n=51, 42.9%) spent one hour a day on the Internet (**Table 1**). Only 3 students (5.6%) attending school in the village and 7 students (10.6%) attending school in the city did not use the Internet. Students who stated that they did not use the Internet, were categorized accordingly.

Table 1. Time spent on computers, cell phones and the Internet, and the purpose for which the Internet was used by students attending the first four grades (N = 119)

Questions for students	Possible answers	No. (%) of students			*P**
		Total (n = 119)	Village (n = 53)	Village (n = 66)	
How much time a day do you spend on your computer?	1 hour	32 (26.9)	20 (37.7)	12 (18.2)	0.318
	2 hours	6 (5.0)	3 (5.7)	3 (4.6)	
	3 hours	4 (3.4)	1 (1.9)	3 (4.6)	
	More than 3 hours	2 (1.7)	0 (0.0)	2 (3.0)	
	I do not use a computer	75 (63.0)	29 (54.7)	46 (69.7)	
How much time a day do you spend on your cell phone?	1 hour	54 (45.4)	28 (52.8)	26 (39.4)	0.243
	2 hours	21 (17.6)	11 (20.8)	10 (15.2)	
	3 hours	9 (7.6)	3 (5.7)	6 (9.1)	
	More than three hours	4 (3.4)	3 (5.7)	1 (1.5)	
	I do not use a cell phone	31 (26.1)	8 (15.1)	23 (34.8)	
How much time a day do you spend online?	1 hour	51 (42.9)	27 (50.9)	24 (36.4)	0.294
	2 hours	15 (12.6)	7 (13.2)	8 (12.1)	
	3 hours	10 (8.4)	3 (5.7)	7 (10.6)	
	More than 3 hours	7 (5.9)	5 (9.4)	2 (3.0)	
	I do not use the Internet	36 (30.3)	11 (20.8)	25 (37.9)	
For what purposes do you use the Internet the most?	Games	23 (19.3)	11 (20.8)	12 (18.2)	0.685
	Learning	27 (22.7)	14 (26.4)	13 (19.7)	
	YouTube	57 (47.9)	25 (47.2)	32 (48.5)	
	I do not use the Internet	12 (10.1)	3 (5.7)	9 (13.6)	

*χ2-test, comparison of response frequency when comparing the village and the city.

The frequency of online gaming in our sample of elementary school students is shown in **Table 2**. 28.6% students played every day, and 71.4% did not play at all. With regard to frequency of online gaming there was no statistically significant difference between the students from the village and the city.

Table 2. Frequency of online gaming by students attending the first four grades (N = 119)

Questions for students	Possible answers	No. (%) of students			*P**
		Total (n = 119)	Village (n = 53)	Village (n = 66)	
Do you play online games?	Yes	79 (66.4)	38 (71.7)	41 (62.1)	0.366
	No	40 (33.6)	15 (28.3)	25 (37.9)	
How often do you play online games?	Every day	34 (28.6)	18 (34.0)	16 (24.2)	0.223
	Once a week	15 (12.6)	10 (18.9)	5 (7.6)	
	Several times a week	32 (26.9)	14 (26.4)	18 (27.3)	
	Once a month	3 (2.5)	0 (0)	3 (4.5)	
	I do not play online games	35 (29.4)	11 (20.8)	24 (36.4)	
How often do you play online games where you use your name and surname?	Every day	9 (7.6)	5 (9.4)	4 (6.1)	0.652
	Often	5 (4.2)	2 (3.8)	3 (4.5)	
	Sometimes	27 (13.6)	15 (28.3)	12 (18.2)	
	Never	78 (65.5)	31 (58.5)	47 (71.2)	

There was also no statistically significant difference between the village and city students' perceptions and attitudes regarding personal data protection (**Table 3**). In contrast to that,

Table 3. Data protection and veracity pertaining to the students attending the first four grades (N = 119)

Questions for students	Possible answers	No. (%) of students			*P**
		Total (n = 119)	Village (n = 53)	Village (n = 66)	
If someone asks you to reveal your password to them, will you do it?	Yes	2 (1.7)	1 (1.9)	1 (1.5)	0.575
	No	117 (98.3)	52 (98.1)	65 (98.5)	
Where do you mostly meet new friends?	At school	93 (78.2)	44 (83.0)	49 (74.2)	0.411
	At a friend's birthday party	8 (6.7)	3 (5.7)	5 (7.6)	
	Online	4 (3.4)	3 (56.7)	1 (1.5)	
	Playing sports	14 (11.8)	3 (56.7)	11 (16.7)	
Is everything you find online true?	Yes	15 (12.6)	9 (17.0)	6 (9.1)	0.312
	No	104 (87.4)	44 (83.0)	60 (90.1)	

there was a statistically significant difference ($P < 0.038$) between the groups of students regarding the knowledge of personal data protection and online safety (**Table 4**). Of the students attending the school in the village, 25/53 (47.2%) gave the correct answer, while 26 (49.1%) believed that personal data mostly include name and surname and cell phone number. One student answered that personal data were only one's photographs, and one student answered that personal data were only home addresses.

Table 4. Student knowledge of online safety (N = 119)

Questions for students	Possible answers	No. (%) of students			*P**
		Total (n = 119)	Village (n = 53)	Village (n = 66)	
What will you do if someone you meet online invites you to meet them in person?	I will not do it	85 (71.4)	34 (64.2)	51 (77.3)	0.693
	I will definitely do it	8 (6.7)	5 (9.4)	3 (4.5)	
	I will ask friends for their opinion and do as they advise me.	12 (10.1)	6 (11.3)	6 (9.1)	
	If I get the impression they are ok, I will do it.	14 (11.8)	8 (15.1)	6 (9.1)	
If a stranger asks for your information, will you give it to them?	No	106 (89.1)	45 (84.9)	61 (92.4)	0.379
	Yes	3 (2.5)	3 (5.7)	0 (0)	
	I don't know, I need to think about it	10 (8.4)	5 (9.4)	5 (7.6)	
Do you know how to protect your personal data online?	No	81 (68.1)	37 (69.8)	44 (66.7)	0.867
	Yes	38 (31.9)	16 (30.2)	22 (33.3)	
What are personal data?	All the data listed below	72 (60.5)	25 (47.2)	47 (71.2)	0.038
	Name, surname, phone number	40 (33.7)	26 (49.1)	14 (21.2)	
	One's photographs	5 (4.2)	1 (1.9)	3 (4.5)	
	Home address	3 (2.5)	1 (1.9)	2 (3.0)	
What will you do if you find out that the person you have been talking to online is not who they say they are?	I will tell my parents	99 (83.2)	43 (81.1)	56 (84.8)	0.177
	I will keep talking to them and I will not tell anyone anything	6 (5.0)	5 (9.4)	1 (1.5)	
	I will stop talking to them and I will not tell anyone anything	14 (11.8)	5 (9.4)	9 (13.6)	

Discussion

According to results from this study, first to fourth graders from elementary schools in rural and urban areas use Internet to great extent but are mostly unaware of the requirements for online safety. One of the key requirements for online safety is protection of personal data. While we detected some differences in understanding of what the personal data is between students from rural and urban areas, school-children do not seem to be aware how easily the personal data can be revealed and compromised when using various Internet applications. As different modes for interaction with strangers via Internet continually emerge, lack of awareness of online safety becomes an issue that should be properly addressed.

We found that there were many students who did not know how to protect their personal data online or what personal data are. According to the Croatian elementary school curriculum for computer science (Ministarstvo znanosti i obrazovanja, 2018), students learn about personal data security and protection in all grades. Students have been able to choose the subject of computer science as an elective subject since the 2020/2021 school year. In the Republic of Croatia curriculum for elementary and high schools it is specifically stated that this is "responsible and effective communication and cooperation in the digital environment" (Ministarstvo znanosti i obrazovanja, 2018). In addition to online

safety being part of the Computer Science Syllabus, parents should also be responsible for instilling online safety measures for their children.

The results of our research are in agreement with the results of the research conducted by the Agency for Electronic Media and UNICEF (Dokler, 2017), which found that YouTube is very popular with children in Croatia, including elementary school students. In addition, a research study conducted in 2017 (Dokler, 2017) also showed that more than a tenth of all respondents met in person with someone they met online, and this was done by 3% of children aged between nine and eleven years. In our research, of the total number of first to fourth grade students of the village and city elementary schools (119 students), 5 students from the village and 3 from the city (8.6%) expressed their intention to see in person someone they met online.

A research study on online safety and risks for elementary school students, conducted by the University of Chester, Great Britain, has shown that teaching about risks and online safety in schools has a positive impact on preventing risks and increasing online safety. In addition, the study has also shown that boys searched for inappropriate content more than girls, but were less at risk than girls (Boulton et al., 2016). It is to be expected that nowadays, many more children use the Internet compared to their counterparts 10–20 years ago. A study conducted in the Great Britain (Livingstone, 2003) showed that 75% of children in the sample aged between seven and sixteen years used the Internet. According to results from this study, that is lower frequency compared with their peers in Croatia. Livingstone's study has also shown that every fourth child aged between seven and sixteen years were harassed online, and only a few informed their parents about it. We found that on average 84% students from our sample would inform their parents in case they suffer online harassment.

The most interesting finding of this study is that there was no difference between children from rural and urban areas considering their knowledge of online safety. Since the sample included only a small number of elementary school students from the city of Zadar and a nearby village, it cannot be concluded that the same trend is apparent in other parts of Croatia or globally. Therefore, a future study encompassing more regions within as well as outside of Republic of Croatia would be informative in this respect.

A limitation of this research is that the frequency of the use of social media or desktop and mobile communication applications by the students was not examined. That was due to the conditions of use of social media according to which children under 13 are not allowed to have accounts. Other limitations include small sample size, possibility that children gave answers to the paper-based survey questions that teachers and parents would find appropriate contributing the social desirability bias, and perhaps some other socioeconomic factors which could not be accounted for due to study design.

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