Marija Šmit
Centar tehnike Ltd.
31000 Osijek, Croatia
marija.jelic.smit@gmail.com

Antun Biloš
Josip Juraj Strossmayer
University of Osijek
Faculty of Economics in Osijek
31000 Osijek, Croatia
abilos@efos.hr

Davorin Turkalj
Josip Juraj Strossmayer
University of Osijek
Faculty of Economics in Osijek
31000 Osijek, Croatia
davorin@efos.hr

JEL: M310, O330
Original scientific article
https://doi.org/10.51680/ev.34.2.5

Received: February 18, 2021
Revision received: May 14, 2021
Accepted for publishing: May 31, 2021

INTERNET USAGE AND RELATED BEHAVIOR PATTERNS OF PRIMARY SCHOOL CHILDREN: PERCEIVED DIFFERENCES BETWEEN GIRLS AND BOYS IN CROATIA

Abstract

Purpose: Children in the Republic of Croatia are, as everywhere else in the world, active users of information and communication i.e. digital technologies, which is reflected in their daily habits and routines in the digital environment. The purpose of this paper is to find out if there are gender-based differences in behavior and established habits in the digital environment between boys and girls.

Methodology: Quantitative research was carried out using the CAWI method among 400 parents or guardians in the Republic of Croatia who provided answers on (their own) children of primary school age. This paper focuses on the segment of children and their gender, i.e. the existence (or the lack of existence) of differences in the behavior of boys and girls in a digital environment. The statistically significant differences are demonstrated by testing various variables between the two above-mentioned segments.

Results: The research results indicate that, on average, girls and boys start to use the Internet at the same age, approximately at the age of 6. However, there are noticeable differences between the sexes in terms of the habits and in the way they use the Internet.

Conclusion: The conclusion shows that boys more frequently have desktop computers, laptops, and gaming consoles, and prefer to play online games and spend time in the online world, while girls more often post and publicly share photos, video records, and music. They equally use the Internet on weekdays, but boys spend more time on Internet activities on weekends.

Keywords: Internet use, children, digital environment, primary school age, behavior

1. Introduction

With the advent of information and communication technologies, a digital environment changes the way we communicate, how we perform work tasks and how we spend our free time. As digital transformation is changing the world every day, this also affects children on the daily basis, i.e. their behavior in the digital environment. Children's behavior is in a part a reflection of the society in which they are growing up and developing; the effect of digital technologies on them is logical and it is indisputable that the children of primary school age daily use both digital devices and the Internet

for performing various online activities. What has been less researched to date is the issue of whether there are gender-based differences in behavior and established habits in the digital environment. Comprehensive quantitative research, but also the testing of a series of variables between two different segments, girls and boys, will provide an insight into the research problem. Before the research itself, it will be shown whether there are differences in behavior between girls and boys. Other important insights into the interaction between children and digital technologies will be presented as well.

2. Children's behavior in a digital environment

Due to the vast amount of information children receive in the digital environment, but also because they use different parts of the brain to process information than the children born in previous generations, an expression *screenager* is starting to be used for children, i.e. they are considered as persons who are growing up "in front of the screens" (Jukes & McCain, 2007). In other words, modern generations are actually digital natives or "digital children". Spitzer (2018) points out that the term digital native is derived from the term native speaker which describes the fact that a mother tongue is learned differently and a person's command of a mother tongue is different compared to foreign languages.

Nierengarten (2018) points out that in 2011, only 10% of children up to 2 years used mobile devices, and in 2013, this value increased to 38%. In 2015, 97% of children up to 4 years of age used digital devices, and as much as 75% owned some device. According to the research carried out in 2017 in the Republic of Croatia, almost half of the children aged 9 to 11, 2/3 of the children aged 12 to 14, and 3/4 of children aged 15 to 17 can access the Internet whenever they want or need to (HR Kids Online, 2017). Dolovčak (2017) point out that 85% of households with pre-school children own a tablet, while 65% own gaming consoles. Children most often access the Internet via mobile phones/smartphones (Ciboci et al., 2020). Šmit (2020) states that 90% of children use mobile devices on a nearly daily basis, and 75% of them own a mobile device for personal use. 84% of children use a desktop computer or a laptop and 59.30% use a tablet. Kotrla Topić and Perković Kovačević (2015) provide in their research an insight into the relationship between socioeconomic characteristics and ownership of digital devices in the Republic of Croatia. The authors point out that the only reason why only half of the surveyed families own a tablet is due to their lower socioeconomic status.

It is certain that children's interactions with digital technology is all-pervasive, but there are differing opinions on the effects of such digital interaction. UNICEF (2017) states in its report that not using digital devices at all, just like their overuse, has a tendency towards negative effects, whereas moderate use has positive effects. Straker et al. (2009) point out positive effects of using digital devices, e.g. the role of computers in improved cognitive development and school achievements, reduced obstacles in social interaction, improving one's fine motor skills, etc. Radesky et al. (2015) state that digital devices may increase early literacy in children by their advanced features, if, for example, one uses educational applications or e-books for reading. However, most of the scientists agree on one thing, and that is the age limit, i.e. recommendations that the children should not use digital devices before the age of two. The same source also states that small children need to develop an inner self-regulation mechanism and that the benefits from digital devices are short-term, but also harmful for later social-emotional outcomes. On the other hand, Nierengarten (2018) points out negative aspects and effects on sleep, while Miličić (2018) warns of eye-sight problems. Badrić and Prskalo (2010) make a connection between the use of digital devices and reduction in physical activity among children. Nierengarten (2018) also mentions parent-child interaction problems associated with the overuse of technology, while Ribarić (2018) cautions against the negative effects of the free use of digital devices during classes in schools.

2.1 Internet activities children engage in

Duvnjak et al. (2016) noted that children spend 2 hours a day on workdays online and 3 hours a day during the weekend, while Šmit (2020) stated that during the usual workday children most often spend 30 to 60 minutes online (35.3%) and that this time usually increases during an ordinary day on the weekend to 2 to 3 hours (26.3%). Vuletić et al. (2014) established that 92% of participants aged 11 to 18 years give leisure and only 8% school obligations as the main purpose of using the Internet. Haddon and Livingstone (2012) stated that children use the Internet in order to communicate with friends, download various content, and research

material needed for school and studying. The use of ICT in education improves the motivation and attainment of both girls and boys, though the increases are more marked for boys than girls. (Becta, 2008). In the research results, Šmit (2020) also highlighted that watching video content is the activity children most often engage in, or specifically as much as 61.3% of the children on a nearly daily basis. Every day or almost every day, 46.3% of the children exchange messages using messaging services. It is important to note that the crisis caused by the COVID-19 pandemic, which is having an unprecedented effect on all spheres of life, also equally affects the education system and it can be assumed that distant learning classes, which had to start in a very short time, undoubtedly contributed to a completely different ratio related to the use of digital devices and the Internet in general, especially among the youngest population.

With regard to gender differences, the data suggest that male participants show a greater degree of Internet overuse (Üneri & Tanıdır, 2011; Livingstone et al., 2011; Dufour et al., 2016). There are different terms to describe this behavior, such as Internet addiction, pathological Internet use, and problematic Internet use (Yellowlees & Marks, 2007), while Robotić (2015) clarifies that there are lots of ways to use the Internet and therefore it follows that there are also so many different types of addiction on the Internet. As to digital addictions among children, the most common ones are related to playing games. Šmit (2020) notes that children most commonly download games once a month (26%), while they play games with other participants most often once a week (20.8%), as well as individually (30%). 40% of children never play online games with other participants. In 56.3% of situations encountered by children, the game made it possible for the child to communicate with other players. In 44% of situations, the game was downloaded for free, but required purchases to accelerate progress, while in 35.2% of situations, it was impossible to play the game without making purchases in the application despite the fact that the game was advertised as a free-to-play game. Kotrla Topić and Perković Kovačević (2015) state that in most cases the parents allow the children to use only free games and applications. Duvnjak et al. (2016) clarify that only 2.4% of participants in their research spend more than 10 hours a day playing games, but prevention should be focused on these individuals if game playing disrupts other daily functions. Children list entertainment and relaxation as the primary motivation for playing computer games. Lynch (2018) notes that online video gaming is more prevalent amongst boys than girls.

Furthermore, Chak and Leung (2004) pointed out a long time ago that there are gender differences when it comes to the selection of activities the children engage in online, where boys and girls are more attracted to playing games and to online communication, respectively. Boys have a tendency to reveal more personal information on social networks than girls (Fogel & Nehmad, 2009). Many parents of both boys and girls have witnessed striking differences in the way their kids use technology, with their sons generally gravitating to video games and their daughters often spending more of their screen time scrolling on social media (Jargon, 2019). Girls use social networks to communicate with persons from real life, unlike boys who often communicate with persons they do not know. Girls use social networks more frequently to communicate with friends (Fairlie, 2016), while boys find the purpose of using social networks in social compensation, learning, social identity building and leisure (Vlček, 2016). Šmit (2020) states that 27.3% of the children use social networks every day or almost every day. The same source also states that 48% of primary school children covered by the research never use social networks.

3. *Child safety and the implementation of safety measures*

In addition to active involvement in the Internet activities of their children, it is also recommended that parents implement restrictive measures depending on the age of the child. Almost 70% of participants state that the parents do not know a single password on the digital devices (Duvnjak et al., 2016). Šmit (2020) provides figures referring to the means the parents most frequently use for blocking or filtering certain websites (44.5%) and monitoring websites or applications used by the child (43.8%), as well as ad blocking software usage (41.5%). The application that sets limits to the time a child can spend on the Internet (28%) and parental control software that limits people who a child can come into contact with online (26.3%) are the applications least frequently used by the parents. Parents most frequently check the purchases made by their children within the applications (20.3%), although 19.5% of respondents never check these. What the greatest number of respondents fail to do is to check their child's e-mail messages or messages in some of the messaging applications. 23.3% of respondents do this very often, while 13% of them do

it all the time. 8.8% of respondents stated that they never check the websites their child visited. In their research, Lagator et al. (2018) highlight the fact that parents are stricter with their daughters and more permissive when it comes to their sons, i.e. they set more rules for their daughters and girls are more closely supervised when using the Internet. Haddon and Livingstone (2012) confirm that parents of daughters are more familiar with the websites and content they visit online compared to parents of sons, and parental monitoring of their children's Internet use takes place more frequently in the case of daughters than sons (Meehan & Hickey, 2016). HAKOM (2017) warns that having a clear and open conversation with a child is most important for the protection of the child online, even when parents do not suspect that there is a problem. Brezinšćak (2017) states that instead of direct supervision, an open relationship between the parent and the child and set rules are much more important for child safety, especially considering the fact that the children today can use the Internet without their parents present. As the child grows, supervision of online activities becomes less and less useful and starts to represent a threat to the relationship with the child, which is not the case with talking. According to Lagator et al. (2018), 90.2% of children claim that they follow their parent's rules referring to Internet usage. Radesky et al. (2015) point out the importance of Internet usage and parental (or any adult) monitoring and supervision during that activity, because when a parent is involved in their child's activities, it becomes normal for the child to talk about its experiences, whether positive or negative.

4. Research

The respondents of the conducted research were parents (or other household members familiar with daily habits) of the primary school age children because children at this age usually start to use digital devices independently and this very fact comes to the fore as an extremely sensitive group was under study. Children become curious to explore digital technology in their free time, while on the other hand, as of the 2020-2021 school year, the School for Life education reform (Divjak et al., 2019) requires the children in the Republic of Croatia to use digital devices in their educational institutions and when doing their homework, which consequently significantly changes their digital habits. The study included 400 respondents. According to the age structure, respondents were divided into two categories, i.e. younger (25-40) and older (41-64), and a higher percentage of respondents belonged to the older age group. 66% of female and 34% of male respondents took part in the study. It is not unusual that women, in general, participate more in the studies, especially in the cases where one needs to be familiar with children's habits, and these are mostly mothers. Considering the relationship with the child they were filling out the questionnaire for, as expected, the majority of respondents declared themselves as child's parents (80.3%).

4.1 Study methodology

The study methodology is based on the methodology of one part of the study by Lupiáñez Villanueva et al. (2016) "*Study on the impact of marketing through social media, online games and mobile applications on children's behavior*", which was carried out as part of the EU *Consumer Programme* by the European Commission in 8 EU member states. The representative research quality is based on 6 regions of the Republic of Croatia in which the study was carried out and according to gender and age groups.

Quantitative research was carried out using the CAWI method among the members of the HrNation panel. It took around 20 minutes to complete a highly structured quantitative questionnaire. Online research was carried out in the period between 1 and 21 March 2019. The goal of the study was to collect opinions on the following aspects:

- How the children use the Internet-access and devices;
- Parental perceptions of children's digital skills;
- Supervision of use and safety: active and restrictive;
- Perception of risks, seriousness of risks and vulnerability;
- Problematic online practices;
- Safety measures;
- Digital skills of the parents;
- Sociodemographic information.

The conducted study examined not only the differences in the habits of children, but also the effects of problematic marketing practices on the children, depending on their characteristics, including gender, age, socioeconomic status and family communication patterns, Internet skills, the use of digital devices and the impact of advertising on them. This paper focuses precisely on the children gender seg-

ment, i.e. the existence (or the lack of existence) of differences in the behavior of boys and girls in a digital environment. The statistically significant differences will be demonstrated by testing various variables between the two abovementioned segments. In order to make the analysis easier, and finally to reach certain conclusions on the presented research problem, the following research questions are asked:

- RQ1: Is there a difference between girls and boys in the average age when they first use the Internet?
- RQ2: Do girls and boys use the same digital devices to access the Internet?
- RQ3: Is there a difference between girls and boys in terms of the ownership of digital devices for their use?
- RQ4: Do girls and boys spend the same amount of time using the Internet during the workday?
- RQ5: Do girls and boys spend the same amount of time using the Internet during the weekend?
- RQ6: Is there a difference between girls and boys in terms of the choice of online activities in which they engage on a daily basis?

4.2 Study results

The study included a total sample of 400 parents or guardians who provided answers for (their own) primary school age children. According to respondent demographic characteristics (age, gender, location), the collected data are considered to be representative at the level of the Republic of Croatia. Answers were collected for 189 girls and 211 boys, i.e. in the total sample, there were 47.3% answers referring to girls and 52.8% to boys. The sample for both genders ranges between 6 and 14 years (i.e. primary school age) and there is no difference in average age between these two groups. Consequently, segments are homogeneous and mutually comparable.

RQ1:

Looking at the age as an important criterion on which children's behavior in the digital environment depends, leads to the need to know at what age a child first uses the Internet. As expected, the largest number of children came into contact with the Internet at senior preschool age, i.e. at the age of 5 (18%), but we also need to highlight the data that as much as 8.1% of children came into contact with the Internet when they were under two years old. Such information confirms assumptions and the opinion telling us that children are beginning to use the Internet at an increasingly earlier age.

The independent samples t-test shows that there is no statistically significant difference between boys and girls in the average age of their first Internet use, i.e. boys and girls come into contact with the Internet at approximately the same age, on average, when they are around 6 years old (x_M=5.92; x_F=5.70; t=-0.918; df=398; p=0.359).

RQ2:

In terms of digital devices children use to access the Internet, they most frequently use mobile phones or smartphones (91%), and desktop computers and laptops (84%). 59% and 29% of them access the Internet through tablets and gaming consoles, respectively. An intriguing piece of information is that only 8.3% of children use a smartwatch to access the Internet.

The Chi-squared test is used to determine whether girls and boys use the same digital devices to access the Internet. A noticeable difference can be seen in the use of a gaming console, where 40.8% of boys and 17.5% of girls use a gaming console to access the Internet (χ^2=29.606; df=2; p<0.001). According to the Chi-squared test, there is a statistically significant difference in the use of gaming consoles, i.e. the data show that compared to girls, a greater number of boys use a gaming console to access the Internet.

No statistically significant difference was detected in the use of other digital devices.

RQ3:

As to the ownership of digital devices for their use, the smallest percentage was recorded for the children who own their own TV set or a desktop computer or a laptop, because such devices are not expected to be owned by individual family members. However, 19.8% of the children do have their own TV sets and 39% of them own a desktop computer or a laptop. The highest percentage was recorded for the children who own a mobile phone or a smartphone (75%).

By comparing the ownership of different types of digital devices between girls and boys, it was found that a difference only exists with regard to the pos-

session of a desktop computer or a laptop, and a gaming console. According to the Chi-squared test, a statistically significant difference was detected in terms of the ownership rate for a desktop computer or a laptop, where a higher percentage of boys (44.1%) own a device in comparison with girls (33.3%) (χ^2=4.836; df=1; p=0.028). Also, a statistically significant difference was detected in the ownership rate of a gaming console, where again a higher percentage of boys (33.2%) own a console compared to girls (14.8%) (χ^2=4.836; df=1; p=0.028).

On the basis of answers to RQ3, it was determined that there is a difference in the ownership of digital devices between boys and girls, i.e. a higher percentage of boys own personal desktop computers or laptops and gaming consoles.

Table 1 Devices for personal use

Devices for personal use	Computer (desktop/laptop)		Gaming console	
	Boys	Girls	Boys	Girls
Yes	44.1%	33.3%	33.2%	14.8%
No	55.9%	66.7%	66.8%	85.2%
Total	100%	100%	100%	100%

Source: Authors' research

RQ4:

The time that children spend in front of digital screens is a popular topic in the modern scientific literature. Because of this, the term screen time, i.e. the time spent in front of a screen of any device was introduced. During the workday, the highest percentage of children in the Republic of Croatia spend from 30 minutes to 1 hour online (35.3%). The American Academy of Pediatrics recommends that preschool children spend exactly this amount of time online, with a gradual increase in time for school age children, in accordance with the age and school obligations (Attai et al., 2020). 31.3% of the children use the Internet for 1 to 2 hours, and 10% of the children use the Internet for less than 30 minutes.

According to the Chi-squared test, there is no statistically significant difference between girls and boys when looking at the time they spend using digital devices during a normal workday (χ^2=8.152; df=5; p=0.148).

RQ5:

Furthermore, according to the Chi-squared test, there is no statistically significant difference between girls and boys when looking at the time they spend using digital devices during a normal weekend day. 19% of boys and 12.2% of girls spend between 3 and 5 hours a day online, whereas 8.5% of boys and 4.2% of girls spend more than 5 hours a day online. According to the above stated, it can be concluded that on average, compared to the girls, the boys use the Internet more during the standard weekend day (χ^2=14.648; df=5; p=0.012).

Table 2 Frequency of Internet usage

Frequency of Internet usage	On a regular school day		On a regular weekend day	
	Boys	Girls	Boys	Girls
Less than half an hour	10.0%	11.6%	4.3%	5.3%
Between half an hour and 1 hour	33.6%	37.0%	19.4%	22.2%
Between 1 and 2 hours	29.4%	33.3%	28.9%	22.8%
Between 2 and 3 hours	18.5%	14.3%	19.9%	33.3%
Between 3 and 5 hours	6,6%	1.6%	19.0%	12.2%
More than 5 hours	1.9%	2.1%	8.5%	4.2%
Total	100%	100%	100%	100%

Source: Authors' research

RQ6:

After examining the time children spend using the Internet, it is important to differentiate between the Internet activities they engage in. Quantitative research data show that watching video content is the activity which the children most often engage in, specifically as much as 61.3% of the children on a nearly daily basis. Every day or almost every day, 46.3% of the children exchange messages by using messaging services and according to the above percentage, it is the second most frequent activity among children. 27.3% of the children use social networks every day, and only 18.0% of them use the Internet every day or almost every day when doing their homework.

By comparing a series of activities performed online by children, a statistically significant difference between boys and girls was detected only when performing one of the following three activities: playing online games with other participants, spending time in the virtual world, posting and public sharing of photographs, videos, and music.

The Chi-squared test shows a statistically significant difference between girls and boys in playing online games with other participants (χ^2=30.029; df=5; p<0.001). 22.3% of boys and 7.4% of girls play online games with other participants every day or almost every day, whereas 25.65% of boys and 15.3% do that at least once a week (but not every day). According to the above, boys play online games with other participants more often than girls, whereas 31.8% of boys and 49.2% of girls never do that.

The Chi-squared test shows a statistically significant difference between girls and boys in spending time in the virtual world (χ^2=34.111; df=5; p<0.001). 18% of boys and 5.8% of girls spend time in the virtual world every day or almost every day, whereas 21.8% of boys and 10.1% of girls do that at least once a week (but not every day). According to the above, boys spend time in the virtual world more frequently than girls, whereas 32.7% of boys and 55% of girls never do that.

The Chi-squared test shows a statistically significant difference between girls and boys (χ^2=11.680; df=5; p=0.039) in posting and public sharing of photographs, videos, or music (including social networks and messaging applications). 3.8% of boys and 9.0% of girls do that every day or almost every day, which shows that girls post and publicly share photographs, videos, or music more frequently than boys.

Table 3 Internet activities

Internet activities	Play games with other people online		Spend time in a virtual world		Put (or post) photos, videos or music online to share with others	
	Boys	Girls	Boys	Girls	Boys	Girls
Every day or almost every day	22.3%	7.4%	18.0%	5.8%	3.8%	9.0%
At least once a week (but not every day)	25.6%	15.3%	21.8%	10.1%	11.8%	11.6%
At least once a month (but not every week)	9.5%	11.1%	10.0%	8.5%	12.8%	11.1%
Less than once a month	6.2%	10.1%	7.6%	11.6%	12.3%	9.5%
Never	31.8%	49.2%	32.7%	55.0%	51.7%	56.6%
DK/DA	4.7%	6.9%	10.0%	9.0%	7.6%	2.1%
Total	100%	100%	100%	100%	100%	100%

Note: DK/DA means 'don't know'/'don't answer'.
Source: Authors' research

4.3 Discussion

Through answers to RQ1 no statistically significant difference was found between girls and boys in terms of the average age of their first Internet use. By means of RQ2 it was determined that more boys than girls use gaming consoles to access the Internet, and with RQ3 it was determined that, compared to girls, a higher percentage of boys own

a desktop computer or a laptop, or a gaming console. RQ4 and RQ5 show that there is no difference between the genders regarding the time they spend using digital devices during the usual workday, but during the weekend boys spend more time on the Internet than girls. In the National Research on the Safety of Children aged 9 to 17 on the Internet: HR Kids Online it was stated that no statistically significant difference between girls and boys was found in relation to the time spent on the Internet (Ciboci et al., 2020), which is a more general piece of information compared to that obtained in answers to RQ4 and RQ5, where a certain difference was detected in the time related to the weekend days. Furthermore, responses to RQ6 revealed a statistically significant difference between boys and girls when performing only three online activities. The first activities is playing online games with other participants, where boys play online games with other participants more frequently than girls. In this regard, boys in the Republic of Croatia are no different than boys in other countries, considering that boys outnumber girls when it comes to playing multiplayer online games (Lynch, 2018). Furthermore, there is a noticeable difference in spending time in the virtual world, where boys also engage in this activity more frequently than girls. Ciboci et al. (2020) identified that boys participate in a somewhat larger number in certain online activities compared to girls, and they associate this fact with greater media literacy of boys and the assumption that the more children engage in certain activities, the more skillful i.e. more competent they become, and therefore they become more self-confident when it comes to such use. What the girls do more frequently than boys is posting and public sharing of photographs, video records and music. In general, girls prefer social and creative use of ICT and like to work in a collaborative manner when using technology for learning, both in formal and informal context (Becta, 2008), and on the basis of this, it can be concluded that the girls have a greater preference for more frequent usage of social networks. In addition to the Republic of Croatia, a trend in the different choice of Internet activities in which boys engage compared to those in which the girls engage was also recognized elsewhere in the world and many parents attest thereto, where boys generally prefer playing video games and girls spend more time using social networks. Emerging research indicates that brain differences between males and females help account for the split (Jargon, 2019). Furthermore, the same source states that studies show that the aforementioned difference is neurological in nature, which in a way explains the difference in the choice of Internet activities between girls and boys and highlights that the identical difference in preferences is present in adults, i.e. men and women.

5. Conclusion

This paper is focused on a currently less researched area related to the digital influence on children's behavior, i.e. the existence of differences between girls and boys in their well-established everyday habits in the digital environment. Quantitative scientific research was carried out using the CAWI method between the members of the *HrNation panel*. The respondents were persons who live in a household with a child (aged 6 to 14) who uses the Internet, and it was usually one of the parents or other persons who are familiar with child's everyday habits. The study included a sample of N=400.

Comprehensive quantitative research generated data from which it can be seen that primary school-aged children in the Republic of Croatia are in general active users of information and communication, i.e. digital, technologies, which is evident in their common routines and the time they spend in the digital environment. While testing a series of variables between different segments, girls and boys, it provided answers to questions posed for the purpose of revealing differences (or the lack thereof) between genders. It was determined that there is no difference between boys and girls in the average age of the first Internet use, i.e. both boys and girls come into contact with the Internet when they are, on average, around 6 years old. The only difference between the genders is in the type of digital devices used to access the Internet, but only regarding the use of a gaming console, where more boys than girls use a gaming console. Regarding the ownership of digital devices, boys own desktop computers, laptops or gaming consoles more frequently than girls. When looking at the time spent on Internet activities, it is evident that there is no statistically significant difference between girls and boys in terms of the time they spend using digital devices during a normal workday, but there is a difference in the use of the Internet on weekends, i.e. compared to girls, boys on average spend more time online on the weekend. The difference between the genders was also noted in the choice of Internet activities

in which the children engage, where boys play online games with other participants and spend time in the virtual world more frequently than girls, who post and publicly share photos, videos, and music more frequently than boys.

The research was subject to certain limitations, such as the choice of the research method, i.e. the selection of the CAWI method, which made it more difficult to include persons of a lower educational level and from rural areas. Furthermore, the study covered more female than male respondents. However, in specific studies such as this (children's behavior), women (specifically mothers) are still more inclined to participate and provide comprehensive and full information than men. Regardless of this limiting factor, the study is representative on the gender level.

The study was carried out before the newly created situation caused by the COVID-19 pandemic, which caused significant changes to everyday life, including the everyday life of primary school-aged children. The obtained data point to the fact that children in the Republic of Croatia use digital technologies much less for learning and fulfilling their school obligations than for activities in their free time, but a sudden urge to introduce and continuously hold distance learning classes caused a drastic shift in the abovementioned ratio. It is difficult to foresee future trends, which will greatly depend on the epidemiological situation which is constantly changing, but it is obvious that certain changes have already occurred in the way of functioning, especially for children, since education is currently undergoing significant changes. Regardless of whether the instruction will take place in educational facilities or through digital tools from homes of both students and their teachers, it is important to value the use of information and communication technology as a privilege of the digital age in which we live. In addition to teaching processes, it would also be good to investigate the way in which children today, in this newly arisen situation, use the digital technologies in their free time and see if it enables them to cope more easily with potential problems they encounter.

The recommendation for further research is to investigate and find out whether boys and girls cope equally with the challenges caused by the pandemic and in what way, to what extent and by what activities digital technology can help them in the future.

References

1. Attai, P., Szabat, J., Anzman-Frasca, S. & Ling Kong, K. (2020). Associations between Parental and Child Screen Time and Quality of the Home Environment: A Preliminary Investigation. *International Journal of Environment Research and Public Health*, *17*(17), 1-11. https://doi.org/10.3390/ijerph17176207
2. Badrić, M. & Prskalo, I. (2010). *Participiranje tjelesne aktivnosti u slobodnom vremenu djece i mladih*. Faculty of Teacher Education of the University of Zagreb.
3. Becta (2008). *How do boys and girls differ in their use of ICT?*. British Educational Communications and Technology Agency. https://dera.ioe.ac.uk/8318/1/gender_ict_briefing.pdf
4. Brezinšćak, T. (2017). *Kako sačuvati sigurnost djece koja odrastaju u online svijetu?*. Zagreb Child and Youth Protection Center. https://www.poliklinika-djeca.hr/aktualno/teme/obiljezavamo-dan-sigurnijeg-Interneta-kako-sacuvati-sigurnost-djece-koja-odrastaju-u-online-svijetu
5. Ciboci, L., Ćosić Pregrad, I., Kanižaj, I., Potočnik, D. & Vinković, D. (2020). *Nacionalno istraživanje o sigurnosti djece na Internetu*. HR Kids Online. http://hrkids.online/prez/EUKidsOnlineHRfinal.pdf
6. Chak, K. & Leung, L. (2004). Shyness and locus of control as predictors of Internet addiction and Internet use. *CyberPsychology & Behavior*, *7*(5), 559-570. https://doi.org/10.1089/cpb.2004.7.559
7. Dolovčak, I. (2017). *Koliko vremena vaša djeca provode pred ekranima, mobitelima, tabletima i koje su posljedice?*. Roditelji.hr. http://www.roditelji.hr/obitelj/koliko-vremena-vasa-djeca-provode-pred-ekranima-mobitelima-tabletima-koje-su-posljedice
8. Dufour, M., Brunelle, N., Tremblay, J., Leclerc, D., Cousineau, M. M., Khazaal, Y., Legare, A. A., Rousseau, M. & Berbiche, D. (2016). Gender Difference in Internet Use and Internet Problems among Quebec High School Students. *The Canadian Journal of Psychiatry*, *61*(10), 663-668. https://doi.org/10.1177/0706743716640755
9. Duvnjak, I., Jukić, R., Milić, M., Ručević, S., Šincek, D. & Tomašić Humer, J. (2016). *Izvještaj istraživanja: Safer Internet Centre Croatia: Making Internet a good and safe place* (CEF-TC-2014-1 005). Josip Juraj Strossmayer University in Osijek, Faculty of Humanities and Social Sciences.
10. Fairlie, R. W. (2016). Do Boys and Girls Use Computers Differently, and Does It Contribute to Why Boys do Worse in School Than Girls?. *The B.E. Journal of Economic Analysis and Policy*, *16*(1), 59-96. https://doi.org/10.1515/bejeap-2015-0094
11. Fogel, J. & Nehmad, E. (2009). Internet social network communities: Risk taking, trust, and privacy concerns. *Computers in Human Behavior*, *25*(1), 153-160. https://doi.org/10.1016/j.chb.2008.08.006
12. Haddon, L. & Livingstone, S. (2012). *EU Kids Online II: Enhancing Knowledge Regarding European Children's Use, Risk and Safety Online* (D1.6 Final Management Report). EU Kids Online.
13. HAKOM (2017). *Kako zaštititi dijete u svijetu Interneta, mrežnih tehnologija i mobilnih telefona.* Croatian Regulatory Authority for Network Industries. https://www.hakom.hr/UserDocsImages/2018/dokumenti/HAKOM_BROSURAmala.pdf
14. Hr Kids Online (2017). *Preliminarni rezultati nacionalnog istraživanja sigurnosti djece i mladih na Internetu.* HR Kids Online. http://hrkids.online/post/second-press
15. Jargon, J. (2019). *Girls vs. Boys: Brain Differences Might Explain Tech Behaviors*. The Wall Street Journal. https://www.wsj.com/articles/girls-vs-boys-brain-differences-might-explain-tech-behaviors-11569317402
16. Jukes, I., McCain, T. & Crockett, L. (2007). *Understanding Digital Kids (DKs): Teaching & Learning in the New Digital Landscape.* The InfoSavy Group.
17. Kotrla Topić, M. & Perković Kovačević, M. (2015). *Young children (0-8) and digital technology. A qualitative exploratory study, national report – Croatia*. Institute of Social Sciences Ivo Pilar & Clinical Hospital Center Osijek.
18. Lagator, I., Šincek, D. & Duvnjak, I. (2018). Roditeljski nadzor i ponašanje djevojčica i dječaka na Internetu. *Život i škola: časopis za teoriju i praksu odgoja i obrazovanja*, *64*(1), 89-103. https://doi.org/10.32903/zs.64.1.7

19. Livingstone, S., Haddon, L., Görzig, A. & Ólafsson, K. (2011). *Risks and safety on the Internet: The perspective of European children. Full findings and policy implications from the EU Kids Online survey of 9-16 year olds and their parents in 25 countries* (Deliverable D4). EU Kids Online.

20. Lupiáñez Villanueva, F., Gaskell, G., Veltri, G., Theben, A., Folkford, F., Bonatti, L., Bogliacino, F., Fernández, L., Marek, E. & Codagnone, C. (2016). *Study on the impact of marketing through social media, online games and mobile applications on children's behavior*. European Commission & London School of Economics and Political Science.

21. Lynch, M. (2018) *Do boys and girls use digital tools differently?*. The Tech Edvocate. https://www.thetechedvocate.org/do-boys-and-girls-use-digital-tools-differently

22. Meehan, S. & Hickey, J. (2016). The Experiences of Irish Parents in the Mediation of Their Children's Use of Internet Connected Devices. *Journal of Psychology and Clinical Psychiatry*, *5*(2), 1-10. https://doi.org/10.15406/jpcpy.2016.05.00277

23. Miličić, N. (2018). *Kako previše vremena provedeno ispred ekrana utječe na vid vašeg djeteta?*. Svjetlost Eye Clinic. https://svjetlost.hr/blog/kako-previse-vremena-provedeno-ispred-ekrana-utjece-na-vid-vaseg-djeteta/3756

24. Nierengarten, M. B. (2018). *Positives and negatives of digital media for children*. Contemporary Pediatrics. https://www.contemporarypediatrics.com/pediatrics/positives-and-negatives-digital-media-children

25. Radesky, J. S., Schumacher, J. & Zuckerman, B. (2015). Mobile and Interactive Media Use by Young Children: The Good, the Bad, and the Unknown. *Pediatrics*, *135*(1), 1-3. https://doi.org/10.1542/peds.2014-2251

26. Ribarić, N. (2018). *Upotreba informacijsko-komunikacijskih tehnologija u nastavi kemije*. Faculty of Science of the University of Split.

27. Robotić, P. (2015). Zamke virtualnog svijeta: zaštita djece i mladih na Internetu i prevencija ovisnosti. *Journal of Applied Health Sciences*, *1*(2), 81-96. https://doi.org/10.24141/1/1/2/1

28. Spitzer, M. (2018). *Digitalna demencija. Kako mi i naša djeca silazimo s uma*. Naklada Ljevak d.o.o.

29. Straker, L., Pollock, C. & Maslen, B. (2009). Principles for the wise use of computers by children. *Ergonomics*, *52*(11), 1386-1401. https://doi.org/10.1080/00140130903067789

30. Šmit, M. (2020). *Djeca u okruženju digitalnog marketinga* [Doctoral dissertation, Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek].

31. Üneri, O. S. & Tanıdır, C. (2011). Evaluation of Internet addiction in a group of high school students: a cross-sectional study. *Düşünen Adam: The Journal of Psychiatry and Neurological Sciences*, *24*(24), 265-272. https://doi.org/10.5350/DAJPN2011240402

32. UNICEF (2017). *Children in Digital World.* UNICEF, Division of Communication https://www.unicef.hr/wp-content/uploads/2015/09/Izvjestaj-HR_12-17_web.pdf

33. Vlček, M. (2016). *Ovisnost o računalu kao suvremena bihevioralna ovisnost* [Graduate thesis, University of Zagreb, Faculty of Education and Rehabilitation Sciences].

34. Vuletić, S., Jeličić, A. & Karačić, S. (2014). Bioetičke konotacije Interneta. *Diacovensia*, *22*(4), 525-558.

35. Yellowlees, P. M. & Marks, S. (2007). Problematic Internet use or Internet addiction?. *Computers in Human Behavior*, *25*(3), 1447-1453. https://doi.org/10.1016/j.chb.2005.05.004