IMPACT OF ICT ON SOME SEGMENTS OF EVERYDAY LIFE OF HIGHSCHOOL POPULATION OF THE CITY OF ZAGREB

Slaven Gašparović[1]
[1] *University of Zagreb, Faculty of Science, Department of Geography, Zagreb, Croatia*

Abstract: Virtual mobility is defined as mobility within the virtual world which is accomplished by use of information and communication technology (ICT) in order to access certain activities without physical access that traditionally required physical access. Nowadays, young people are group of society that is most often engaged in virtual mobility and takes advantages of various opportunities that ICT provides. The paper shows that the greatest influence of ICT on the lives of high school students has on the social interactions and school activities. The aim of this paper was to investigate the impact of ICT on social interactions and school activities of high school population of the City of Zagreb. The research was conducted and analyzed using quantitative, as well as qualitative methods. The data was collected by conducting a survey on 826 high school students of the City of Zagreb. In order to make detail research of specific problems of high school population, high school students of the City of Zagreb were detiaily interviewed through eight focus groups. Thus, the results obtained from the survey were further substantiated by claims from the focus groups. The results showed significant correlation between the use of ICT and academic achievements of students. In addition, students were deeply aware of the negative impact of the internet and mobile phones usage on their school activities. Also, results showed that ICT helped in communicating with friends, but without the effect on the number of friends.

Keywords: ICT, virtual mobility, high school population, City of Zagreb.

1. Introduction

Today, young people are the group of society that is most often engaged in virtual mobility, thereby taking advantage of various opportunities provided by telecommunication and computer technology (ICT) (Livingstone, 2006; Alvarez et al., 2013). Young people use ICT technology by use of computers and mobile devices (smartphones and cell phones). Here, it should be noted that today computers and mobile phones are multi-functional as the Internet can be accessed via mobile devices (smartphones), while the former "classic" telephone conversation can be performed using a personal computer (e.g. via Skype). On the other hand, young people are transport disadvantaged social group often with limited mobility and accessibility to life activities (Gašparović, 2014; Gašparović, 2016). Therefore, young people will often use virtual mobility as a substitute for physical mobility and, under certain circumstances will reduce the impact of transport disadvantage on their everyday lives.

Croatian scientific bibliography lacks studies of interrelationship between ICT and young people thereby providing the motive for this work. Studies are mainly related to ICT as a factor of risk behavior, addiction, and violence on the Internet (e.g. Puharić et al., 2015; Mandarić, 2012; Ružić, 2011). Only rare publications address everyday life of young people (e.g. Nicodemus et al., 2014). It is important to note that there are no references regarding this subject matter on high school students.

The aim of this paper is to investigate the impact of ICT on the selected segments of high school population everyday life. The emphasis is put on the impact of ICT on the school activities of students and their social interactions. In addition, the paper studied differences in the impact of ICT on the selected segments of everyday life with regard to gender. Based on their self-assessments, the surveyed students expressed the importance of ICT in their lives. The paper presents the aspect of possible substitution of existing physical mobility for ICT and the increasing potential of ICT.

2. Theoretical framework and research methodology

Mobility can be defined from several different points of view, which results in the different types of mobility (Kenyon et al., 2002; Larsen et al., 2006). In addition to the physical movement, new types of mobility emerged and are strengthen with the development of ICT. Thus, virtual movement or virtual mobility gained on the significance. Virtual mobility is a movement in the virtual world that is realized in the context of telecommunication and computer technologies. Therefore, virtual mobility is about accessing to certain activities that traditionally required physical access, which can now be performed without physical access. This is very important issue because virtual mobility overcomes geographical and social distance in real time. Virtual mobility is strongly linked to the extreme expansion of the Internet and mobile telecommunication, completely changing the human race. Therefore, virtual mobility includes, among other things, teleworking, creating new and maintaining existing social connections (especially via the social media, e-mails and personal web pages), gaining both formal and informal education, shopping via the Internet etc. If the physical mobility is hampered or disabled for some reason, in certain circumstances virtual mobility may be used as its substitute (Kenyon et al., 2002; Larsen et al., 2006).

International scientific bibliography is extremely rich in studies about the relationship between ICT and young people. However, not so many articles concerning the high school population can be found. Also, there are only few papers describing the impact of ICT on school activities of students. The link between ICT and school activities is studied mainly from the aspect of Internet addiction and its impact on childrens' education. Further, Internet addiction was

associated with problems in learning and school success (e.g. Siomos et al., 2013; Zhu et al., 2015; Soohyun, 2011). Badasyan and Silva (2012) have concluded that the possibility to access the Internet affected good school achievement, while Adegoke (2013) and Darah (2013) concluded that Internet access had no effect on school performance. Austin and Totaro (2011) have concluded that excessive use of the Internet adversely affected school performance. Young people use the Internet for a whole range of activities. Among the most common reasons for Internet usage are school activities and games (Omar et al., 2014; Lee and Chae, 2007). A whole range of authors emphasized communication (i.e. instant messaging and social networking) as an important reason for Internet usage (Paus-Hasebrink et al., 2010). Studies of numerous authors put the emphasis on social media usage (e.g. Woods et al., 2016; Montgomery, 2015; Barbieri, et al., 2016). The impact of mobile phones is also mentioned in both, positive and negative context. Seo et al. (2016) state that mobile phones are used for assistance in school activities, while Abeele et al. (2014) consider it as an important tool for social networking. However, many authors emphasize negative aspects of mobile phone usage, such as addiction, attention deficit, depression and so (e.g. Billieux, 2012; Lee et al., 2014), which may adversely affect the school and other activities.

In this study survey and interview methods were used. Anonymous and completely voluntary survey was conducted in seven high schools in the City of Zagreb. A total of 826 students were surveyed (3% of the total high school population in the City of Zagreb). Gender ratio in the survey included 429 females (51.9%) and 397 males (48.1%). The survey obtained general information about the participants and their attitudes and opinions towards ICT and its impact on their everyday lives. Students were also asked to give their opinions about eight suggested transport (virtual mobility) issues, according to the Likert scale, in which each issue was assessed from 1 to 5 indicating their importance for the student (on the scale: 1 – no importance/very little importance; 5 – very high importance).

In order to obtain detailed information on the researched issues, focus group method was included to the research. The focus group research was conducted in two high schools in the City of Zagreb. In each school students were divided into four groups based on their age and gender. Group I included female students of the 1st and 2nd grades, Group II male students of the 1st and 2nd grades, Group III female students of the 3rd and 4th grades, and Group IV male students of the 3rd and 4th grades. In total 8 focus groups were examined. Within each group, there was an evident dichotomy among the students with regard to their place of residence (half of the students lived near the city center and half lived nearer to the city periphery).

The research was conducted according to the *Code of Ethics of Research with Children* (2003). Permission for the research was obtained from the Ministry of Science, Education and Sport of the Republic of Croatia, the Principal of each school and pupils' parents. The data collected in the survey were processed using the software package SPSS Statistics 20.0 using the statistical correlation method and t-test.

3. Impact of ICT on some segments of everyday life of high school population

Computer technology is very widespread among young people. This is confirmed by the fact that 99% of surveyed students (818 of 826 students) in this study used a computer at home. Students used laptops and desktops almost equally, 51.5% students (421) used laptop, while used 48.5% students (397) use desktop computer. Only 1% of students (8) did not use computer at home, for being used by other family members (7 students) or not owning one (only one student). Further, the vast majority of students accessed Internet via computers at a flat rate (89%, 735 students), while 7.6% (63 students) accessed Internet with limited data traffic. Only 3.4% of students (28) did not have Internet access at home. Still, out of this 3.4%, 9 of them had possibility to access it regularly elsewhere, while 10 students had possibility to access it occasionally elsewhere. Only 9 students lacked the possibility to access Internet at home, and did not have the possibility to access it elsewhere.

Beside computer technology, mobile technology increasingly takes place in the everyday lives of young people. Thus 99.3% of students use mobile phone (820 of 826 surveyed students). 3/4 of students use a smartphone (76.7% or 629 students), while 191 of them (23.3%) use a cell phone. Only 6 students don't use a mobile phone (0.7% of the surveyed students). It should be noted that 764 students use the Internet via mobile phone (92.5% of students), while only 7.5% (62 students) students don't use it. 545 students (71.3%) use mobile Internet regularly, occasionally 166 students (21.7%), and when it is absolutely necessary 53 students (7.0%).

Numerous studies tried to determine the extent of internet usage among the students. These estimates varied in dependence of the method used for Internet usage measurement (e.g. on the basis of personal statements or automatic recording), the age of examined children and definition of "Internet usage" (e.g. time spent or frequency of use). Studies reported that young people use the Internet on average for 1 to 3 hours daily (Jackson et al., 2006; Alvarez et al., 2013). Researchers agree that children today spend a considerable amount of time using the Internet (Jackson et al., 2006; Livingstone et al., 2011; Özgür, 2016).

Due to the growing importance of the Internet in everyday life of students, which is accessed either by computers or mobile phones, the time spent on the Internet is even higher than previous reports suggest. The results showed that high school students spend 4.3 hours on the Internet on average daily (including the usage of virtual social networks). Interestingly, there was no statistically significant correlation between age and time spent on the Internet, while the slight statistically significant correlation occurred with regard to gender ($r = .117$, $p<0.01$), which was confirmed by t-test ($t = -3.389$; $p<0.01$). These results indicated that girls spend more time on the Internet than boys. Furthermore, reasons for using the Internet had to be established. Studies have shown that young people use the Internet mostly for

school activities (information, homework, school projects) and communication with friends (via email and chat) (Jackson et al., 2006). Although these were recent researches, today there are other reasons for the use the Internet.
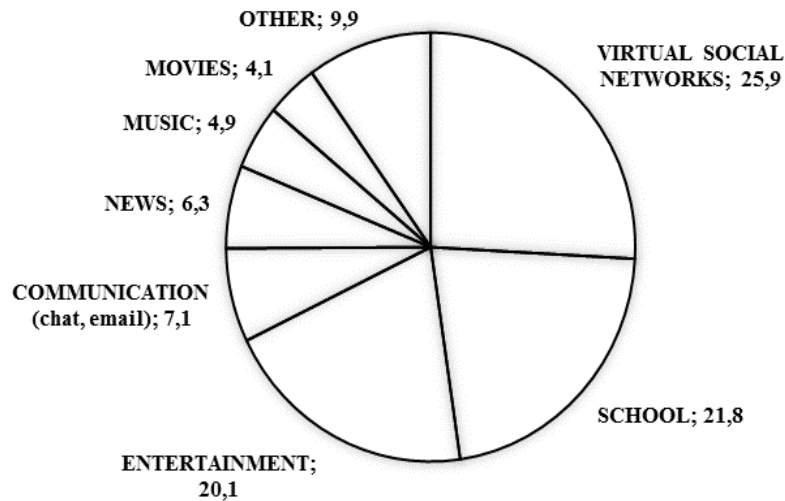

Fig. 1.
The purpose of Internet usage of high school population in the City of Zagreb (in %)
Source: Survey

Figure 1 shows the purpose of Internet usage among high school students in the City of Zagreb. The research showed that the first reason to use the Internet was communication via social media (primarily Facebook), and not via chat or e-mail. The second reason to use the Internet was for school activities (various information, help with writing homework, reports and seminar papers etc.). In addition, the Internet was also used for entertainment for accessing YouTube, games and various other forms of entertainment. Communication via chat and e-mail and other channels (except via social networks) was also popular. Beside access to services that provide various news, the Internet was used to listen and download music and movies. Also there were various other reasons such as browsing transport timetables, on-line betting, writing blogs etc.

As founded, ICT was highly present in everyday lives of students. Therefore, it can be assumed that this technology affects their everyday lives. Almost 90% of students (87.5%) stated that the Internet and mobile phones affected the organization of their everyday life (Table 1). This point was relatively important, as one third of students (34%) stated that ICT often or almost always (i.e. high or very high) affected the organization of everyday life. If students who stated that ICT occasionally (i.e. moderate) affected organization of everyday life are added, then the share of students stating that ICT had influenced their life went up to 71.2%. Only less than one third of students (28.8%) stated that ICT rare (i.e. poor) affected the organization of everyday life.

Table 1
Frequency and strength of the influence of ICT on everyday lives of high school students in the City of Zagreb

Frequency/strength of the influence	Number of students	Share (in %)
Influence	723	87.5
rare / poor	*208*	*28.8*
occasionally / moderate	*269*	*37.2*
often / high	*163*	*22.5*
almost always / very high	*83*	*11.5*
No influence	103	12.5
Total	826	100

Source: Survey

In addition to investigate the presence of ICT in the lives of high school students, the aim was to examine the importance of individual segments of ICT in their everyday lives. In order to examine this issue, the method of self-reported measure was applied. In this process, eight suggested transport (virtual mobility) issues i.e. problems were assessed from the aspect of importance to provide possible impact on students' daily life. Given that students everyday life is different in many aspects, especially in the context of gender and age, it was assumed that there were differences in the importance of the problems. A Likert scale of self-assessment was used in which the students assessed suggested issues. To determine the correlation between age/gender and importance of the issues Pearson correlation coefficient and point-biserial correlation coefficient were used. (Table 2).

Table 2
Correlation of age and gender with the importance of virtual mobility issues

Issue		Age		Gender
Ability to access to Internet whenever you want to	r	-.059	r_{pb}	**.114**[**]
	p	.092	p	.001
Constant and quick access to information via the Internet	r	-.006	r_{pb}	**.128**[**]
	p	.863	p	.000
High speed of "fix" Internet	r	.003	r_{pb}	**.075**[*]
	p	.941	p	.030
High speed of mobile Internet	r	**-.072**[*]	r_{pb}	**.203**[**]
	p	.039	p	.000
Access to virtual social media (e.g. Facebook, Twitter...)	r	**-.118**[**]	r_{pb}	**.230**[**]
	p	.001	p	.000
Feeling safe when using the Internet	r	-.056	r_{pb}	**.256**[**]
	p	.105	p	.000
The possibility of permanent availability via mobile phones and the Internet	r	-.052	r_{pb}	**.218**[**]
	p	.135	p	.000
Covering Internet and mobile phone costs	r	-.011	r_{pb}	**.145**[**]
	p	.763	p	.000

r = Pearson's correlation coefficient; r_{pb} = point-biserial correlation coefficient; p = statistical significance
* $p < 0.05$; ** $p < 0.01$
Source: Survey

Based on the data shown, it could be assumed that the association between gender and issues was stronger than the association between age and issues. A statistically significant correlation between age and transport issues appeared only in two cases. The obtained results clearly indicate a statistically significant correlation, though low, between gender and issues. This correlation was significant for all issues. It is necessary to note that in all cases, girls gave higher grades to issues than boys did, which might indicate that girls find the proposed issues more important in their daily lives than boys do.

In order to detaily examine the differences between girls and boys within the frame of certain issues, the statistical significance of differences between male and female subjects for a series of test variables was tested using a t-test (Table 3). Though these were not exceptionally large differences in the grade assigned, the t-test indicated that there was a statistically significant difference in the responses between girls and boys. The obtained results were in line with the correlation results. The results of the t-test suggested that girls gave higher grades for transport issues from the aspect of importance in their daily lives. Although the differences between girls and boys were not so pronounced, it can be noted that girls gave higher importance to the access to virtual social networks, to the importance of security when using the Internet, as well as to the importance of high-speed mobile Internet and the possibilities for permanent availability. Such results could indicate a higher importance of virtual mobility in the daily life for girls than for boys.

Table 3
Mean values for the results of assessing the influence of issues on the daily life of high school students and the values of t-test

Issue	M_M	M_F	t	p
Ability to access to Internet whenever you want to	3.77	4.08	**-3.744***	.000
Constant and quick access to information via the Internet	3.79	4.11	**-3.962***	.000
High speed of ''fix'' Internet	3.83	4.04	**-2.524***	.012
High speed of mobile Internet	3.56	4.09	**-6.302***	.000
Access to virtual social media (e.g. Facebook, Twitter...)	3.26	3.88	**-7.034***	.000
Safety when using the Internet	3.20	3.91	**-7.887***	.000
The possibility of permanent availability via mobile phones and the Internet	3.59	4.14	**-6.659***	.000
Covering Internet and mobile phone costs	3.15	3.54	**-4.490***	.000

M_M = mean of the results for males; M_F = mean of the results for females; t = value of t-test; p = statistical significance
* $p < 0.05$
Source: Survey

The impact of ICT on the organization of daily life will be mainly manifested in its two segments. In accordance with the results of the reasons for using the Internet, the impact was most prominent in communication with friends and within the school activities.

Friendship is very important component of young peoples' life. They establish and maintain as many friendships as possible, and these friendships tend to have longer duration compared to those from childhood. High school students have more friends than adults and communicate with them more than adults (Boneva et al., 2006). This communication

is carried out in the context of physical meetings, but also through virtual mobility, of which the most important channels of communication are through mobile phones and virtual social networks accessed via computers, but also mobile phones. Still, some studies have shown that the need for intensive communication decreases from adolescence to adulthood with regard to increasing stability of personal identity. For example, older teens have less friends than younger teens (Boneva et al., 2006). This is also shown by the data, which showed that the number of good friends of high school students from Zagreb slowly decreased with age. This proves the correlation coefficient (r = -.074, p<0.05), indicating a slight, but statistically significant correlation.

In the context of social interactions, a great majority of high school students was using ICT for the formation of new relationships, as well as to maintain existing friendships. Young people are keeping their social life during adolescence through both, physical and virtual meetings (Mesch, 2009). This was certainly confirmed by the survey of high school students in Zagreb. It should be noted that ICT had more significance in the frequency of communication with good friends as more than half of the surveyed students (58.7%) communicated in this way very often with good friends (i.e. every day). Unlike virtual meetings, 48.7% of high school students communicate very often (i.e. every day) with their good friends through physical companionship. It can be seen that good friends of high school students are people who do not necessarily go with them in the same class or even in the same school since students communicate with them often (i.e. a few times a week) through physical meetings (41.9%) indicating a temporary meetings during the week or evening outings on weekends. This was also evidenced by the frequent communications (i.e. a few times a week) with good friends via the Internet and mobile phones which accounted for 31.4%, being ten percent less than the physical companionship. Finally, it can be concluded that friendship had a very great importance in the lives of high school students as they communicated with their close friends very often, while emphasis is put on the communication via the Internet and mobile technology rather than to the physical companionship. This allowed communication with friends with whom it was not possible to physically meet on daily basis, partly overcoming the physical distance between them.

Table 4
Frequency of the communication with good friends

Frequency	Physical companionship		ICT	
	Number	Share (in %)	Number	Share (in %)
Never	4	0.4	6	0.7
Rare (several times a year)	13	1.6	17	2.1
Occasionally (several times a month)	61	7.4	59	7.1
Often (several times a week)	346	41.9	259	31.4
Always (every day)	402	48.7	485	58.7
Total	826	100	826	100

Source: Survey

When analyzing the importance of ICT in establishing new and maintaining existing social interactions, it can be asked if the usage of ICT affected the number of friends. In fact, some research had shown that teens who spend lots of time on the Internet, had less social contact with family and friends in comparison to those who use it less (e.g. Kraut et al., 1998). In contrast, other studies had found that youth increase their social interaction just by using the Internet (e.g. the Pew Internet and American Life Project, 2002). Analysis of this issue in the City of Zagreb showed that the frequency of using ICT had no connections with a number of good friends. Correlation analysis showed statistically insignificant correlation between the time spent on the Internet and the number of close friends (r = .041; p>0.05), and between the time spent on virtual social networks and the number of good friends (r = .051, p>0.05). Students stated that the Internet and mobile phones helped in communicating with friends, with no effect on the number of friends.

- *Number of friends does not depend on the mobile phone and the Internet. We would hang out with them one way or another.*
  (female student, 17 years, Trešnjevka)
- *I think I would have the same number of friends. They are friends from my childhood and from elementary school.*
  (male student, 17 years, Centar)
- *I think it does not affect the number of friends. I see my friends every day and because of mobile phones we talk even more. It is better for us because we could see and hear each other.*
  (female student, 16 years, Botinec)
- *I think I even meet my friends more often because of mobile phones. We make a deal via mobile phone and then meet.*
  (male student, 18 years, Malešnica)

However, there are also students who feel that ICT influence the friendship in the context of reduced mutual physical meetings.

- *I think I see some of my friends less because they are affected by this.*
  (male student, 16 years, Jarun)

159

Despite the fact that students consider ICT useful for socializing with friends, some students think that quality of physical meetings declined because of ICT.

- *Typing the mobile phone when you're having coffee… What's the point at all to see anyone if they are all using the mobile phone.*
  (male student, 17 years, Centre)
- *I am totally irritated when I am with friends and when people do not communicate but are constantly on the phone. I find that stupid. If you are with a person then rather talk to him/her or him and socialize, and not to check Instagram, Facebook etc. All that can wait.*
  (female student, 16 years, Botinec)
- *People lose confidence. It is easier to communicate via mobile phones and other applications, and when we meet face to face there is eerie silence.*
  (female student, 14 years, Trešnjevka)

As the virtual social networks are extremely important element in communicating with friends, and considering that the usage of virtual social networks is the most important reason for using the Internet, usage of virtual social networks was additionally examined. Thus, 95.4% of students (788 of them) used virtual social networks to some extent, while only 4.6% (38 of students) did not use them. The significance of virtual social networks in the daily lives of high school students was extremely high as shown by the average time of their use that was 2.6 hours per day, being 60% of the total time spent on the Internet. Threat, girls used virtual social networks more than boys, confirmed by the correlation coefficient ($r = .241$, $p<0.01$), indicating a statistically significant correlation. This result was confirmed by the t-test ($t = -6.965$, $p<0.01$). It could be assumed that social interaction was more important in life for girls than for boys. This was also indicated by the correlation between frequency of communication with good friends via the Internet and mobile phones and gender in favor of girls ($r = .196$, $p<0.01$). This was a slight correlation, but statistically significant and obviously systemically present, which was also confirmed by the t-test ($t = -5.741$; $p<0.01$). Greater importance of social interaction for girls was indicated by the correlation between frequency of communication with good friends via physical meetings and gender, being in favor of girls ($r = .142$, $p<0.01$); here a slight, but statistically significant correlation was present ($t = -4.105$; $p<0.01$).

Impact of ICT on school activities was certainly expected, as this was an activity that all students were regularly engaged every day. For this purpose, students' attitudes related to the impact of ICT on school activities were examined (Table 5). Interestingly, more than two-thirds of students (76.2%) stated that ICT affected their school activities. This indicated the great importance of ICT in their everyday life. Thereby, ICT had quite a significant impact on school activities of students. Namely, 43.6% of students stated that ICT often or almost always (i.e. high or very high) affected their school activities. In addition to students who stated that ICT occasionally (i.e. moderate) influences (37.8% of students), then the share was rather high 81.4%. Only less than a fifth of students (18.6%) stated that ICT rare (i.e. poor) affected the school activities.

Table 5
Frequency and strength of the influence of ICT on the school activities of high school students in the City of Zagreb

Frequency/strength of the influence	Number of students	Share (in %)
Influence	629	76.2
rare / poor	*117*	*18.6*
occasionally / moderate	*238*	*37.8*
often / high	*200*	*31.8*
almost always / very high	*74*	*11.8*
No influence	197	23.8
Total	826	100

Source: Survey

Table 6
Ways in which ICT impacts the school activities of students

Way of influence	Number of students	Share (in %)
Help in performing school activities	287	45.6
Negative impact on performance of school activities	342	54.4
Total	629	100

Source: Survey

Impact of ICT on school activities of students was reflected through two segments (Table 6). Students stated that ICT helped in performing their school activities (45.6%). This assistance was evident in several aspects. Students stated that ICT allowed access to additional information for the courses. In addition, ICT allowed communication with each other (via e.g. social networks, emails, SMSs etc.) based on which students shared information about curricula and different information related to school activities. It is interesting to point out how students used ICT for illegal acts related to

school activities. It was about a use of ICT in writing exams within the illicit use, as well as the taking photos of exams and sharing them later.

- *I think it has more positive than negative effect. We can check an exam or reading, we do not have to go to friend to look at it. We send in via the Internet.*
  (male student, 16 years, Medveščak)
- *On Facebook we have a group, called the 2d, where you put some questions, sub-questions, "... let me get this ...", "... can you help me ...", I think that it is much more useful than look it up in the book and wasting time.*
  (female student, 16 years, Pantovčak)
- *It is easier to find help. When we went to the elementary school we all lived close to each other, now that we're in the secondary a lot of people do not live close to each other and it is easier for lot of us, we do not have to travel to each other.*
  (female student, 16 years, Botinec)
- *It is easier for us to reach some data, for example for Croatian language, reading, mathematics where we have a page with solutions so we can check our homework.*
  (female student, 18 years, Špansko)
- *ICT helps. In order not to learn everything from books, we take photos of some scripts. It serves as a source of knowledge, all can be found on the Internet.*
  (male student, 18 years, Centar)
- *During the Latin language, many times it helped me to get the translation of the text, I just take a photo and choose to "translate" the Croatian and it translate it more or less accurately.*
  (male student, 15 years old, Kustošija)

Apart from help in performing the school obligations, students stated that ICT had negative impact on their school activities. It is interesting that the proportion of students with such an attitude was more than half of respondents (54.4%). The students thought that Internet and mobile phones distracted from the learning, so it sometimes even threated in certain subjects.

- *It affects by the time spend on the Internet. It can be quite addictive.*
  [Do you think you learn less?]
  Yes. I'm aware of that, but I cannot help myself.
  (male student, 16 years, Centar)
- *It influences negatively, when I have to learn, I'm on the phone for an hour, sitting beside a book and then the time pass in doing nothing, I don't learn and get negative mark.*
  [Are you aware of the problem?]
  I am aware of the problem, but cannot give up '.
  [Why?]
  I do not know. I have no motivation regardless of grades. When I leave it, every five minutes I go and check it for if there's something new, and always like that.
  (male student, 16 years, Vrapče)
- *I understand that this is not good and that I am addicted to these social networks but I don't do anything to reduce it. I am aware that my school activities suffer because of it.*
  (female student, 18 years, Lučko)
- *It affects when we learn. And if there is nothing on Facebook I still have to go on Facebook because I do not want to learn, so I rather go to Facebook.*
  (female student, 15 years, Savica)
- *ICT threatens us. If we didn't have a mobile phone and the Internet and Facebook we could learn more.*
  (female student, 18 years, Jarun)

Beside the students' opinion that ICT affects their school activities both, positively and negatively, their school success to some extent depends on ICT technology. Namely, after analyzing the correlation between school success and ICT a slight correlation was observed between the time spent on the Internet and school success. This was a statistically significant correlation ($r = -.099$, $p<0.01$), indicating a poorer school success of students with the increase in time spent on the Internet. Also, a slight, though statistically significant correlation occurred between the variables of school success and time spent on social networks ($r = -.084$, $p<0.05$).

In order to confirm obtained results, the time spent on the Internet and social media were placed in tabular correlation with school success (Table 7). Thereby, time spent on the Internet and social media were divided into classes. This analysis showed that decrease in school success was related to the increase in time spent on the Internet and social media. However, the value of school success was not reduced substantially, therefore the difference in the school success of high school students who spent more and less time on the Internet and social media was relatively slight.

Table 7
Relation between time spent on the Internet, social media and school success

Time (in hours)	School success (in the case of the Internet)	School success (in the case of the social media)
0 – 2.9	3.96	3.95
3 – 5.9	3.95	3.89
6 – 8.9	3.80	3.88
> 9	3.76	3.81

Source: Survey

It can be concluded that in the domain of school success the time spent on the Internet and on social media had slight impact. Certainly, it should be investigated in which segment of cognitive skills ICT eventually had more significant impact. Given the scope and complexity of such research, it is certainly a separate research topic.

In the context of the spatial segment of research, the correlation between the location of the student's residence and the use of ICT were examined. This study was conducted at the schools in the city center. This means that students who spend more time on the traveling to school live closer to the city periphery. But statistically significant correlation between travel time to school and time spent on the Internet and social media was not found (r = .005; p>0.05; r = .043; p>0.05). These results were also confirmed by students.

- *It doesn't matter where someone lives. While I am in the bus to school or from school I use the Internet or I chat with my friends who are already at home. And they are also at home using the Internet. I think we spend the time on the Internet equally.*
  (female student, 16 years, Botinec)
- *I think that we use the Internet equally. We use the Internet, social networks, mobile phones, there is no correlation with living location.*
  (male student, 18 years, Centar)
- *We use the Internet and social media when we need and when we want, no matter where we live.*
  (male student, 16 years, Medveščak)

4. Conclusion

The results showed that ICT usage was very much present in the everyday lives of students. The possession and use of ICT increases the mobility of young people. They use ICT mainly to communicate with friends, especially via virtual social media, and in the context of school activities (getting information, assistance in writing homework, reports and seminar papers). The results showed that ICT helped in communicating with friends, but with no effect to the number of friends. Analysis showed the decrease in school success related to the increase in time spent on the Internet and social media, though the correlation between ICT usage and school success is relatively slight. It should be noted that students were deeply aware of the disadvantages of Internet and mobile phones usage in the context of neglecting their duties. Obtained results could indicate a higher importance of virtual mobility in the daily life for girls than for boys.

High school population are the group of society that is most often engaged in virtual mobility. This work showed that ICT has an impact on some segments of their lives. Since there are not so many papers that study the impact of ICT on lives of high school students, certainly it would be good to broaden researches on various segments of their lives.

Acknowledgements

References

Abeele, M.V.; Antheunis, M.L.; Schouten, A.P. 2014. Me, myself and my mobile: A segmentation of youths based on their attitudes towards the mobile phone as a status instrument, *Telematics and Informatics*, 31(2): 194-208.

Adegoke, S.P. 2013. Effect of Internet Browsing on Students' Academic Achievement at the Senior Secondary School Level, *International Journal of Evaluation and Research in Education*, 2(3): 123-128.

Alvarez, M.; Torres, A.; Rodríguez, E.; Padilla, S.; Rodrigo, M.J. 2013. Attitudes and parenting dimensions in parents' regulation of Internet use by primary and secondary school children, *Computers & Education*, 67: 69–78.

Austin, W.; Totaro, M.W. 2011. High School Students' Academic Performance and Internet Usage, *Journal of Economics and Economic Education Research*, 12(1): 30-45.

Badasyan, N.; Silva, S. 2012. The Impact of Internet Access at Home and/or School on Students' Academic Performance in Brazil. Available from Internet: < http://ssrn.com/abstract=2133609>.

Barbieri, P.N. et al. 2016. Let young people join the legislative process. A Twitter based experiment on internships, *Computers in Human Behavior*, 60: 468-482.

Billieux, J. 2012. Problematic use of the mobile phone: a literature review and a pathways model, *Current Psychiatry Reviews*, 8(4): 1-9.

Boneva, B.S.; Quinn, A.; Kraut, E.R.; Kiesler, S.; Shklovski, I. 2006. Teenage Communication in the Instant Messaging Era, In *Computers, Phones, and the Internet: Domesticating Information Technology* (eds. Kraut, R.; Brynin M.; Kiesler, S.). Oxford University Press. United Kingdom. 201-218.

Council for children of the Government of the Republic of Croatia and National institute for protection of family, maternity and youth. 2003. Etički kodeks istraživanja s djecom (Code of Ethics of Research with Children; In Croatian). Available from Internet: <http://www.dijete.hr/en/documents/doc_view/232-etiki-kodeks-istraivanja-sdjecom.raw?tmpl=component>.

Daraha, K. 2013. The effect of the internet use on high school students: A case study of Pattani province of Thailand, *Procedia - Social and Behavioral Sciences*, 91: 241-256.

Gašparović, S. 2014. Impact of transport disadvantage on education of high school population of the City of Zagreb. In *Proceedings of the Second International Conference on Traffic and Transport Engineering ICTTE Belgrade 2014*, 789-800.

Gašparović, S. 2016. Theoretical Postulates of Transport Disadvantage, *Hrvatski geografski glasnik*, 78(1): 73-95.

Jackson, L.A.; Vo Eye, A.; Biocca, F. 2006. Children's Home Internet Use. Antecedents and Psychological, Social, and Academic Consequences. In *Computers, Phones, and the Internet: Domesticating Information Technology* (eds. Kraut, R.; Brynin M.; Kiesler, S.). Oxford University Press. United Kingdom. 145-167.

Kenyon, S.; Lyons, G.; Rafferty, J. 2002. Transport and social exclusion: investigating the possibility of promoting inclusion through virtual mobility, *Journal of Transport Geography*, 10(3): 207-219.

Kraut, R.; Patterson, M.; Lundmark, V.; Kiesler, S.; Mukopadhyay, T.; Scherlis, W. 1998. Internet paradox: A social technology that reduces social involvement and psychological well-being?. *American Psychologist*, 53(9): 1017-1031.

Larsen, J.; Urry, J.; Axhausen, K. 2006. *Mobilities, Networks, Geographies*, Ashgate, United Kingdom.

Lee, S.J.; Chae, Y.G. 2007. Children's Internet use in a family context: Influence on family relationships and Parental Mediation., *Cyber Psychology and Behavior*, 10(5): 640-644.

Lee, Y.K.; Chang, C.T.; Lin, Y.; Cheng, Z.H. 2014. The dark side of smartphone usage: psychological traits, compulsive behavior and technostress, *Computers in Human Behavior*, 31: 373-383.

Livingstone, S. 2006. Children's Privacy Online: Experimenting with Boundaries Within and Beyond the Family. In *Computers, Phones, and the Internet: Domesticating Information Technology* (eds. Kraut, R.; Brynin M.; Kiesler, S.). Oxford University Press. United Kingdom. 128-144.

Livingstone, S.; Haddon, L.; Görzig, A.; Ólafsson, K. 2011. Risks and safety on the Internet: The perspective of European children. Full Findings. Available from Internet: <http://www.lse.ac.uk>.

Mandarić, V. 2012. Novi mediji i rizično ponašanje djece i mladih (New Media and Risky Behaviour of Children and the Young; In Croatian), *Bogoslovska smotra*, 82(1): 131-149.

Mesch, G.S. 2009. The Internet and Youth Culture, *The Hedgehog Review*, 11(1): 50-60.

Montgomery, K.C. 2015. Youth and surveillance in the Facebook era: Policy interventions and social implications, *Telecommunications Policy*, 39(9): 771-786.

Nikodem, K.; Kudek Mirošević, J.; Bunjevac Nikodem, S. 2014. Internet i svakodnevne obaveze djece. Analiza povezanosti korištenja interneta i svakodnevnih obaveza zagrebačkih osnovnoškolaca (The Internet and Children's Responsibilities. An Analysis of the Relationship Between the Use of Internet and Everyday Responsibilities of Primary School Children in Zagreb; In Croatian), *Socijalna ekologija*, 23(3): 211-236.

Omar, S.Z.; Daud, A.; Hassan, S.Md.; Bolong, J.; Teimmouri, M. 2014. Children Internet Usage: Opportunities for Self Development, *Procedia - Social and Behavioral Sciences*, 155(6): 75-80.

Özgür, H. 2016. The relationship between Internet parenting styles and Internet usage of children and adolescents, *Computers in Human Behavior*, 60: 411-424.

Paus-Hasebrink, I.; Wijnen, C.W.; Jadin, T. 2010. Opportunities of Web 2.0: Potentials of learning, *International Journal of Media and Cultural Politics*, 6(1): 9-24.

Pew Internet and American Life Project, 2002. The digital disconnect: The widening gap between Internet savvy students and their schools. Available from Internet: <http:// www.pewinternet.org>.

Puharić, Z.; Stašević, I.; Ropac, D.; Npetričević, N.; Jurišić, I. 2015. Istraživanje čimbenika nastanka ovisnosti o internetu (A study investigating the factors of Internet addiction; In Croatian), *Acta Medica Croatica*, 68(4-5): 361-372.

Ružić, N. 2011. Internet i videoigre: uzročnici povećane agresivnosti među mladima (The Internet and Video Games: Causes of Increased Aggressiveness Among Young People; In Croatian), *Medijske strukture*, 2(3-4): 16-27.

Seo, D.G.; Park, Y.; Kim, M.K.; Park, J. 2016. Mobile phone dependency and its impacts on adolescents' social and academic behaviors, *Computers in Human Behavior*, 63: 282-292.

Siomos, K.; Paradeisioti, A.; Hadjimarcou, M.; Mappouras, D.G.; Kalakouta, O.; Avagianou, P.; Floros, G. 2013. The impact of Internet and PC addiction in school performance of Cypriot adolescents, *Studies in Health Technology and Informatics*, 191: 90-94.

Soohyun, K. 2011. *Effects of Internet Use on Academic Achievement and Behavioral Adjustment among South Korean Adolescents: Mediating and Moderating Roles of Parental Factors*, Child and Family Studies – Dissertations, Syracuse University, U.S.A.

Woods, H.C.; Scott, H. 2016. Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem, *Journal of Adolescence*, 51: 41-49.

Zhu, J.; Zhang, W.; Yu, C.; Bao, Z. 2015. Early adolescent Internet game addiction in context: How parents, school, and peers impact youth, *Computers in Human Behavior*, 50: 159-168.