The virtual world, mobile technology and return to the real world

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Abstract

Information and communication technologies have established themselves in all areas of human life. We use these technologies for work but also for entertainment. Computers facilitates numerous activities. New technologies also bring new problems. Therefore, educational institutions must respond to this situation. Children use computer devices very often, also to the detriment of their movement. Children also use a lot of mobile devices. There is a tendency to use mobile devices in the classroom and find new teaching methods. According to international research has current way of life negatively affects health, especially children. Children too much time sitting at the computer, stare into its smartphones, watching television for a long time. They move little and they carry little activity outside. The paper describes case study among children. We used questionnaire method and long-term observation. The first questionnaire was completed by 138 students aged 11 to 19 years. Obtained data are processed by statistical methods. For analysis of the results in each item was measured as having detected data variability. We used a coefficient of variation. To interpret the results of the second stage classification was done chi-square test. We've also used a case study. We are within one year we observed 15 boys aged 10 to 17 years. We have focused on observing their physical condition, any manually abilities, use of leisure time. This paper aims to show the possibilities of using information and communication technologies in promoting the healthy development of children. The paper shows practical examples of informatics education. The paper describes examples for education of informatics with physical activity. The findings were obtained in a survey that the detection methods used knowledge case study, questionnaire, observation, interview and pedagogical experiment.

Keywords: Mobile technologies; a pedagogical experiment; a questionnaire; an observation; the virtual world

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1. Introduction

Information and communication technologies are helping people in all areas. Technologies facilitate the work, accelerating calculations, increasing clarity in teaching, enhance communication, make available a wealth of information etc. These technologies also bring new problems and difficulties. One of the big problems is that people lock themselves in the virtual world and they often lose contact with the real world. Teaching science should not only serve to acquaint with technology and their control. An important task of education is to teach students to use pieces from the contemporary technology properly and not to lose contact with the real environment (Baran, 2014; Pachler, Bachmair & Cook, 2009; Vaughan & Lawrence, 2013).

2. The methodology

For research, we were used quantitative and qualitative methods. We used a questionnaire and the method of long-term observation.

The first questionnaire was completed by 138 students. Pupils received an electronic questionnaire with ten items. Most of the items of the questionnaire were closed or semi-closed structured entries. The aim of the survey was to determine how children use computers and mobile devices (Australia, 2015).

For the second part of the research method was used long-term observation. It was from July 2015 to April 2016. I watched 15 boys. These boys also completed a second questionnaire. The questionnaire included 15 items. Most of the items of the questionnaire were closed or semi-closed structured entries. The aim of the survey was to determine how much time the children spend with computer activities and how much time children spend outdoors sports and activities.

The evaluation of the data obtained were used statistical methods. For analysis of the results in each item was measured as having detected data variability. We used a coefficient of variation. To interpret the results of the second stage classification was done chi-square test. The significance level was set at 5%. For evaluating the results were used MS Excel and statistical software Wizard for the operating system on Mac OS X and statistical software Statistics Visualizer for iPad (Chraska, 2007; Prucha, 1995).

We created several hypotheses:

H1: Boys use computers and mobile devices for purposes other than girls.

H2: Children use mobile devices for gaming.

H3: Children spend on computers large part of their free time.

3. The result of research

The first questionnaire was completed by 138 students aged 11 to 19 years. The questionnaire focused on how children use mobile devices. Five questions dealt with how children use mobile devices for learning. The results of this survey are not part of this research. The following graphs show the use of mobile devices in their free time children. The average age of children was 15 years. 67% were boys and 33% girls. The following graph in Figure number 1 shows what devices own children. Most respondents own a smartphone and a notebook.
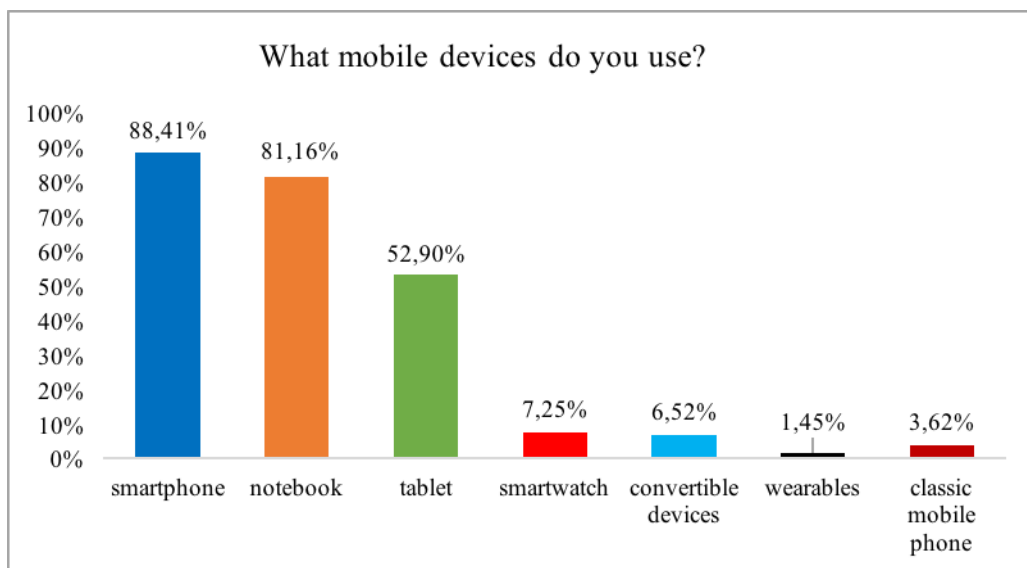
Figure 1. What mobile devices do you use?

The graph in Figure number 2 shows how students use mobile Internet access. The results obtained show that both boys and girls use the same types of computer equipment. The use of mobile internet is for boys and girls of the same.
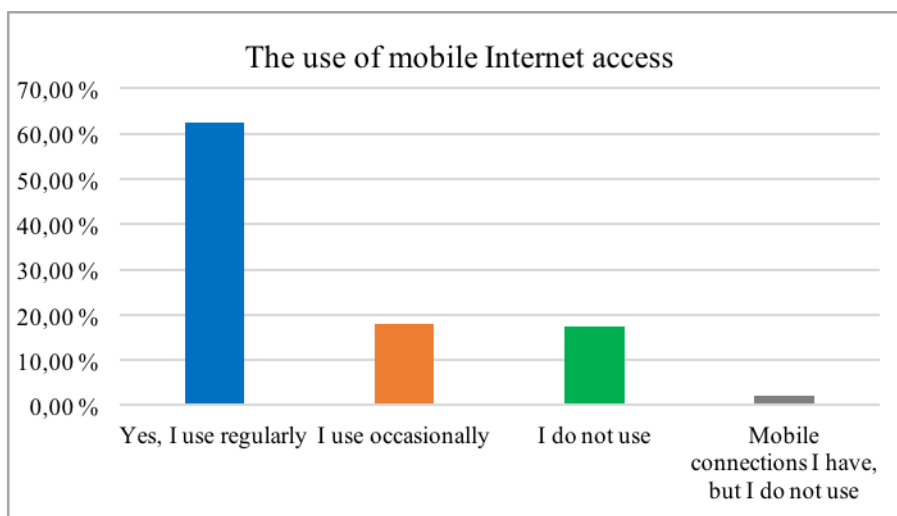

Figure 2. The use of mobile Internet access

Pupils on their devices most commonly used mobile applications for social networking, Web browser and mobile games. The graph in Figure number 3 shows how students lined up mobile application, depending on how frequently and intensely used. Results of statistical test show the differences between boys and girls in the use of mobile applications. Most boys play computer games. Girls mainly use social networks. Respondents not only play games, but they often use social networks, web browser, maps and photographs (Kumar, Jamatia, Aggarwal & Kannan, 2011; Lappi, 2010).
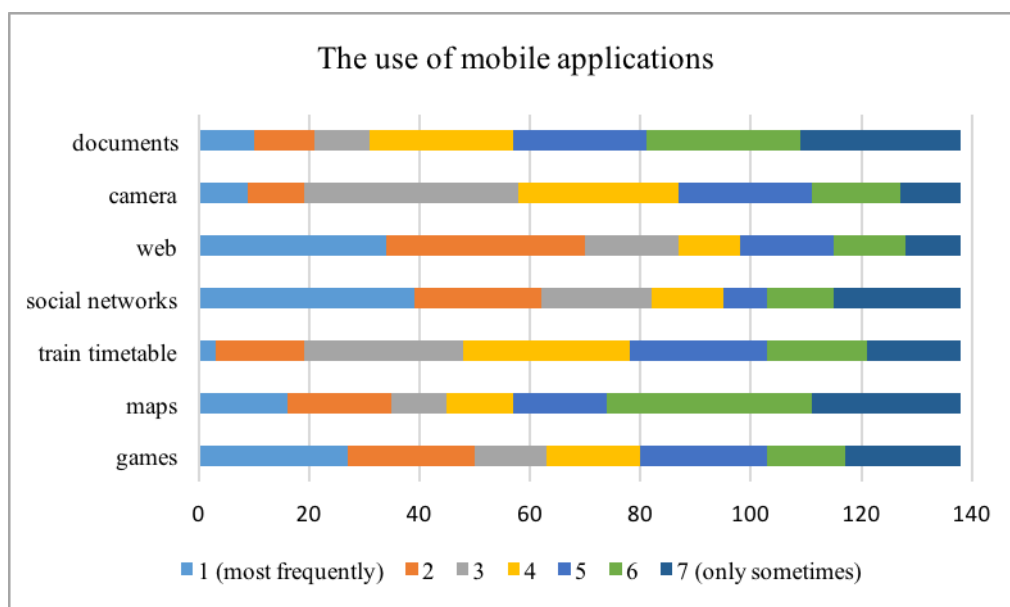
Figure 3. The use of mobile applications

The testing of hypotheses was used statistical methods for analysis of nominal data, specifically the chi-square test. Were first formulated null and alternative hypotheses were calculated expected frequencies and test criterion, which was then compared with a critical value. At a significance level of 5% can be stated veracity hypothesis H1. Conversely H2 hypothesis cannot be confirmed.

The next part of the article describes the results of observations during the case study. The average age of children was 13 years. The youngest boy was 10 years old, the oldest boy was 17 years old. All the boys lived in the city. The boys were watching during the activities in the scouting troop. Observations focused on the ability of boys in sporting activities, working with mobile computing devices, work activities and handicrafts activities.

At the beginning of the observation that all the boys had problems with handicraft activities. They did not know how to use a pocket knife or normal working tools (saw, ax, hammer...). Most of the boys had a problem to prepare origami paper. But all the boys knew how to work with your smartphone or tablet. At the end of the observation boys completed the questionnaire. The questionnaire wasn't anonymous.

Graph in Figure number 4 shows that he majority of respondents watching television less than three hours a day. The comparison indicates that currently more children use computers than television. The answers can be found that respondents spend on computers very much time. We can confirm the third hypothesis.
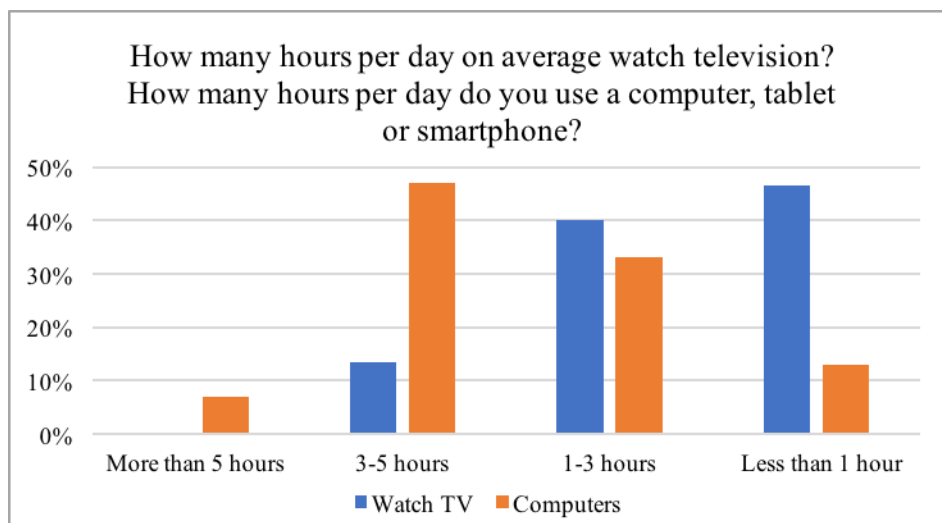
Figure 4. How many hours per day on average watch television? How many hours per day do you use a computer, tablet or smartphone?

The next chart shows the amount of time that boys do sports. The results are not very good. Other indicators of small sports activities: 46% of respondents do not travel by bicycle, 47% goes to the ski only occasionally and 27% do not go skiing. 27% of boys do not travel with their parents to the countryside and 27% goes with his parents to the nature rarely.
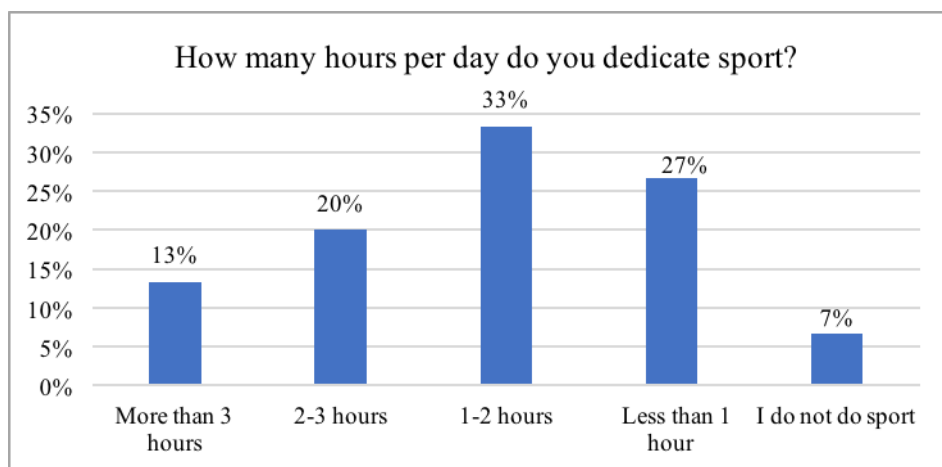

Figure 5. How many hours per day do you dedicate sport?

The following chart shows how much time they spend outdoors respondents. The results are not very good. 27% of boys spend outside less than 1 hour per day. The boys spend too much time indoors. Sports activities take place frequently in the gym (sports clubs, floorball…). Before the advent of computers, it was normal that the boys played football, hockey and other sports have done outside in nature.
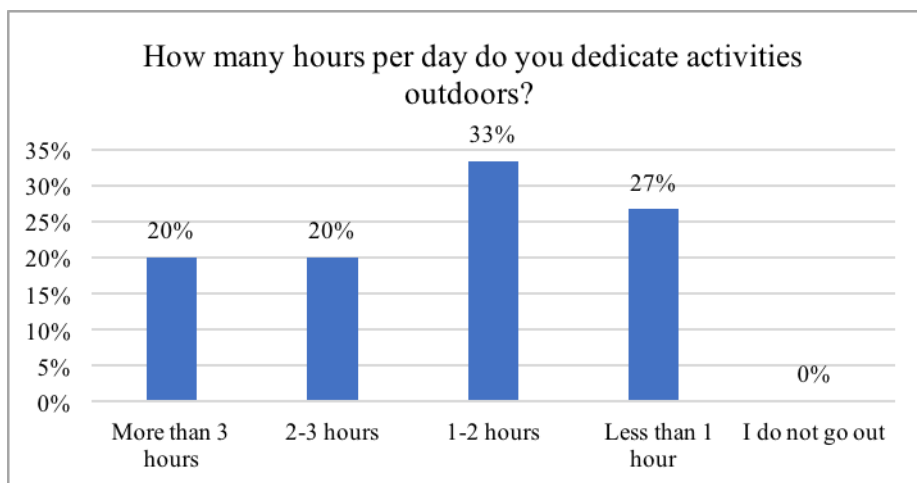
Figure 6. How many hours per day do you dedicate activities outdoors?

The graph in Figure number 7 demonstrates how often the boys do some handicraft activities. Most of the boys does not make any handicraft activity. Only a small proportion of boys devoted to handicrafts activities, an average of one hour per day. 20% of boys think of themselves that is manually skilled. 33% think the opposite. 47% think they are skilled only in part. These results correspond to the observations.
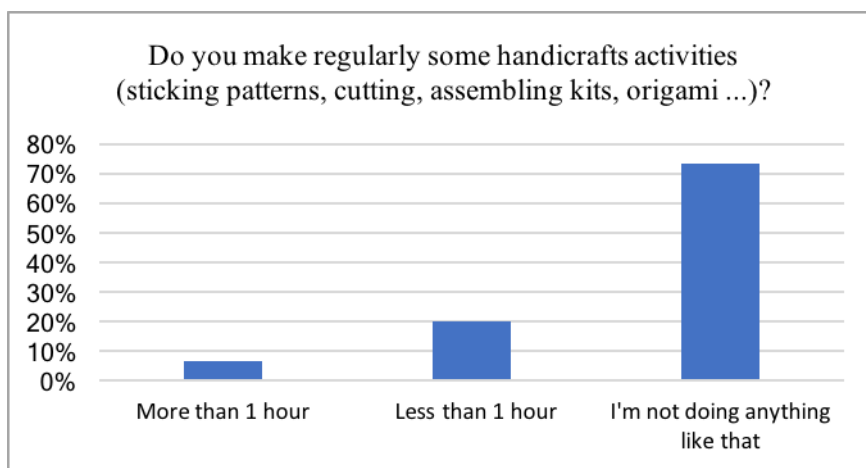

Figure 7. Do you make regularly some handicrafts activities (sticking patterns, cutting, assembling kits, origami ...)?

4.Conclusion

The impact of information and communication technologies on behavior, skills and abilities of children is great. Research shows that children spend very much time at computers. They spend much less time outdoors, sports or handicraft activities (Tremblay, Gonzalez, Katzmarzyk, Onywera & Reilly, 2015). The first option is to offer children activities without computers and Internet access. This, however, in the current conditions can be hardly realized. The second option is to teach children to use mobile computers not only in computer classroom, but also outside. Option is not to teach computer science and programming, not only in the classroom but also through physical activity

outdoors. Good tool for teaching are robots for example Lego robots or Ozobot. Working with robots forcing children to use their motor skills.

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