

Use of Smartphones in 6th and 7th Grade (Elementary Schools) in Istria: Pilot Study

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Abstract—Younger and younger children are now using a smartphone, a device which has become ‘a must have’ and the life of children would be almost ‘unthinkable’ without one. Devices are becoming lighter and lighter but offering an array of options and applications as well as the unavoidable access to the Internet, without which it would be almost unusable. Numerous features such as taking of photographs, listening to music, information search on the Internet, access to social networks, usage of some of the chatting and messaging services, are only some of the numerous features offered by ‘smart’ devices. They have replaced the alarm clock, home phone, camera, tablet and other devices. Their use and possession have become a part of the everyday image of young people. Apart from the positive aspects, the use of smartphones has also some downsides. For instance, free time was usually spent in nature, playing, doing sports or other activities enabling children an adequate psychophysiological growth and development. The greater usage of smartphones during classes to check statuses on social networks, message your friends, play online games, are just some of the possible negative aspects of their application. Considering that the age of the population using smartphones is decreasing and that smartphones are no longer ‘foreign’ to children of pre-school age (smartphones are used at home or in coffee shops or shopping centers while waiting for their parents, playing video games often inappropriate to their age), particular attention must be paid to a very sensitive group, the teenagers who almost never separate from their ‘pets’. This paper is divided into two sections, theoretical and empirical ones. The theoretical section gives an overview of the pros and cons of the usage of smartphones, while the empirical section presents the results of a research conducted in three elementary schools regarding the usage of smartphones and, specifically, their usage during classes, during breaks and to search information on the Internet, check status updates and ‘likes’ on the Facebook social network.

Keywords—Education, smartphone, social networks, teenagers.

I. INTRODUCTION

SMARTPHONES have become a "must have" of almost every individual and the device is particularly popular among the teenagers. According to a research conducted by an agency [1], 171.5 million people (71%) own a smartphone in the USA. Among the so called Millennials generation aged 18-24, there were 85% of users of smartphones in the second-quarter 2014. There is almost no difference in the ownership of smartphones by gender, with men and women (a research conducted in second-quarter 2014, with 70% of men owning smartphones and 72% of women in the U.S.). The number of

users of smartphones in Western Europe in 2014 was about 196.6 million [2].

The findings of a survey conducted by the agency Common Sense Media [3] on a sample of 1,463 parents, have shown that over the two-year period of surveying, concluded in 2013, 38% of toddlers and infants under 2 used a mobile device. The findings were almost shocking, especially considering the age of the children and the educational role of parents (guardians). Premature and inappropriate use of smartphones and other devices may negatively affect child development; by imitating their parents’ toddlers and infants can ably use their index fingers to swipe across a touch screen. Such activities undertaken as such an early age can disturb a well-balanced (regular) psychophysiological development, fine motor skills in particular.

Young people use mobile devices for various activities, such as: listening to music, watching videos, making phone calls, texting, checking social networks, searching the Internet etc., and it can be assumed that most of the parents are not familiar with the pros and cons of the use of smartphones (whether for lack of knowledge, time, interest etc.). It is worth emphasizing that education of parents (guardians), teachers and all other persons involved in the process of children education and upbringing should be permanent and accessible. There are numerous free tools, such as "DinnerTime Parental Control" and "DinnerTime Plus" [4], network sites such as the "E-munitet" [5] workshop, parent meetings and applications which enable parents to set, i.e. limit the time allowed for the use of smartphones and survey of used applications in real time.

The Association of Teachers and Lecturers [6] states that there is a growing number of children who use iPads that are "unable" to perform simple tasks such as using building blocks. They also claim that most of the children aged three or four can swipe a screen but have little dexterity (particularly in their fingers) after spending hours glued to iPads. These figures can pinpoint problems of development (non-development) of motorics, especially of fine motorics in the hands, which is also linked to speech development. For instance, in the combinatorial play [7] that appears at the beginning of the second year of age, a child combines objects (builds towers by putting block on block). The lack of symbolic and combinatorial play can be a sign of speech disorder.

Scientists say that children younger than 30 months cannot learn from television and videos as they do from real-life interactions. The use of these devices can be detrimental, especially to the social-emotional development of the child.”

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[8]. It is therefore important [9] that elements which are proven to stimulate the mental development of children, but also specific exercises that develop coordination of movements and motor skills, thereby preventing any deficiencies in concentration and attention later in life, are included in the daily work of pre-school children.

Play gives the basis of development, children learn, create, research and exist through play. Coordination of speech with movements is training for the brain: traditional speech games where verses are combined with finger movements and clapping, or stories are combined with hand movements, are ideal to encourage speech development in the family, kindergarten and elementary school. The foundations of a healthy speech development [10] are laid in the first three years of life.

Authors [11] state that through play children learn to coordinate their sensory input with three primary movement abilities: equilibrium, locomotion, and sensorimotor coordination. While the child is growing, all these abilities are combined to foster learning skills, behavioural, perceptive and postural correlates of school subjects. The use of smartphones in the classroom does have its advantages. For instance, Bromley [12] claims that supplementing reading with smartphones can develop better vocabulary knowledge, comprehension, technology skills, and writing. Abayneh [13] claims that young people are so attached to their smartphones they sleep with them under the pillow. Losing a smartphone is an extremely dramatic situation. The advantages of smartphones are reflected in the fact that they allow their users to stay in touch with each other in their business and private lives. Smartphones offer limitless access to news, social networks, games, entertainment, emails, media management and various applications covering nearly all spheres of human activity. The opportunities offered by smartphones appeal especially to the younger generation who are keen on using smartphones as access to a wide range of social networks which further support (via various applications) numerous activities. One of the main goals of the research, therefore, was to find out the frequency and reasons for using smartphones at school among the elementary school sixth and seventh graders.

II. RESEARCH METHODOLOGY

The ICT having become a significant part of the educational process and keeping in mind that most of the children own a mobile device, the research sought to find out whether elementary school sixth and seventh graders use smartphones and to what extent, for what reasons and whether they are used in the classroom for non-learning activities. The research tried to explore the assumption that the great majority of students owned a smartphone and that the latter was being used during the classes however not for educational purposes.

The research population comprised 117 students of the sixth and seventh grade in three elementary schools in Pula: "Kaštanjer", "Tone Peruško" and "Stoja" Elementary Schools. A questionnaire containing 23 variables was implemented. This research analysed the following claims: students' age,

students' gender, use of smartphone, use of smartphone for online gaming, use of smartphone to check status on Facebook social network, use of smartphone to check "likes" on Facebook social network, use of smartphone to search information on the Internet, use of smartphone during school breaks, use of smartphone during classes but for non-learning activities, use of smartphone to listen to music, teacher's admonition due to use of smartphones in the classroom, playing outdoors and computer games. Research was conducted anonymously and the students were informed that they could withdraw from filling in of the questionnaire at any time and without any consequences, however this did not occur.

III. RESEARCH FINDINGS

The research was joined by the total of 117 students, 47% of them aged 12, 57% aged 13 and 19% aged 14.

TABLE I
STUDENTS AGE

| Age | f | % |
|----------|-----|------|
| 12 years | 47 | 35 |
| 13 years | 57 | 48,7 |
| 14 years | 19 | 16,2 |
| Total | 117 | 100 |

As per gender (see Table II), the research was joined by a total of 53% male students and 47% female students.

TABLE II
STUDENTS GENDER

| Gender | f | % |
|--------|-----|-----|
| Male | 62 | 53 |
| Female | 55 | 47 |
| Total | 117 | 100 |

The respondents were students of the age of 12 (35 %), 13 (48.7 %) and 14 (16.2 %). It is interesting that 35 % of the total number of respondents of the age of 12 have profiles on the Facebook social network set up, which is against the terms of use of this social network since to be eligible to sign up for Facebook, you must be at least 13 years old.

TABLE III
THE USE OF SMARTPHONE

| | f | % |
|---------------------------|-----|------|
| I don't use it | 12 | 10,3 |
| I generally do not use it | 2 | 1,7 |
| I use it sometimes | 19 | 16,2 |
| I generally use | 36 | 30,8 |
| I use it always | 48 | 41,0 |
| Total | 117 | 100 |

Table III shows that 41% of the students use the smartphone to a large extent and 30.8% of the students use it to a moderate extent.

The students consider that they do not use smartphones for online gaming (32.5%), 30.8% of the students stated they use

smartphones for online gaming sometimes, while 16 % of the students mostly play video games on their smartphones.

The calculated value of the χ^2 test (Chi square=1.863 (df=4), $p=0.8$) is larger than the limit value at degree of freedom 4. The results can therefore be considered statistically significant.

TABLE IV
USING YOUR SMARTPHONE IN ORDER TO PLAY ONLINE VIDEO GAMES

| | f | % |
|---------------------------|-----|------|
| I don't use it | 38 | 32,5 |
| I generally do not use it | 24 | 20,5 |
| I use it sometimes | 36 | 30,8 |
| I generally use | 16 | 13,7 |
| I use it always | 3 | 2,6 |
| Total | 117 | 100 |

TABLE V
USING YOUR SMARTPHONE TO BROWSE PROFILES ON THE SOCIAL NETWORKS AS FACEBOOK

| | f | % |
|---------------------------|-----|------|
| I don't use it | 26 | 22,2 |
| I generally do not use it | 8 | 6,8 |
| I use it sometimes | 29 | 24,8 |
| I generally use | 35 | 29,9 |
| I use it always | 19 | 16,2 |
| Total | 117 | 100 |

The majority of students (29.9%) mostly use their smartphones to check statuses on the Facebook social network, while 16.2% of the students use the smartphones completely to check statuses. Chi square = 5.640, (df = 4), $p = 0.05$.

TABLE VI
USING YOUR SMARTPHONE TO CHECK THE "LIKES" ON THE SOCIAL NETWORK FACEBOOK

| | f | % |
|---------------------------|-----|------|
| I don't use it | 86 | 73,5 |
| I generally do not use it | 12 | 10,3 |
| I use it sometimes | 11 | 9,4 |
| I generally use | 5 | 4,3 |
| I use it always | 3 | 2,6 |
| Total | 117 | 100 |

Table VI clearly shows that students do not use their smartphones to check "likes" on Facebook. Chi square = 3.402 (df = 4), $p = 0.05$.

TABLE VII
USING A SMARTPHONE TO SEARCH FOR SOME INFORMATION ON THE INTERNET

| | f | % |
|---------------------------|-----|------|
| I don't use it | 28 | 23,9 |
| I generally do not use it | 12 | 10,3 |
| I use it sometimes | 38 | 32,5 |
| I generally use | 24 | 20,5 |
| I use it always | 15 | 12,8 |
| Total | 117 | 100 |

Table VII shows that 32.5% of students use smartphones sometimes, 20% use them mostly and 12.8% use them completely to search information on the Internet. Chi square = 3.462 (df = 4), $p = 0.5$. The obtained results can be considered statistically significant.

TABLE VIII
USING YOUR SMART PHONE DURING SCHOOL BREAK

| | f | % |
|---------------------------|-----|------|
| I don't use it | 32 | 27,4 |
| I generally do not use it | 23 | 19,7 |
| I use it sometimes | 23 | 19,7 |
| I generally use | 24 | 20,5 |
| I use it always | 15 | 12,8 |
| Total | 117 | 100 |

The calculated value of the χ^2 test (Chi square=11.302 (df=4), $p=0.05$) is larger than the limit value at degree of freedom 4. The results can therefore be considered statistically significant. It can be concluded that students use smartphones during breaks.

TABLE IX
USING YOUR SMARTPHONE DURING CLASSES, BUT NOT FOR SCHOOL PURPOSES

| | f | % |
|---------------------------|-----|------|
| I don't use it | 76 | 65,0 |
| I generally do not use it | 15 | 12,8 |
| I use it sometimes | 17 | 14,5 |
| I generally use | 6 | 5,1 |
| I use it always | 3 | 2,6 |
| Total | 117 | 100 |

In Table IX the majority of the students, 65% of them, stated that they never use smartphones during classes, 12.8% of the students mostly do not use them during classes, 14.5% of the students use them sometimes and 7.7% of the students mostly or completely use smartphones during classes, but for non-learning activities. Chi square = 10.325 (df = 4), $p = 0.02$.

TABLE X
USING YOUR SMARTPHONE FOR LISTENING TO MUSIC

| | f | % |
|---------------------------|-----|------|
| I don't use it | 14 | 12 |
| I generally do not use it | 4 | 3,4 |
| I use it sometimes | 25 | 21,4 |
| I generally use | 31 | 26,5 |
| I use it always | 43 | 36,8 |
| Total | 117 | 100 |

Table X shows data regarding the use of smartphones to listen to music. 36.8% of the students completely use smartphones to listen to music, 26.5 % use them mostly and 21.4 % of the students use them sometimes. Chi square = 1.526 df = 4, $p = 0.05$.

Table XI shows that a total of 4.3% of students gets admonished by their teachers for using their smartphones during classes, 7.7% are admonished sometimes and 88% of them are never admonished.

At degree of freedom 4 the value of the χ^2 test (Chi square = 4.019 (df=4) $p=0.5$) is larger than the limit values. The results can therefore be considered statistically significant.

Table XII shows that a total of 42.7% of the students prefer playing outdoor games to playing games on their computer or smartphone, while 23.1% of the students prefer playing games on their computer or smartphone to playing outdoor games. A total of 34.2% of the students claim that they sometimes prefer outdoor games to computer and smartphone games. It can be concluded that students prefer playing outdoor games, which is of great significance for their psychophysiological development. Chi square values (Chi square = 3.942 (df=4) $p=0.5$) indicate that data can be considered statistically significant.

TABLE XI
WARNING TEACHERS FOR USING THEIR SMARTPHONES DURING CLASSES

| | f | % |
|------------------|-----|------|
| 1 I don't use it | 97 | 82,9 |
| 2 Generally not | 6 | 5,1 |
| 3 Sometimes | 9 | 7,7 |
| 4 Generally yes | 2 | 1,7 |
| 5 Usually yes | 3 | 2,6 |
| Total | 117 | 100 |

TABLE XII
STUDENTS WHO SAY "I PREFER GAMES OUTSIDE MORE THAN COMPUTER GAMES OR GAMES ON THE CELLPHONE"

| | f | % |
|------------------|-----|------|
| 1 I don't use it | 22 | 18,8 |
| 2 Generally not | 5 | 4,3 |
| 3 Sometimes | 40 | 34,2 |
| 4 Generally yes | 19 | 16,2 |
| 5 Usually yes | 31 | 26,5 |
| Total | 117 | 100 |

IV. CONCLUSION

The research comprised students of the 6th and 7th grades of elementary school. Of the 117 respondents, only 10.3% of the respondents do not use the smartphone. Students often use their smartphones to play online video games (67.5%), to search information on the Internet (76.1%) and to browse Facebook social network. During breaks at school most of the students spend this time using their smartphones, however more worrying information is that students use smartphones during classes but not in relation to that particular class. Since most of the students spend their school time using the smartphone, the question is to what extent are such new forms of communication "harmful" for the students, particularly during school breaks when time could be spent exercising, walking, doing other form of physical activity, socializing, playing games, communicating face to face, etc. It is highly worrisome that students use smartphones during classes. The suggestion is that students are asked to leave their mobile devices in their school bags or in another appropriate place and not to use them during classes, unless this is required for teaching, i.e. educational purposes. Furthermore, permanent education of students about the pros and cons of the use of

smartphones and other devices for educational purposes and in their free time should become frequent reminders by the teachers but also by the students. There are probably many reasons to use smartphones during classes for non-learning purposes, whether it being indifference for the teaching contents, inability to follow the class, falling behind in learning, boredom, lack of motivation, preoccupation with news on social network, possible signs of addiction and similar. Nevertheless, it must be noted that new generations require new learning and teaching methods, however importance must be reflected in the right dosage of new technologies and adequate software to make the "technology at the service of students" instead of "students at the service of technology". We therefore propose the only possible solution (formula), which reads: smart teens + new ICT = use it in a smart, appropriate and friendly way and you will create more free time for other (physical) activities and hobbies.

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