**Kőrösi Gábor**[1]
Bolyai Grammar School and Dormitory for Gifted Students
*Senta, Serbia*
**Esztelecki Péter**[2]
Bolyai Grammar School and Dormitory for Gifted Students
*Senta, Serbia*

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# IMPLEMENTATION OF MOBILE PHONES IN EDUCATION

***Resume*:** According to a latest survey of UNESCO 6 milliard people use mobile phones every day. Such huge numbers might raise the question of what their influence is on education. In which direction would the methodology of education evolve? Such an enormous developmental change was noticeable 10-15 years ago when the Internet arrived to virtually every single school. In those times, this rapid technological improvement left a great impact with positive and negative effects and still prevails in today's classrooms. Nowadays, we clearly know that the reason behind this developmental shift lies in our unpreparedness for a paradigm shift in front of our eyes. The educational system in our region looks upon pedagogy through mobile phones (M-learning) as a notion delving in the realms of utopia. However, such inadequacy could be transformed into advantage through learning from mistakes and keeping a pace ahead immediate and expected revolutionary changes in education.

It is well-known that mobile phone usage during lessons is, according to social standards, unwanted not only in several countries worldwide but also in Serbia. The Ministry of Education cannot handle effectively mobile phones, tablets, and other potential alternative educational methods or supplements. Thus, the easiest solution has become widespread; namely, to ban phones entirely out of classrooms. However, scratching the surface would not eliminate problems; it would just delay them given the fact that educational experts in the north treat this issue in a more liberal way. A good example would be Denmark that introduced the BYOT program (Bring Your Own Technology) and is determined to pin down that each school provide Wi-Fi coverage.

Our research aims at finding out how teachers and learners treat this issue on the territory of Vojvodina. We would attempt to justify our presuppositions according to which teachers feel certain scepticism about mobile phones in the classrooms, especially those teachers who are not owners of a smart phone. Data were collected through an on-line questionnaire with 455 young participants and 49 teachers from 9 municipalities in Vojvodina.

*Key Words*: M-learning, smart phones, educational methodology.

[1] imgaboy@yahoo.com
[2] esztelecki@gmail.com

## Introduction

It seems noticeable that this last decade brought about a tangible change in social and cultural life with a revolutionary and rapid development in mobile communication; in fact, such a change has already become our everyday reality. A good example might be the Arab Spring in 2011 that started on Facebook and smart phones ending with the resolution of the parliament.

Nowadays, 6 milliard people own a mobile phone and have Internet access, which could have a direct helpful impact on education (Mark 2012). As a professional teacher and as a private person, I have been observing such changes with anxiety and caution not excluding the possibility of technology surmounting our students, children, and all of us. Bearing in mind the aims of education, I would argue that purposeful use of technical innovations and possibilities would enhance efficiency, since whether one likes it or not the entire world has become mobile.

Today's mobile communication is an everyday reality in the lives of learners and it will increasingly be true in the future, thus sooner or later it is going to grow into a generally accepted learning tool as video, computer, or Internet had once become. The capacity of contemporary phones are not legging behind the processing power of personal computers, can be carried in a pocket, and can provide access to various sources of information and data worldwide. This obvious advantage carries huge potentials that are exploitable for the benefit of education (Naismith 2004).

Mobile phones as educative tools have been sentenced to prejudice and resistance through the entire society around the world including Serbia. Even educators and the Ministry of Education regard this innovative technology with certain contempt while struggling to include it into the long established methodological solutions as an alternative. In my view, such a possibility should be taken into consideration, since never has a technological advancement in its entire history been so available to civil societies as mobile communication (Kismihok 2007). We should live with the opportunity, even though we are a small and poor country, we have been given the possibility of introducing mobile devices in education that would not cost a penny for the Ministry of Education, since learners have already gained access to apply such a technology (Kismihok 2007).

In our paper, on the one hand, we intended to shed light on attitudes toward M-learning worldwide including Serbia, and on the other, to acquire answers to the question of how teachers and learners use mobile communication.

## Global and domestic access to mobile communication during lessons

According to a UNESCO research (Mark 2012), there are 6 milliard subscribers to mobile networks worldwide, a tendency seemingly unstoppable. Information revolution poses itself as a challenge to schools and shifts the framework of the entire educational system. Written word is slowly losing the battle in communication against virtual education that is becoming widespread; nonetheless, personal communication cannot be disregarded.

Contrary to advanced societies, we have acquired a status quo regarding M-learning, while others are trying to benefit from its various possibilities in education. A good example is the European Union's Leonardo da Vinci project that offers the following topics:

1) from E-learning to M-learning (2000-2003);
2) Mobile-learning for the next generation (2003-2005);
3) Implementation of mobile technology into education (2005-2007) (TORSTEIN 2009). In line with this program, several countries of the European Union have initiated their own research as Norway's NKI (Norwegian Knowledge Institute), which listed 10 000 learners through 400 courses and 130 educational - scientific programs. (TORSTEIN 2009). Another good example is the MoLeNet in England with 7 000 participants and 40 000 learners, including a financial capacity of 12 million pounds (Mark 2012).

How do we reflect upon the aforementioned facts? We are, unfortunately, underdeveloped in this matter, though teachers have been offered an accredited M-learning course this year (ZUOV, 2014). The KOBSON database provides research in that direction, however, they are unremarkable with reference to data from the neighbouring Hungary, even though they are at the end of the list.
While some are dreaming of M-learning revolution, mobile phones are forbidden in most of the Serbian schools. I cannot even imagine how a teacher is willing to participate in an M-learning conference trying to put the acquired knowledge into practice afterwards.

**Do you support mobile phones in education?**

The standpoint of NKI, MoLeNet, and the European Union is that we should not underestimate the application of mobile phones in education. A number of research provide proof to the efficiency of M-learning courses, an example is the university in Burnel, which investigated the effects of mobile phones on learners during lessons and the level of their impact on mathematical skills development. The results are encouraging showing positive outcomes (Ahmad, 2012).

Other examples reveal that new opportunities have been given to communities that lacked educational establishments in the past. An example is the ABC project in Africa, which aimed at teaching adults to read and write. Also, oppressed women were thought mathematics through interactive games within the framework of M4Girls project in South Africa. A similar initiative was called Mobile Mathematics (MoMath) also in South Africa with 25 000 learners and 500 teachers in 172 schools. Those in favour of the program like sponsors are not only teachers but also delegates to the parliaments (Mark, 2012). Additionally, Colombia has a standpoint that the level of illiterate in the country can be lowered with the help of mobile communication instead of laptops or personal computers.

Besides social benefits, a number of positive pedagogical advantages seem to be salient. The application of mobile phones makes available data collection and processing of incoming information even during lessons emphasizing a technological hybrid tool as a supplementary instrument in teaching (Naismith, 2004).

ML does not put emphasis on the place of learning, does not separate workplace from public space, home from learning environment, and does not even alter the notion of learning opportunities (Agnes, 2010). Following this line of thought of Agnes (2010) we may conclude that mobile communication has got some advantages, namely:

- It is an effective tool for disadvantaged individuals in lower layers of society;
- Course information is widely available owing to podcasts, mobile applications, blogs, and e-books all accessible to potential future users;
- Disadvantaged people, through mobile phones, would be given the opportunity to improve the quality of education in their neighbourhood;
- Lesson plans and methodology behind them could be revitalized through incoming information from the learners;
- It could serve as a useful scientific tool for learners in geographically dispersed areas, which would allow them to access local information and knowledge, and also to gain access to scientific research material.

## Methods

Besides analysing international research database in the framework of our study, our primary aim was to do an opinion poll among students and teachers in connection with mobile communication in schools across Vojvodina. We were searching for answers to the question: how much time do students spend on mobile phones and in what purpose? Our study involved 9 municipalities (Senta, Kanjiza, Becej, Sombor, Subotica, Apatin, Kovacica, Backa Topola, Novi Sad) with 455 learners and 49 teachers. Samples were acquired deliberately, since this study was an exploratory research, thus we used the technique of gathering information by questionnaires; namely, participants filled in an on-line sheet in respect to smart phones, in particular we were interested if learners and teachers own a smart phone and what their opinion was about the potentials of their application during lessons and in what purposes. Answers were collected and registered automatically in a database. We spread the questionnaire among Facebook groups with educational profiles, and also asked for assistance from primary and secondary school colleagues to collect data among their learners.

Our hypothesis is that teachers feel sceptical regarding this new technology, mostly those who do not own a mobile phone. Research was carried out using the methodology of non-experimental systematic observation and descriptive methods.

## Research findings

The first question referred to how many students and teachers own the necessary smart phone which enables putting in use an M-learning environment. We concluded that 71.81% of learners (Table 1, Chart 1), and 45.83% of teachers use smart phones (Table 2, Chart 1). If learners are observed along their age and gender, on the one hand, significant differences cannot be stated, on the other hand, male teachers seem to be more entrepreneurial with 72.73% of mobile phone possession, while only 37.84% of female teachers use smart phones.

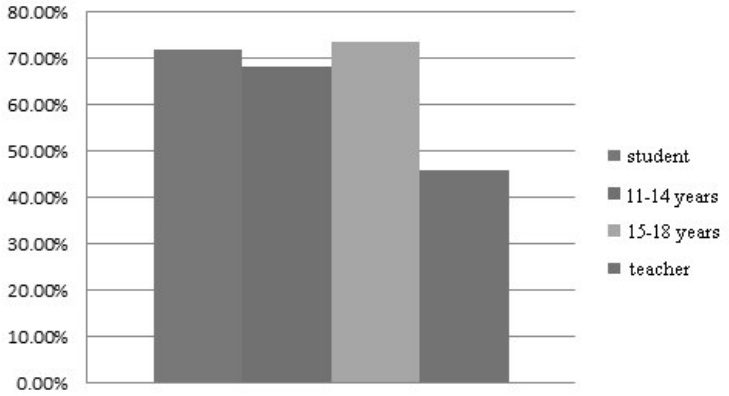
*Table 1. Possession of smart phones among learners according to their age and gender*

| Altogether | Female | Male | 11 -14 years | 15 -18 years |
|---|---|---|---|---|
| 71.81% | 53.40% | 47.22% | 68.22% | 73.46% |

*Table 2. Possession of smart phones among teachers according to gender*

| Altogether | Female | Male |
|---|---|---|
| 45.83% | 37.84% | 72.73% |

*Chart 1 Possession of smart phones among learners and teachers*

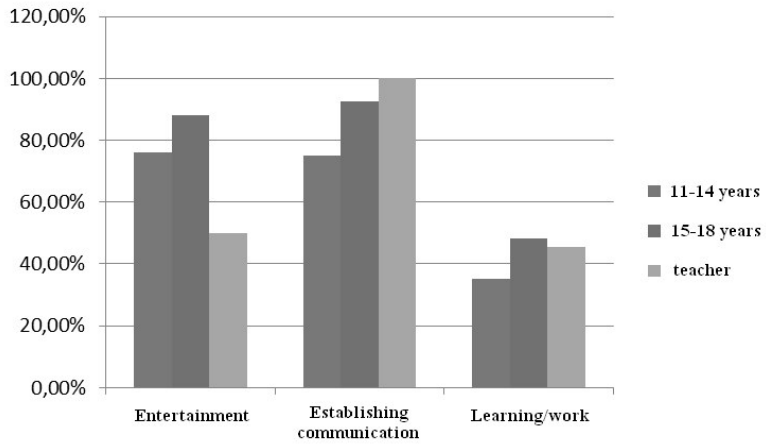



One of the intentions of our research was to find out what the motivation of people involved in the study was to use smart phones (Table 3, Chart 2). An eye-catching difference could be observed between certain groups; namely, two groups of students with a tiny difference used their smart phones in entertainment purposes (76-88%), while only every second teacher had an application installed with the same intent. However, if we treat mobile phones as communication tools, we may conclude that 100% of teachers use them purposefully, while only 75% of the youngest learners turn on their phones to communicate. The source of such differences may lie in different user interpretations: while younger generations use Facebook, Skype, etc. to communicate due to financial reasons, their teachers connect to a cell phone data communication network with the same aim. We should point out that generation between the age of 15-18, i.e.: secondary school students use their phones mostly for work and learning.

*Table 3. What is smart phone used for?*

| 11 -14 years | 15 - 18 years | Teachers | |
|---|---|---|---|
| 76.14% | 88.24% | 50.00% | Entertainment |
| 75.00% | 92.44% | 100.00% | Establishing communication |
| 35.23% | 48.32% | 45.45% | Learning/work |

*Chart 2 What is smart phone used for?*




We have already mentioned that using mobile phones in Serbian schools are prohibited, though we were intentionally curious about what teachers and learners think about this question. The question of whether students use their smart phones despite prohibition was answered with a YES in 53% of cases. 63.45% of learners between the ages of 15-18 have got a phone. These numbers become interesting when we compare the results with the 27% percent of teachers who support the inclusion of smart phones in teaching.

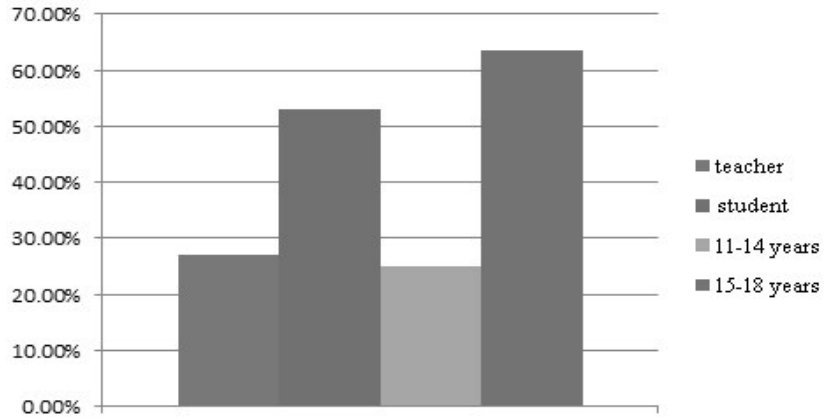
*Table 4. Have you used your mobile during lessons? (Learners' answers)*

| Yes | No | Altogether |
|---|---|---|
| 173 | 153 | "%" |
| 53.07% | 46.93% | |
| 25.00% | 65.91% | 11 – 14 |
| 63.45% | 22.27% | 15 - 18 |

*Table 5. Do you allow the use of phones? (Teachers' answers)*

| Yes | No |
|---|---|
| 27.08% | 72.92% |

*Chart 3. The application of mobile phones during lessons*

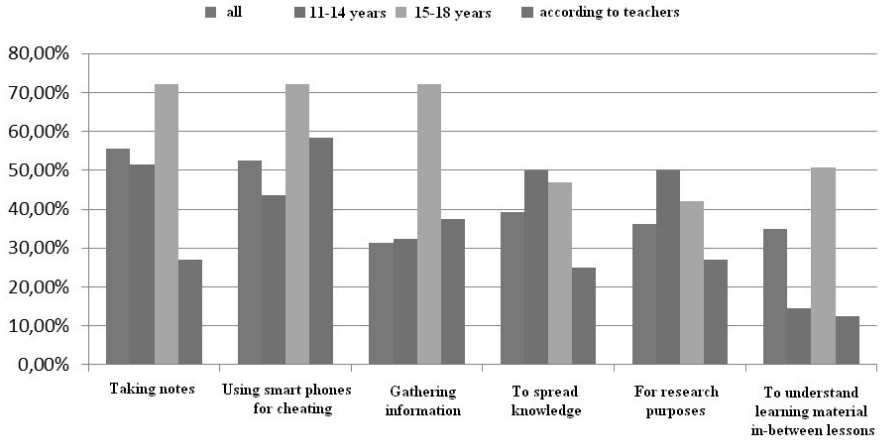



It is evident that learners despite prohibition use their phones during lessons, thus we may raise the question what for? We attempted to answer it from two aspects. We were inquisitive about what tasks students accomplish on their gadgets and what the subjective opinion of teachers is. Though, only 27% of the teachers think that students use their smart phones to take notes, this number might be higher due to the fact that learners between the ages of 15-18 had opted for the use of mobile phones in 72.20% of the cases. Unfortunately, their second most common intention is to cheat with the phone during testing and assessment in general, which is clearly banned. Smart phone usage permits higher mobility in 72% of the cases obtaining a good deal of useful information, while 50% of learners turn on their phones as a reminder of time elapsed till break.

*Table 6. The use of mobile phones in the school and during lessons*

| 15-18 years | 11-14 years | According to teachers | |
|---|---|---|---|
| 72.20% | 51.61% | 27.08% | Taking notes |
| 72.20% | 43.55% | 58.33% | Using smart phones for cheating |
| 72.20% | 32.26% | 37.50% | Gathering information |
| 46.83% | 50.00% | 25.00% | To spread knowledge |
| 41.95% | 50.00% | 27.08% | For research purposes |
| 50.73% | 14.52% | 12.50% | To understand learning material in-between lessons |

*Chart 4 The use of mobile phones in the school and during lessons*

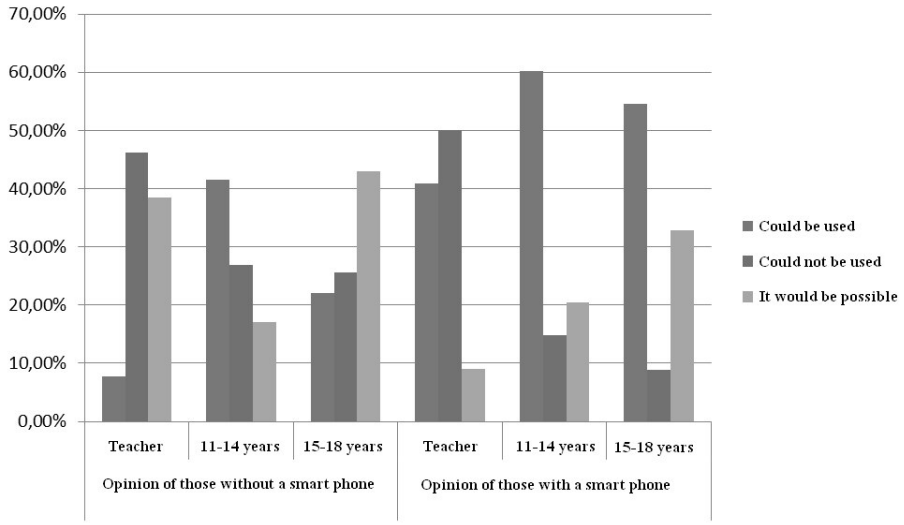



Regardless of the fact if somebody has got a smart phone or not or even if it is practical and justifiable to use a mobile phone in teaching or not, we all have a clear opinion. Next step in our study was to identify if students and teachers would be eager to introduce this type of educational device in their classroom (Table 7, Chart 5). A considerable deviation from the answers could be noticed because 50-60% of learners with a smart phone support this type of teaching, while students without the same gadget are not familiar with the advantages and opportunities of such a new methodological approach. It may seem interesting that learners in both groups tended to answer with a YES and POSSIBLE, while teachers overwhelmingly doubted in such a change since not even 50% of them supported this idea.

*Table 7. Would it be worth using smart phones during lessons?*

| Could be used | Could not be used | It would be possible | | |
|---|---|---|---|---|
| 7.69% | 46.15% | 38.46% | Teacher | Opinion of those without a smart phone |
| 41.46% | 26.83% | 17.07% | 11 – 14 years | |
| 22.09% | 25.58% | 43.02% | 15 - 18 years | |
| 40.91% | 50.00% | 9.09% | Teacher | Opinion of those with a smart phone |
| 60.23% | 14.77% | 20.45% | 11 - 14 years | |
| 54.62% | 8.82% | 32.77% | 15 - 18 years | |

*Chart 5. Would it be worth using smart phones during lessons?*




**Interpretation of the Findings**

Research findings indicate, to conclude, that mobile phone possession is more widespread among learners than teachers, while only 50% of the latter group use their smart phones just for fun; however, this ratio is higher in the circles of primary and secondary school students amounting to 80%. We have acquired interesting results with regards to smart phone usage during school lessons, since 63% of learners admitted to use smart phones, though it was permitted only in 27% of the cases.

If we analyse students' goals, we may arrive to the conclusion that, most of the time not only they gather information and take notes, but also fabricate cheat-sheets. All in all, we can conclude that ICT is slowly gaining space thanks to learners, but not in the right quality and quantity that would have a true emancipatory potential in the learning process; namely, to develop critical attitudes toward raw information, research triggering motivation to search and discover answers to some interesting questions. We hypothesized that teachers do not support the usage of smart phones because these gadgets are considered to be potential sources for cheating. We have gained confirmation to the supposition that smart phones are supported only by those teachers and learners who themselves own one, however they are in minority. Thus, a place where mobile phones could be effectively used to develop critical thinking, creative approaches to sorting out information, and to hypothesize to solve problems in projects that are aimed at acquiring thorough knowledge, that is education, has not earned its desired place in the modern world.

## Conclusion

Our research has shown that mobile communication is gradually gaining space in institutional education not only around the world but also in our country. Opposite to developmental trends, a number of schools and universities said no to mobile phones forcing teachers to stick to traditional teaching methods. Clearly, to undergo a change in attitudes toward this question, well defined educational policies are necessary that would sets rules and advice to proper use of new technologies in education (Agnes, 2010).

There was a certain level of palpable opinion differences between students and teachers, a reaction that is typical if an innovative technology gains space; a good example was the introduction of computers, projectors, or Internet connection in schools, which are all absolutely indispensable nowadays. Naturally, the acceptance of ICT tools depends largely upon financial and psychological aspects (Namesztovszki, 2008), though our teachers truly do not recognize the potentials in education hidden behind these tools and the possibility to organize lessons that would nourish emancipatory functions of learning, help in self-determined and self-organizing learning, and would facilitate an autonomous and a motivating environment. Educators rather neglect such an alternative pedagogy, which may be the direct consequence of them not realizing didactic-methodological possibilities of ICT tools.

Regardless of these facts, we must conclude that mobile phones have their place in education not only around the world but also in our country, all underpinned by results from this study: - illiterate women in Pakistan learnt to write and read using mobile phones, while in Eastern-America examples about the local ecosystem helped students to understand complicated phenomena using M-learning during an excursion, etc. (Mark, 2012).

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***Biographical note:***

***Korosi Gabor,*** control and robotics engineer and graduated teacher of IT. Currently he works as an IT teacher at Bolyai Secondary Grammar School and Dormitory for Gifted Students in Senta, Serbia. He has exceled in talent management for the last eight years, which concentrates on the field of STEM. Students from his study group were attending to competitions in Moscow, Bratislava, England and Abu Dhabi. In 2013-2014 he took part in Google's Trailblaizer project which proposed reformation in the education of the STEM field. In 2014 he got the Digital Teacher Award in Budapest. Author of numerous studies and participant of conferences, in 2015 he was the founder and teacher of the first Vojvodinian MOOC course in Hungarian language.

***Peter Estelecki*** was born in Senta in June 28, 1984. He graduated from the Budapest University of Technology and Economics in 2010 as IT engineer. In 2011 he graduated from High School of Technology in Subotica as electrical engineer. In 2014 he finished his studies at the University of Debrecen on the postgraduate program for qualification examination in pedagogy. Currently he works as an IT teacher and educator at Bolyai Secondary Grammar School and Dormitory for Gifted Students and also at College of Horticulture of Budapest Corvinus Faculty in Senta. In 2014 he got the Digital Teacher Award in Budapest. His main research area is the use of ICT devices in IT education and other courses.