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## KORIŠĆENJE MOBILNOG TELEFONA U NASTAVI

**Rezime:** Po najnovijim istraživanjima UNESCO-a 6 milijardi ljudi poseduje pametne telefone (engl. smartphone). Na osnovu ovog ogromnog broja postavlja se pitanje kakav će biti uticaj toga na nastavu. U kom pravcu ide razvoj metodike nastave? Takav ogroman stepen razvoja tehničkih reformi videli smo pre 10–15 godina, kada je korišćenje interneta postalo dostupno svim školama. U to vreme ova promena je bila ogromna i brza sa pozitivnim i negativnim rezonancama na koje i danas nailazimo u učionicama. Danas već znamo da je razlog za to, pre svega, što nismo bili dovoljno pripremljeni na zbivanja koja su se dešavala pred našim očima. U našem regionu obrazovanje pomoću mobilnih telefona (*m-learning*) još uvek se smatra utopijom. Tu nepovoljnost treba pretvoriti u prednost, učiti iz sopstvenih grešaka i biti korak ispred neposredne i očekivane revolucije u nastavi.

Poznato je da upotreba mobilnih telefona na školskim časovima nailazi na društveni otpor i predrasudu kako u mnogim zemljama sveta tako i u Srbiji. Ministarstvo za obrazovanje ne zna gde da smesti telefone, džepne računare kao moguće alternativne metode obrazovanja, ili pak dopune. Iz tog razloga odabran je najlakši put – zabrana korišćenje ove tehnike. Međutim, sa ovim se ne eliminiše, već se samo odlaže problem, jer severnije od nas stručni krugovi odnose se prema ovoj problematici puno liberalnije. Dobar je primer Danske gde su 2014. godine prihvatili BYOT (Bring Your Own Technology) program, a odlučeno je da se svaka škola obavezuje da obezbedi *WI-FI* (Wireless-Fidelity) pokrivenost.

U našem istraživanju tražimo odgovor kako se ophode nastavnici i učenici prema ovom pitanju u Vojvodini. Pokušavamo da opravdamo našu pretpostavku prema kojoj su nastavnici skeptični u vezi sa korišćenjem mobilnih telefona, a posebnu averziju imaju oni nastavnici koji ne poseduju pametne (smart) telefone. Podatke smo prikupili pomoću onlajn-anketiranja u kojem je učestvovalo 455 učenika i 49 nastavnika iz devet vojvodanskih opština.

**Ključne reči:** M-learning, nastavni metod, pametni telefoni.

### Uvod

Čini se da u ovoj deceniji, zahvaljujući napretku mobilne telefonije, dolazi do velikih promena u socijalnom i kulturnom životu. Dobar primer je *Arapsko proleće 2011*, kada je zahvaljujući mobilnim telefonima i Fejsbuku pala vlada jedne države.

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U sadašnjem vremenu, više od 6 milijardi ljudi poseduje mobilne telefone i internet pristup, koji pomaže i ima uticaj na razvoj nastave (Mark, 2012). U svojstvu nastavnika i čoveka, gledam sa strepnjom kako tehnika nadvladava našim učenicima, decom i nad nama samima. Imajući u vidu ciljeve nastave, smatram da svrsishodnim korišćenjem tehničkih mogućnosti možemo biti efikasniji, jer hteli mi to ili ne – ceo svet je postao mobilan.

Mobilna komunikacija je danas svakodnevni deo života učenika i taj proces se sve više nastavlja; zato će, pre ili kasnije, postati i svakodnevna praksa u nastavi kao ranije video, računar i korišćenje interneta. Današnji telefoni dostižu kapacitete personalnog računara, mogu stati u džep i pružaju pristup raznim informacijama i izvorima podataka bilo gde na zemljinoj kugli. Ova prednost je veoma značajna i može se iskoristiti u izvođenju nastave (Naismith, Lonsdale, Vavoula, Sharples, 2004).

Mobilni telefon kao nastavno sredstvo, kako u mnogim državama na svetu tako i u Srbiji, nailazi na predrasudu i otpor u društvu. Ni pedagozi, ni Ministarstvo prosvete, ne znaju gde da smeste tu dopunsku alternativu. Po našem mišljenju, ovu mogućnost bi trebalo razmotriti, jer nikada do sada u istoriji tehnike ni jedna tehnologija nije bila toliko dostupna civilnom društvu kao danas mobilna telefonija (Kismihok, 2007). Trebalo bi iskoristiti priliku, jer se prvi put u istoriji (mada smo siromašna zemlja) pruža prilika da se uvede nastavna tehnologija koja Ministarstvo prosvete ne košta ništa, budući da učenici već poseduju mogućnost primene te tehnologije (Kismihok, 2007).

U našem istraživanju želeli smo da saznamo kako se na međunarodnom nivou i u Srbiji odnose prema *M-learning*-u i da dobijemo odgovor na pitanje: kakvi su načini korišćenja mobilne telefonije nastavnika i učenika.

### **Globalni i domaći pristup upotrebi mobilne telefonije za vreme nastave**

Prema istraživanjima UNESKO-a (Mark, 2012) danas postoji 6 milijardi pretplatnika mobilne telefonije na svetu i ova pojava ne može da se zaustavi. Ova revolucija u informatici je izazov za školu i menja okvire nastave. Pisana reč polako gubi mesto u komunikacijama, virtuelna nastava će biti uobičajena iako lična komunikacija ne može da se zanemari. Dok mi u vezi sa *M-learning*-om samo tapkamo u mestu, dotle napredna društva, umesto da se suprotstavljaju, pokušavaju da iskoriste te mogućnosti u nastavi. Dobar primer je projekat *Leonardo da Vinci* Evropske unije, u okviru koga su objavljeni programi:

- 1) *Od E-learning-a do M-learning-a* (2000–2003);
- 2) *Mobil-learning za sledeću generaciju* (2003–2005);
- 3) *Ugradnja mobilne tehnologije u nastavu* (2005–2007) (Rekkedal & Dye, 2009).

Pored toga, veći broj zemalja Evropske unije je pokrenuo svoja istraživanja, npr. Norveška (Norwegian Knowledge Institute<sup>3</sup>) je uključila 10.000 učenika kroz 400 kurseva i 130 nastavno-naučnih programa (Rekkedal & Dye, 2009). Dobar primer je takođe i projekat *MoLeNet* iz Engleske sa 7.000 učesnika i 40.000 učenika, sa finansijskim okvirom od 12 miliona funti (Mark, 2012).

A kako se mi ophodimo prema tom pitanju? Nažalost, mi smo jako zaostali na tom planu, iako smo ove godine naišli na akreditovanu *M-learning* obuku (ZUOV, 2014). U bazi podataka

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<sup>3</sup> U daljem tekstu: NKI.

KoBSON nailazimo na istraživanja u tom pravcu, mada su ona zanemarljiva u odnosu na podatke iz susedne Mađarske, koja se nalazi na začelju liste.

Dok neki sanjaju o *M-learning* revoluciji, za to vreme u Srbiji je u većini škola zabranjeno korišćenje mobilnih telefona.

### Da li podržavati primenu mobilnog telefona u nastavi?

Stav NKI, MoLeNet i Evropske unije je da ne treba zanemariti primenu mobilne telefonije u nastavi. Mnogobrojna naučna istraživanja govore o efikasnosti *M-learning* programa. Tako je, na primer, fakultet u Burnelu ispitivao kako nastava sa korišćenjem mobilnih telefona utiče na učenike (Abu-Al-Aish & Love, 2013) i kakav je uticaj takve nastave na matematičku sposobnost učenika. Rezultati su pokazali pozitivnu perspektivu (Abu-Al-Aish, Love & Hunaiti, 2012).

Drugi dobri primeri su slučajevi gde do sada nije bilo nastave – sada su se primenom mobilne telefonije otvorile nove dimenzije. Tako, na primer, u Africi u okviru ABC projekta odrasli uče da pišu i čitaju; *M4Girls* projekat u Južnoj Africi omogućio je da se edukuju ugnjetavane žene i interaktivnim igrama uče matematiku. Sličan ovome je projekat *Mobil matematika* (MoMath), takođe u Južnoj Africi, sa 25.000 učenika i 500 nastavnika u 172 škole. Zagovornici i sponzori programa su kako nastavnici škola, tako i poslanici u parlamentu (Mark, 2012). Kolumbija smatra da veliku nepismenost može da smanji korišćenjem mobilne telefonije, umesto laptop i personalnih računara...

Pored društvenih prednosti uočava se i bezbroj pozitivnih pedagoških prednosti. Upotrebom mobilne telefonije u stanju smo da sakupimo i da obradimo povratne informacije još za vreme nastave, koja naglašava tehnološki hibrid kao dopunsko sredstvo u nastavi (Naismith et al., 2004).

ML se ne zadržava samo na klasičnom mestu za učenje, već se proširuje ta mogućnost učenja kod kuće, na radnom mestu na javnim mestima, a čak obuhvata i pojam učenja i pojam mogućnosti učenja (Kukulska-Hulme, 2010). Prema ovom autoru, sledeće prednosti proizilaze iz korišćenja mobilne telefonije u nastavi:

- efikasno je sredstvo u omalovažavanim društvenim slojevima;
- informacije za obuku dostupne su širim slojevima pomoću podkastova, mobilnih aplikacija, blogova i e-knjiga, koji su dostupni budućim potencijalnim korisnicima;
- ugroženim društvenim grupama mobilna telefonija pruža mogućnost da se poboljša kvalitet nastave u njihovom okruženju;
- plan nastave može da se revitalizuje, da se nastavne metode poboljšaju uz pomoć povratnih informacija od učenika;
- vredno je pomoćno naučno sredstvo za geografski razudene učenike, koje omogućava da učenici lakše dopru do lokalnih podataka i znanja, a postoje i mogućnosti pristupa naučnim ispitivanjima.

### Metode istraživanja

Pored sagledavanja međunarodnih iskustava, u našem istraživanju cilj je bio da saznamo kakvo je mišljenje učenika i nastavnika u vezi sa korišćenjem mobilne telefonije u nastavi vojvođanskih škola. Tražili smo odgovor na pitanje: koliko i za šta koriste učenici mobilne telefone u školi.

U naše istraživanje uključili smo 9 opština (Senta, Kanjiža, Bečej, Sombor, Subotica, Apatin, Kovačica, Bačka Topola, Novi Sad); učestvovalo je 455 učenika i 49 nastavnika. Uzorak je bio hotimični, jer je reč o eksplorativnom istraživanju. Za prikupljanje podataka korišćena je tehnika anketiranja – učesnici su ispunili jednu onlajn-anketu u vezi sa korišćenjem pametnih telefona, sa pitanjima vezanim za to da li učenici, odnosno nastavnici poseduju pametne telefone i šta misle o tome da li mogu da se koriste na školskim časovima i u koje svrhe. Odgovori su bili automatski skladišteni u bazi podataka. Ovaj upitnik smo proširili po raznim edukativnim Fejsbuk grupama, a takođe smo tražili podršku od naših kolega (iz osnovnih i srednjih škola) da upitnik šire dalje svojim đacima.

Naša hipoteza je da su nastavnici skeptični kada je reč o novoj tehnologiji, posebno oni koji ne poseduju pametne telefone. Istraživanje je vršeno metodom neeksperimentalnog sistematskog posmatranja i korišćenjem deskriptivne metode.

### Nalazi istraživanja

Prvi korak našeg istraživanja je da na osnovu datih odgovora konstatujemo da li postoji uzročno-posledična veza između uzrasta i činjenice da li anketirani učenici poseduju smart telefon. Za ovakvu analizu kako uzrast tako i posedovanje smart telefona treba pretvoriti u numeričke vrednosti (tabela 1).

Tabela 1. Numeričke vrednosti posedovanja smart telefona

| UZRAST       | VREDNOST |
|--------------|----------|
| 6–10 godina  | 0        |
| 11–14 godina | 1        |
| 15–18 godina | 2        |
| SMARTFON     |          |
| Ima          | 1        |
| Nema         | 0        |

Dobijeni faktor korelacije iznosi 0.05, a Cronbach alpha koeficijent iznosi 0.09. Na osnovu toga može se zaključiti da ne postoji odnos zavisnosti.

Zatim smo odredili zavisnost između polova učenika i posedovanja smart telefona kao rezultat toga koeficijent korelacije je -0.02, dok je Cronbach alfa koeficijent -0.04. Zavisnost ne postoji ni u ovom slučaju. Za ovu opraciju-radnju polove treba numerički predstaviti. Odgovore dečaka smo označili sa 0, a kod devojaka sa 1. Negativni predznak označava obrnutu vezu između ispitivanih vrednosti, tj. dečaci sa nulom u većem procentu poseduju smart telefone nego devojke koje su sa većom numričkom vrednošću, tj. 1.

Drugi test smo izvršili na nastavnicima. Dobijena vrednost koeficijenta korelacije je -0.29, koji ima neznatno veću vrednost (1), što u ovom slučaju znači da muškarcima u neznatnoj meri, ali ipak više poseduju smart telefone. Vrednost Cronbach alfa koeficijenta je -0.82, a to je potvrda prethodno navedenog.

Sledeće pitanje bilo je koliki broj učenika i nastavnika poseduje neophodni pametni telefon, koji omogućuje primenu *M-learning*-a. Došli smo do saznanja da je kod učenika to 71,81% (tabela 2 i prikaz 1), dok kod nastavnika pametne telefone koristi samo 45,83% (tabela 3 i

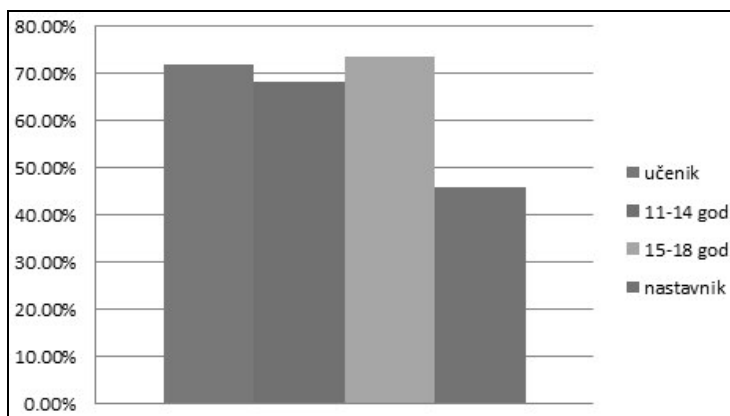
prikaz 1). Ako posmatramo učenike po uzrastu i polu, ne mogu se konstatovati značajne razlike. Međutim, 37,84% od ukupnog broja nastavnica koje su učestvovala u istraživanju poseduju pametne telefone, dok 72,73% nastavnika ima svoje pametne telefone.

Tabela 2. Posedovanje smart telefona kod učenika po uzrastu i polu

| 15–18 god. | 11–14 god. | Muško  | Žensko | Svega  |
|------------|------------|--------|--------|--------|
| 73.46%     | 68.22%     | 47.22% | 53.40% | 71.81% |

Tabela 3. Posedovanje smart telefona kod nastavnika po polu

| Muško  | Žensko | Svega  |
|--------|--------|--------|
| 72.73% | 37.84% | 45.83% |

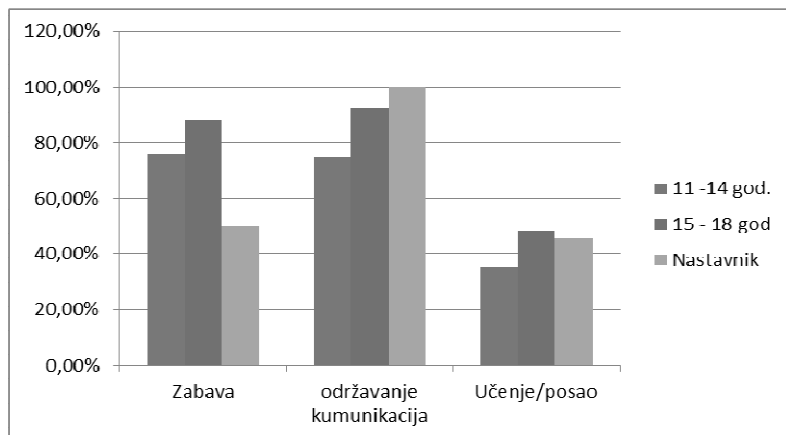


Prikaz 1. Posedovanje smart telefona kod učenika i kod nastavnika

Prilikom našeg ispitivanja tražili smo odgovor na pitanje: ko za šta koristi mobilni telefon (tabela 4 i prikaz 2). Interesantna razlika se pokazala između pojedinih grupa – dok su u dve grupe učenika, samo sa malom razlikom, svi koristili svoje mobilne telefone u svrhu zabave (76–88%), kod nastavnika je tu mogućnost koristio samo svaki drugi nastavnik. Međutim, ako telefon posmatramo kao sredstvo komunikacije, u tom slučaju nastavnici koriste 100% ovaj vid primene, dok i najmlađi učenici tu mogućnost koriste samo u 75%. Ova razlika najverovatnije proizilazi iz različite interpretacije korisnika: dok mlađa generacija korisnika iz finansijskog razloga upotrebljava *Fejsbuk*, *Skajp* itd., njihovi nastavnici telefonski saobraćaj podataka koriste sa istim ciljem. Interesantan je i podatak da generacija od 15 do 18 godina, znači srednjoškolci, koriste najviše svoje telefone za rad i učenje.

Tabela 4. Ko za šta koristi svoj smart telefon? (Odgovori učenika)

|                         | Nastavnik | 15–18 god. | 11–14 god. |
|-------------------------|-----------|------------|------------|
| Zabava                  | 50.00%    | 88.24%     | 76.14%     |
| Održavanje komunikacija | 100.00%   | 92.44%     | 75.00%     |
| Učenje/posao            | 45.45%    | 48.32%     | 35.23%     |



Prikaz 2. Ko za šta koristi svoj smart telefon? (Odgovori učenika)

Iz tabele 5 se vidi da nijedna aktivnost nije u korelaciji sa uzrastom što znači da aktivnost ne zavisi od uzrasta.

Tabela 5. Korelacije aktivnosti i uzrasta

| AKTIVNOST           | KORELACIJA |
|---------------------|------------|
| Zabava              | 0.10       |
| Povezanost, kontakt | 0.16       |
| Učenje              | 0.11       |
| Rad                 | 0.07       |

Iz tabele 5. se vidi da nijedna aktivnost nije u korelaciji sa uzrastom što znači da aktivnost ne zavisi od uzrasta.

Rezultati dobijeni kod nastavnika prikazani su u tabeli 6. Nastavnici koji ne poseduju smart telefone nisu uzeti u obzir kod procentualnog proračuna.

Tabela 6. Za šta koristi svoj smart telefon? (Odgovori nastavnika)

|   | Zabava | Povezanost, kontakt | Učenje | Rad   |
|---|--------|---------------------|--------|-------|
| % | 50.00  | 100.00              | 31.82  | 45.45 |

Na pitanje "Da li si koristio smart telefon za učenje" dobijeni odgovor sa koeficijentom korelacije od 0.18 pokazuje da ne zavisi od uzrasta. Distribucija prema uzrastu je prikazana u tabeli 7.

Tabela 7. Distribucija prema uzrastu – korišćenje smart telefona za učenje

| Već su koristili za učenje<br>% | 11-14 god.<br>% | 15-18 god.<br>% |
|---------------------------------|-----------------|-----------------|
| 69.37                           | 57.25           | 74.46           |

Naveli smo da je u Srbiji zabranjeno korišćenje mobilnih telefona u školama, a bili smo

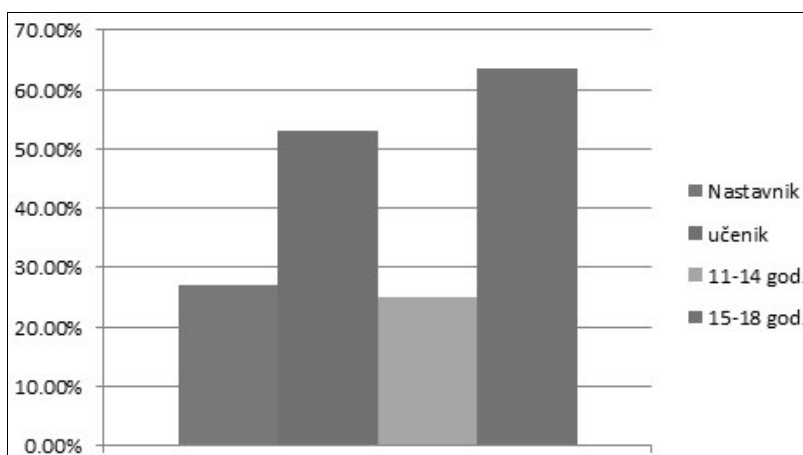
ljubopitljivi kakvo je mišljenje nastavnika i učenika o tome. Na postavljeno pitanje da li učenici ipak obično koriste svoje telefone, 53% učenika je odgovorilo sa DA, a u uzrastu učenika od 15 do 18 godina čak 63,45%. Ovakav podatak postaje interesantan kada posmatramo nastavnike koji podržavaju ovakvu vrstu primene samo u 27% slučajeva.

Tabela 8. Da li si već koristio telefon na času? (Odgovori učenika)

|       | Ne     | Da     |
|-------|--------|--------|
| "%"   | 46.93% | 53.07% |
| 11-14 | 65.91% | 25.00% |
| 15-18 | 22.27% | 63.45% |

Tabela 9. Dozvoljavate li korišćenje mobilnog telefona (u koje svrhe?) (Odgovori nastavnika)

| Ne     | Da     |
|--------|--------|
| 72.92% | 27.08% |

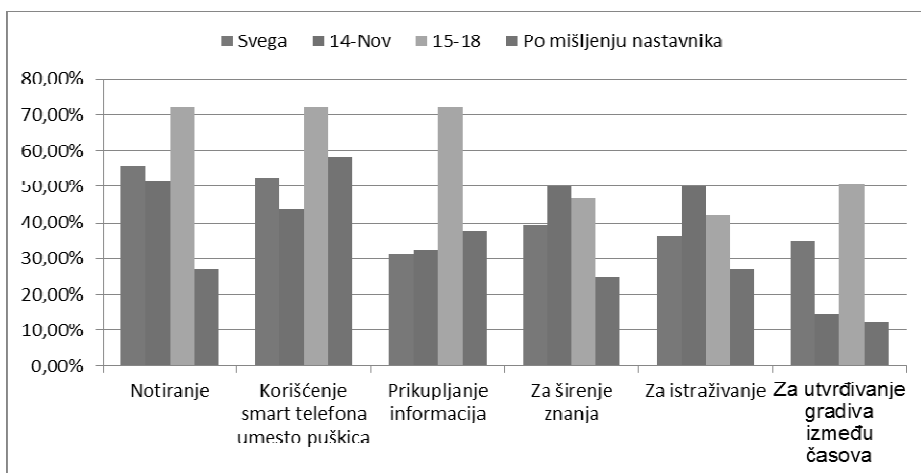


Prikaz 3. Korišćenje telefona na času

Pošto učenici ipak koriste svoje telefone na času, postavlja se pitanje za šta ga koriste. Na ovo pitanje tražili smo odgovor sa dva aspekta. Bili smo zainteresovani za šta se može stvarno koristiti telefon i kakav je subjektivni stav nastavnika. Dok je mišljenje nastavnika bilo da učenici svoje smart telefone koriste za hvatanje beleški u 27% slučajeva, ova brojka je znatno veća, jer su se u uzrastu od 15 do 18 godina, 72,20% učenika izjasnilo da ga koriste u tu svrhu. Nažalost, na drugom mestu je da većina učenika zloupotrebljava smart telefone kod pisanja testova, kontrolnih zadataka što nije dozvoljeno. Korišćenjem smart telefona srednjoškolci u 72% slučajeva postaju svestraniji i dobijaju veliki broj korisnih informacija, dok 50% učenika uključuju svoje telefone samo u svojstvu podsetnika za vreme odmora između časova.

Tabela 10. Korišćenje mobilnog telefona u školi i na časovima

|  | Po mišljenju nastavnika | 11–14  | 15–18  |
|--|-------------------------|--------|--------|
| Notiranje                                | 27.08%                  | 51.61% | 72.20% |
| Korišćenje smart telefona umesto puškica | 58.33%                  | 43.55% | 72.20% |
| Prikupljanje informacija                 | 37.50%                  | 32.26% | 72.20% |
| Za širenje znanja                        | 25.00%                  | 50.00% | 46.83% |
| Za istraživanje                          | 27.08%                  | 50.00% | 41.95% |
| Za utvrđivanje gradiva između časova     | 12.50%                  | 14.52% | 50.73% |



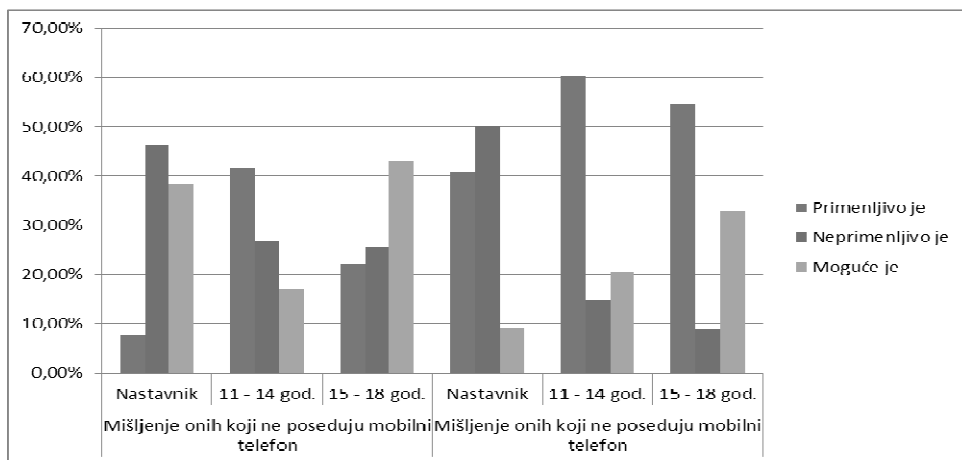
Prikaz 4. Korišćenje mobilnog telefona u školi i na časovima

Bez obzira da li neko ima ili nema smart telefon u vezi sa pitanjem da li je potrebno svrsishodno korišćenje ovakvih telefona u nastavi, anketirani imaju konkretno mišljenje. Sledeći korak u ispitivanju odnosio se na pitanje učenicima i nastavnicima da li uopšte žele uvesti ovaj vid nastave (tabela 11 i prikaz 5). Iz odgovora na postavljeno pitanje uočili smo veliko odstupanje. Učenici koji imaju smart telefone u 50–60% slučajeva podržavaju ovaj vid nastave, dok učenici, koji ih ne poseduju nemaju predstavu o prednostima i mogućnostima takvog obrazovanja. Interesantno je da je kod učenika u obe grupe preovladao odgovor DA i MOGUĆE, a kod nastavnika se u velikom broju odgovora na ovom polju osetila neizvesnost, jer nije postignuto ni 50% podržavajućih odgovora.

Tabela 11. Da li bi vredelo koristiti smart telefone na času?

|   |           | Moguće je | Neprikladno je | Primenljivo je |
|---|-----------|-----------|----------------|----------------|
| Mišljenje onih koji ne poseduju smart telefon | Nastavnik | 38.46%    | 46.15%         | 7.69%          |

|  |            |        |        |        |
|--|------------|--------|--------|--------|
|  | 11–14 god. | 17.07% | 26.83% | 41.46% |
|  | 15–18 god. | 43.02% | 25.58% | 22.09% |
| Mišljenje onih koji poseduju smart telefon | Nastavnik  | 9.09%  | 50.00% | 40.91% |
|  | 11–14 god. | 20.45% | 14.77% | 60.23% |
|  | 15–18 god. | 32.77% | 8.82%  | 54.62% |



Prikaz 5. Da li bi vredelo koristiti smart telefone na času?

### Interpretacija nalaza

Nalazi istraživanja upućuju na konstataciju da je rasprostranjenost korišćenja smart telefona veća kod učenika nego kod nastavnika, ali dok samo 50% nastavnika za svoju zabavu koriste smart telefone, kod učenika osnovnih i srednjih škola ovaj procenat iznosi 80%. Dobijeni su interesantni podaci o korišćenju smart telefona na školskim časovima. Učenici su se izjasnili u 63% slučajeva da su se služili smart telefonima, ali je to bilo dozvoljeno samo od strane 27% nastavnika.

Ako analiziramo u koje svrhe koriste učenici smart telefone, dobijamo odgovore da se, uglavnom, na taj način prikupljaju informacije, kao i za hvatanje beležaka i pravljenje puškica. Dakle, moglo bi se reći da se IKT polako ipak uključuje od strane učenika u učenje, ali ne u onoj meri i na način koji bi omogućio emancipatorni pristup učenju u nastavi, dakle, ne u svrhu razvoja kritičkog pristupa informacijama, istraživanju pitanja koja bi pokretala motivaciju za saznavanjem, traganje za odgovorima na postavljena pitanja i sl. Kako naša hipoteza pretpostavlja da nastavnici ne podržavaju korišćenje smart telefona jer smatraju da su telefoni potencijalni oblici puškica, potvrdu smo dobili nalazom da korišćenje mobilnih telefona na časovima, uglavnom, podržavaju oni nastavnici i učenici koji i sami imaju smart telefone, a oni su u manjini. Tako da se na pravo mesto mobilne telefonije u nastavi, tamo gde bi mogla da

bude dobro sredstvo za razvoj kritičke svesti, razvoja kreativnih pristupa u traganju za informacijama i postavljanju hipoteza za rešavanje problema u projektima kojima učenici stižu znanje na emancipatorni način – još čeka.

### Zaključak

Iz naših istraživanja proizilazi kako se i kod nas, na ovaj ili na onaj način, mobilna telefonija infiltrira u institucije obrazovanja. Nasuprot tome, u stvarnosti mnoge škole i fakulteti zabranjuju korišćenje mobilnih telefona, primoravajući učenike da koriste tradicionalne nastavne metode. Naravno, da bi se takav stav promenio, potrebna je jasno definisana politika obrazovanja gde se precizno definiše kako treba odgovorno koristiti ove alate u nastavi (Kukulska-Hulme, 2010).

Istraživanje je ukazalo na osetnu razliku između mišljenja nastavnika i učenika, što je uobičajeno kod uvođenja novih tehnologija (računara, projektor, interneta), koje su danas već apsolutno prihvaćene. Naravno, prilikom prihvatanja IKT alata najveća barijera je finansijskog i psihološkog karaktera (Namesztovszki, 2008) i, pošto naši nastavnici istinski ne prepoznaju pravo mesto ovakvih sredstava u nastavi, a time i mogućnost da se nastava organizuje na načine koji bi podsticali emancipatornu funkciju učenja u njoj, odnosno omogućili samoodređeno i samoorganizovano učenje i pomoć da se olakša funkcionalna autonomija motiva – radije zanemaruju ovakav vid nastave, što je posledica njihove nedovoljne upućenosti u didaktičko-metodičke mogućnosti primene savremenih IKT uređaja.

Bez obzira na ove činjenice treba da konstatujemo da mobilna telefonija kako u svetu, tako i u našoj državi – ima svoje mesto u nastavi, tj. u obrazovanju, što potvrđuju gorenavedeni dobri primeri: nepismene žene su u Pakistanu naučile da pišu i da čitaju korišćenjem mobilnog telefona, kao i primer iz Istočne Amerike, gde je primenom *M-learning*-a dat primer kako da učenici bolje shvate, tj. nauče komplikovane ekosisteme za vreme ekskurzija (Mark, 2012) i dr.

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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.

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## 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 lagging 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 Burren, 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 taught 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.

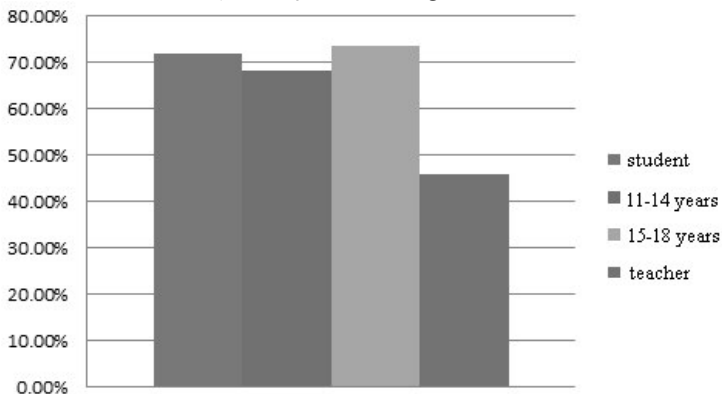
Table 1. Possession of smart phones among learners according to their age and gender

| 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

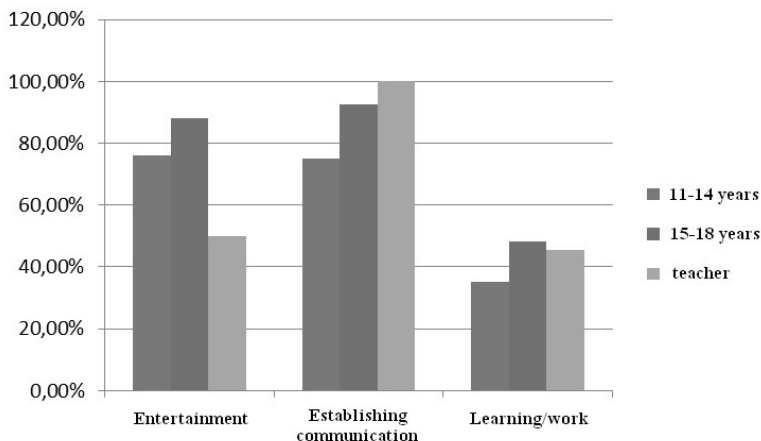


One of the intentions of our research was to find out what the motivation of people involved in the study was to use smart phones (Table 3, Chart 2). An eye-catching difference could be observed between certain groups; namely, two groups of students with a tiny difference used their smart phones in entertainment 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.

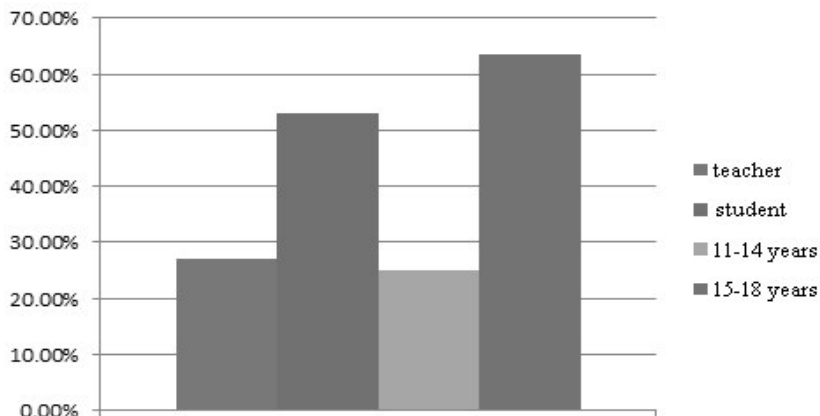
Table 4. Have you used your mobile during lessons? (Learners' answers)

| 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

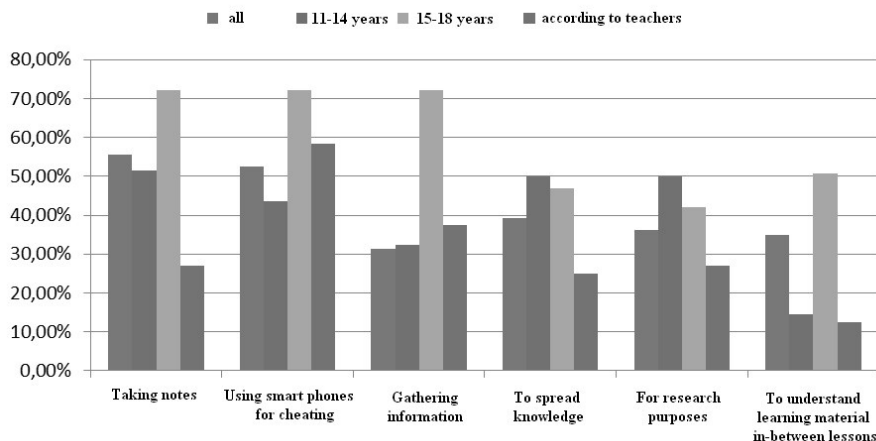


It is evident that learners despite prohibition use their phones during lessons, thus we may raise the question what for? We attempted to answer it from two aspects. We were inquisitive about what tasks students accomplish on their gadgets and what the subjective opinion of teachers is. Though, only 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 on 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

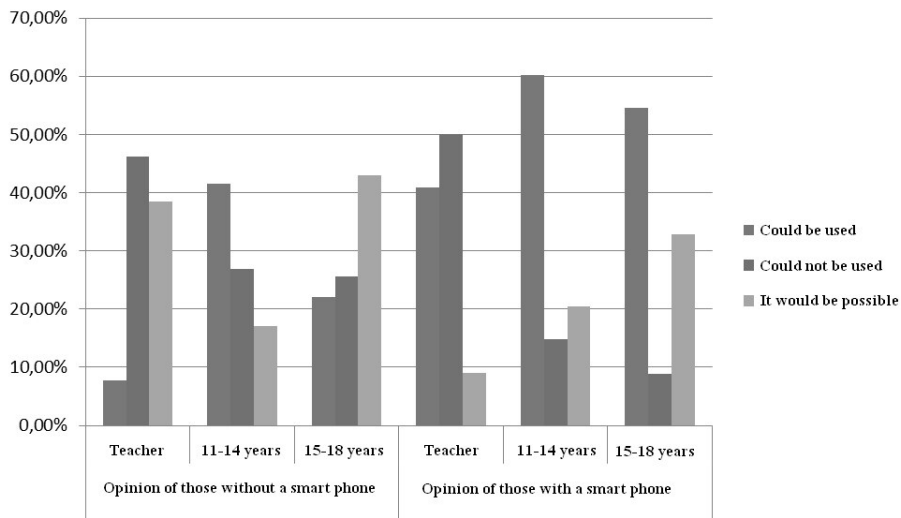


Regardless of the fact if somebody has got a smart phone or not or even if it is practical and justifiable to use a mobile phone in teaching or not, we all have a clear opinion. Next step in our study was to identify if students and teachers would be eager to introduce this type of educational device 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 set 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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