Chapter 9
Mobile Learning, Student Concerns and Attitudes

Zoran Putnik

Abstract In this paper, examples of the current methods of employment in mobile learning, both in schools and in independent projects is presented and commented. After that, statistical data collected in a survey of students is given, concerning student's opinions about the use of mobile services in mLearning, reasons for such a situation with, and attitudes about the future possible use. This data is accompanied with the ideas about the proper method of application of mobile learning not only in formal environment in schools, but also in an informal environment. Suggestion of this paper is to develop and organize mLearning as an addition, enhancement and supplement to both classic classroom and already accepted "classic" eLearning, because of ample additional possibilities for use of mobile technology in any type of education.

9.1 Introduction

Possible changes in learning theories, due to the developments in information and communication technologies, attract globally increasing interest internationally. An intention to meet the needs of knowledge-based economy and society, and provide high-quality living, initiated adjustments of technology-based learning—from computer assisted, through computer-based education, then over web-based learning, finally touching elements of mobile learning.

Reason for this situation is quite obvious. Declaration that "Today's exciting opportunities require innovative thinking, practical know-how and tremendous depth and breadth of expertise" in SRI International (2013), describes in plain words that the two main drivers for such transformation, which are not a surprise, are: demand and supply.

Z. Putnik (✉)
The University of Novi Sad, Novi Sad, Serbia
e-mail: putnik@dmi.uns.ac.rs

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Demand because of rapid obsolescence of knowledge, need for a specific piece of information and understanding at a specific moment, desire to satisfy learning needs of distributed employees in a profitable way, and enable anytime access to lifelong learning. Similarly, supply since advances in the digital field enables construction of multimedia and interactive learning objects, and since Internet access, both wireless and mobile, became standard at work and at home, because technology and educational standards became more able to facilitate production of reusable and compatible learning resources.

An easy conclusion comes from this. Knowledge-based society has new requirements which finally could be gratified for both general education, and on-time and in-place training. We are finally able to create settings for well-informed and flexible people, erudite ready to be continuously (re)trained and (re)educated. Not only in order to stay competitive as a workforce, but also for their personal improvement, fulfilment and satisfaction. And, as noted in Homan and Wood (2003), "… with wireless phones and handheld devices, the relationship between the device and its owner becomes one-to-one, always on, always there, location aware and personalized"—exactly what we need for just-in-time education. In addition to that—why stop only at education? As said in Traxler (2007), "… we have to recognize that mobile, personal, and wireless devices are now radically transforming societal notions of discourse and knowledge, and are responsible for new forms of art, employment, language, commerce, deprivation, and crime, as well as learning".

While most of the current papers discussing points about mobile learning try to compare it with some other form of learning, or discuss technological issues of it, this paper has different intention. By showing collected answers to a survey about current and possible future use of mLearning at the Department of Mathematics and Informatics, Faculty of Science, University of Novi Sad, Serbia, our idea is to show the possibilities to use mLearning as an addition to all other forms of teaching and learning, starting from classic classroom teaching, and going over well established practice of eLearning at our Department that is in much more detail explained in Putnik et al. (2014), Zdravkova et al. (2012), and Ivanović et al. (2010). In a wider sense, the idea is to let students select time, place and amount of learning, using technology that comes so naturally to them who are digital natives—mobile technology.

9.2 State of the Art

Common contemporary learning model includes ideas of learning content management systems (LCMSs). Reusable learning objects, digital learning activities and available educational software, all of those are ready, created by subject experts and instructional designers, with the help of interested learners fascinated to get involved in this field, as discussed in Putnik (2014). Created repositories of learning objects are available to be accessed and searched, to allow users to share and

retrieve needed learning resources, according to their individual learning objectives. However, such organization is still rather traditional in its nature. Interested learners access common repository of learning objects, with the purpose of acquiring "body of knowledge", created so that it can be assessed later. What is missing here are situation and circumstances, conversation, dialogue and exchange of opinions.

Such or similar claim is repeated in many research papers. For example, in Homan and Wood (2003) authors say that "With increased popular access to information and knowledge anywhere, anytime, the role of education, perhaps especially formal education, is challenged and the relationship between education, society, and technology are now more dynamic than ever". Similarly, in Vavoula and Karagiannidis (2005) authors claim "The emergence of the knowledge society poses new requirements for education and training: the knowledge-based economy requires a flexible, very well-trained workforce; and the citizens of the information society need to be continuously (re)trained in order to remain competitive…"

There are a lot of definitions of mobile learning, but even the most informal one will satisfy a point we find important to make. A large line of authors describe mobile learning as learning that takes place using mobile and wireless devices, such as personal digital assistants, tablet computers, or smart mobile phones. Such a definition makes a distinction between mobile and other forms of eLearning considering specific type of equipment used. However, in our opinion, mobile learning should be defined with the emphasis on something else, allowing for mobile learning from the point of view of learner! Mobility in such a sense enables learning to take place everywhere and in any situation. For example, doctors can recheck their medical knowledge while doing the hospital rounds, computer experts can update their expertise while fixing a software bug, person can improve its' language skill while travelling abroad. Of course, as claimed in Motiwalla (2007) among other papers, after reading and researching into attempts of mLearning usage "… we know from these studies that mLearning approach must complement an existing learning environment, developers must understand limitations of mobile devices and use them for appropriate learning pedagogies…"

Generally speaking, the idea is not new—serious projects and evaluations of mobile learning are performed for more than a decade now. What follows are some of the available results. In an introductory survey course in sociology described in McConatha and Praul (2007), an opportunity to use mLearning product developed by HotLava Software was offered. About 40 % of the students selected to use this product, and access data via their personal devices. Their responses were collected and analyzed, and their performance was compared to the outcomes of those students who chose not to use mLearning tool. The conclusion was that students using mLearning software "… demonstrated a higher level of knowledge on the subject matter covered in the course, when compared to students choosing not to use the tools".

Another example is given in Zanela Saccol et al. (2010), where a more specific question was investigated. The actual possibilities of mLearning were researched for the development of individual competences and for collaboration in the organizational setting. After developing a mobile virtual learning environment called

COMTEXT, the analysis was conducted about the training of IT professionals. This analysis did not give such a complimenting result for mLearning. Or, to quote the paper's conclusion "… learners showed interest and excitement for the innovation characteristic of mLearning … However, excitement turns into frustration when mobile and wireless technological limitations are faced, as well as the mobile device ergonomic limitations". Since in our research, IT professionals are in question, the result is of a larger interest, because we are also dealing with (future) IT professionals, students of Computer Science at our Department.

In Fayyoumi et al. (2013) a situation and students satisfaction with mLearning was studied in Arab countries. The results are very favourable, which probably might be to a certain level connected with the facts that the research is (a) very recent, which covers use of even smarter smart phones, and (b) conducted in rich countries, which ensures that students do have necessary technical equipment. Either way, data obtained within a survey shows that 70 % of the students agreed that "learning skills are enhanced through mLearning", 60 % claimed that "mobile examination is useful", while fascinating 96 % of students agreed that "mLearning is very useful and is very helpful for those students who live at remote areas and cannot attend the university daily". This last fact should not be connected only to "living at remote areas", since mLearning has the same effect on students who are employed, thus being limited by time and cannot attend university lectures because of other obligations.

Finally, visiting the other part of the world through (Organista-Sandoval and Serrano-Santoyo 2014), we can read about the situation and opinions on mLearning in Mexico. Being the most recent study, it is not a big surprise to find that about 97 % of teachers and students have "some kind of cell phone or smart-phone", and that about one of every four interactions with the mobile device has a concrete educational purpose. While authors complain that "… in general the educational use of the cell phone is mainly aimed to establish communication between the students and to access information via Internet", we find this fact exactly in line with our ideas!

Smart phones and ability to access Internet at all times, which in turn includes access to teaching and learning resources, is what gives mLearning its greatest value. This, even without creation of any particular mLearning educational systems, or repositories of obligatory teaching materials, facilitate the most of necessary environment for just-in-time and just-in-place learning. At the same time, presented examples of projects using advantages and possibilities of mobile technologies show that mobile learning is, for some time now, able to take a step forward from experimental pilot projects, towards institutionalized implementations. An example of such use of mLearning is given in Corbeil and Valdes-Corbeil (2007) where it is been said "Instructional uses: Students can download audio and video lectures and podcasts to their smart phones. They can play audio, video, and Flash movies; display and edit text documents; access e-mail and Web contents; send IM and text messages; and use the phone for mass storage".

All of the mentioned examples show, one way or another, that mLearning can be an excellent extension and complement of formal learning and eLearning,

particularly in a sense of situation dependent, lifelong, or just-in-time learning. And this is exactly the point we are trying to investigate in this paper and show that even in a lesser economically developed country such as Serbia, student concerns and attitudes towards mobile learning are rather similar to student opinions all over the world.

While considering such a prospect, we must also make a comment on possible problems in application of mobile learning in practice. Pretty much the same inconveniences are mentioned in a lot of papers dealing with mLearning, so we will just try to abstract them from for example Organista-Sandoval and Serrano-Santoyo (2014), Frydenberg (2007), or Litchfield et al. (2007). The first things usually mentioned are:

- Limited resources compared to desktop technologies;
- Problems with compatibility between devices;
- Different operating systems and applications, or simply
- Fast progress and frequent innovations in the development of mobile technologies.

Limited resources, same as with other technologies, are becoming less of a problem with the growth and evolution of mobile devices. Still, while the problem of speed or storage size for example will be or already are overcome, in our opinion, one of the limitations will stay longer, and that is the size of the screen. Even with the advancements in precision and screen resolution of mobile devices, the size itself will for the most of users be everlasting problem. Yet, if we accept that as a fact, work harder on the design of suitable user interface, and not limit ourselves only to mobile technology for learning; this should not be a devastating fact.

Compatibility problem, as time passes, becomes less and less important also. Mobile phone producers are trying to either make machines that are standardized and similar to others, or to enable use of the same/similar operating system, which helps overcoming the issue. Same situation as the one we encountered with desktop technology is on the verge to happen with mobile devices. Device itself is one thing, while the operating system is something else, not bound to the device, left for user to select. This way, combined problems of compatibility and different operating systems and applications help solving each other. Companies that produce games and utilities for mobile devices showed us that it is possible to cover wide range of mobile platforms, so we are sure that this will be the case with mobile learning also.

Finally, we mentioned problem of "fast progress and frequent innovations in the development of mobile technologies". While this can be a challenge and can cause certain difficulties, we should keep in mind that it's not a technology that is in the centre of teaching, but methods. Of course, let us also not forget that "digital natives" can cope with any technological advancement much easier than us "digital immigrants" can, as nicely explained in Prensky (2001). And, since they not only like digital technologies, but use them as an integral part of their lives, if schools do not join, students will feel even greater separation between school and life.

9.3 The Present Study

Going further in our research, besides analyzing general issues, obstacles, and potential of mLearning, we tried to dig deeper into specific situation at our country, and in particular at our institution. According to Wikipedia (2015) Serbia is economically speaking not a highly developed country, suffering consequences of wars, breakdown of the country of Yugoslavia, bombing and economic sanctions, just to mention a few things. Still, before all of the these things, Serbia and Yugoslavia in general, was one of the most developed countries of East Europe with much more developed connections with the Western Europe and USA than any of other so-called "communist" countries. The question we were investigating was are there some traces of that left, and if people of Serbia, and specifically young people, are ready to accept the challenges of technological development in all areas of life and in particular changes and developments in the area of education. We tried to research into the situation considering the mobile technology, phones, notebooks, tablets and similar tools and equipment, but limited ourselves to the situation in education, and students' attitudes and standpoints in this area.

9.3.1 Current Situation in Serbia in General

Traditionally and historically, we can claim that Serbia is the country rather fond of phones. Only 7 years after Alexander Graham Bell patented the telephone in 1876, the first phone conversation was conducted in Serbia in 1883 between the Geography Department of the Ministry of Military affairs and army barracks in charge of engineering in Belgrade (Trninić 2013). Not long after that, in 1899. the public phone traffic was started in Serbia using inductor phone central, while in 1902. a new "Siemens and Halske" central with 1000 new phone numbers was installed in Belgrade, because of the growing needs of interested public.

Checking the "World Factbook", we can also notice that Serbia, country of a little more than seven million inhabitants, uses (data is from 2012) 2.98 million of main lines, and 9.138 million of mobile phones. There are also about 4.107 millions of Internet users (data is from 2009, from CIA "The World Factbook" for 2012.). Data available at "100 People: A World Portrait" mentions that 75 out of 100 people in the world owns a cell phone, and 30 are Internet users. Comparing to situation in Serbia, we can notice that speaking of Internet Serbia is ahead of the world average, while considering the mobile phones it is at the forefront of average by far!

9.3.2 Specific Situation at the Department of Mathematics and Informatics, Novi Sad, Serbia

Before presenting the data and results we collected, let us repeat in a few words a basic idea behind the chapter.

Current research in the area of mLearning usually presents different results about successful use of mLearning at Universities, but also in various informal educational projects. At the same time, we are at the point where some portion of our teaching is delivered in some form reachable by mobile learning facilities, intentionally or not. While originally it means that we are aware that some people will interact and communicate with our teaching resources using mobile devices, further it should lead us towards decision on how to publish and distribute this information and these resources.

Creation of learning activities and teaching material suitable for mobile learning should be governed by the ideas connected and guided to learning, not to technology —same as is the case with the implementation for any other technology-based learning. Use of mobile devices is not the purpose, objective, or sole goal—it is a medium, an instrument to enable activities that otherwise were not possible, to increase usability of those that had drawbacks because of technological reasons, all in all to increase benefits for learners. As a consequence, in our opinion it is definite that the use of mobile technologies is suitable only for the part of learning activities, while other parts are still better supported by some other types of technologies. And, we are satisfied with that, because we confirm to the stand that "learning can't be managed, but can and should be facilitated" (Ivanović et al. 2014).

9.4 Methodology

9.4.1 Instrument

Study is focused on the attitudes and views of undergraduate students about the possibilities of mobile learning. It is a quantitative research, and we developed a short questionnaire to collect the data needed. As one of the common possibilities with this type of study, we decided to use structure of close-ended, Likert scale five-point measure survey. For each question, students were asked to give opinion ranging from 1 = strongly disagree, to 5 = strongly agree. The questionnaire was distributed to students via e-mail, and it took only several minutes to complete, since the questions covered only the basic opinions. This in turn leads to a high response rate.

Survey was conducted on two occasions, with two generations of students of the Department of Mathematics and Informatics, Faculty of Science, University of Novi Sad. We narrowed our survey only to students of the Computer Science direction.

Students were informed that, since data collection went through e-mail, their answers will not be anonymous, so that they are allowed to refuse to answer the survey. Great majority of students declared that they do not mind answering publicly, actually that they wish that their opinion is heard and taken into account. While it may be contrary to some other institutions or countries, this type of behaviour is recognized at our Department earlier, as presented in Ivanović et al. (2013).

Survey took about 2 weeks each year, and first time covered 178 students, while the second time there were 138 students communicated. Not all of the students answered and completed the survey, so altogether we collected 198 surveys for the analysis.

Major descriptive statistics is presented in Table 9.1. The most of the respondents, as can be noticed, have some type of mobile phone, but this time we didn't investigated further into the type of the phone/tablet/e-book they use. Still such a majority of students using mobile phones, together with their opinion about possibilities, with extremely rare persons being strictly against mLearning, shows that there is a large space for improvement of the use of mLearning at our Department.

Considering the age of the respondents, it can be noticed that the most of them are "older" students, students of final year of bachelor studies (3.) final year of diploma studies (4.) or students of master studies. Does this mean that we can take their opinions more seriously, we will not assess.

Also, we must make a comment about "frequency of use" of mobile phones. While we honoured answers of "I don't use mobile phones" type and counted six of those, we noticed that those same persons later answered that they sometimes read they mail using their phone. We interviewed one of them in person and at least with

Table 9.1 Descriptive statistics of the respondents

Item	Options	Number of people (total is 198)	Percentage (%)
Gender	Male	129	65.15
	Female	69	34.85
Mobile device	Phone	198	100
	No phone	0	0
Year of study	1. year	5	2.53
	2. year	11	5.56
	3. year	73	36.87
	4. year	52	26.26
	Master studies	57	28.79
Use frequency	Does not use	6	3.03
	Calls and sms's, rarely other functions	77	38.89
	Calls, sms's, often other functions	75	37.88
	"Everything" available at the Department (calls, sms's, e-mail, instant messaging with LMS, Wiki, Forums, learning resources, access to LMS, contact with lecturers)	40	20.20

him, thing was cleared-up. “I don’t use” refers to his beliefs, to the fact that he does not like mobile phones, mainly for the privacy issues. Still, as a person of a modern age and profession, he is aware that mobile phones are a necessity, he has one, and having it he also uses, unwillingly, the most of its functions.

Of course, this fact throws a slight shadow on our statistics, since some of the numbers do not fit with answers to other questions, but we consider this a normal and usual matter with such a large survey.

Numbers and percentages of students using mobile phones for other functions here probably does not represent only their wishes, but mainly availability of possibilities for use of mobile phones and mobile services of the LMS we employed. The complete statistics will shed much more light on the topic.

Table 9.2 shows the results of students’ answers regarding mobile phones from the viewpoint of their use in education. It can be separated into two groups of questions, the first one dealing with how our students use mobile phones at the faculty and for which (educational) purposes.

The second group of questions tries to recognize the reasons for the situation, and identify the causes and motives for the state of the art at the Department. Finally, the third “group” contains only a single question, and tries to find out whether our students are willing to use mobile phones in their studies more than they do now.

There are 12 items discussed, with the distribution of opinions presented, and the mean score given in order to describe the strength of the item. There are only two mean scores higher than three, showing that only reading e-mail as a service is accepted at the moment. The highest grade after that one gets willingness of our students to use mobile phones more in their education, having a mean value of exactly 3.

The lowest mean score is gained for “I do not use mobile phone” question, showing that our students are accustomed to mobile phones and use them in life outside of the faculty. In our opinion, this suggests that with adding more abilities for clever use of mobile phones for education, there is a chance for introduction of mLearning at our Department.

The next two lowest mean scores are in connection of use of mobile phones for access to forums and wikis available within our LMS, and for communication with lecturers. Both of those low scores are easily explainable. Forums and wikis within LMS are at our Department used for the obligatory assignments. Consequently, that requires reading of posts of other students in forums, and of additions and changes of wikis from other team members. Finally, it requires text typing, sometimes a lot of text, perhaps even addition of some drawings, which is much more difficult through the mobile phones.

The other low mean score is even easier to explain. Communication with the lecturer by mobile phones requires a prerequisite that the lecturer agrees to something like that, which is generally speaking not very likely. Namely, having dozens or even hundreds of students looking for help/opinion/assistance at possible weird hours is a good reason not to agree to that kind of communication.

Table 9.2 Percentage distribution of opinions about mobile phones in education

Item	Strongly disagree (%)	Disagree (%)	Slightly agree (%)	Agree (%)	Strongly agree (%)	Mean
What do I use?						
I do not use mobile phone	180	7	3	2	6	1.22
I use mobile phone only for calls and sms's	71	28	32	31	36	2.66
Sometimes I use mobile phone for reading e-mail	48	18	27	26	78	3.35
I use mobile phone to receive notifications from faculty LMS	99	8	25	25	40	2.49
I use mobile phone to communicate with lecturers	138	24	21	5	10	1.61
I use mobile phone for LMS forums and wiki	140	22	21	4	10	1.59
I use mobile phone to download learning resources from LMS	104	24	22	18	30	2.22
Mobile phone is a usual part of my studies, and I use it for everything	80	34	41	17	23	2.33
Why don't I use it?						
I do not use mobile phone at the faculty because of the high price of Internet access	121	19	30	10	18	1.91
I do not use mobile phone at the faculty because my phone is not good enough	104	24	20	12	36	2.24
I do not use mobile phone at the faculty because that is wrong, and I concentrate better on written material	53	23	44	42	32	2.88
Do I want to?						
I would like to have a possibility to use my mobile phone more for my studies	44	29	53	27	45	3.00

That the above is true is easily visible if we check the mean scores for other 3 possible uses of mobile phones in connection with the LMS, which are higher almost by a whole grade on the average. Namely, possibility to download learning resources, even with the recognized problem of small screen of mobile phones, is graded higher and used more often. Even higher is a mean score for "receiving notifications from lecturers". The most promising point is still the fact that even with a lot of individual services with a mean score relatively low, bellow two, mean

score for the assessment if mobile phones are "regular part of studies" is higher than that, showing that with some changes in the approach of lecturers, mobile phones can be used to a much greater benefit in education at our Department.

As mentioned, the final big question is why do not our students use mobile phones in their education more that they do? The first two possibilities that come to mind and that would easily explain the situation were in our opinion:

- It's too expensive, or
- My mobile phone is not strong enough.

The survey gives a definite "No" answer for the first possibility. Almost 2/3 of the respondents "strongly disagree" with the opinion that access to Internet needed for mobile phone use is expensive, while only 9.09 % of students strongly students agrees with that opinion.

The second opinion also has "No" answer almost to the same degree. More than a half of students strongly disagree that their phone is not strong enough, while mere 18.18 % see that as a problem. Considering the trends and developments in the field, it is only natural to expect that with time, number of those with weak mobile phones can only drop down.

So, the situation might be explained by the answers to the third question within that section of a survey—is it good to use mobile phones for learning? Are we better suited or accustomed to use written material? Opinions about this question are highly divided, and the distribution is very balanced. This probably can also mean that we should re-phrase our definition of mLearning and think of it more as the meeting point of mobile devices and eLearning pedagogy. Not dependent anymore on use of computer laboratories, students can work on their knowledge at their homes, on field trips, or even while travelling to those field trips.

There is only one question with more balanced answers amongst students. The final question "Do you want to use mobile phones in your education more than you do currently?" has almost perfect balance between answers:

- Strongly agree versus strongly disagree: 45 : 44;
- Agree versus disagree: 27 : 29;
- Slightly agree (or we can asses it as "I'm-not-sure"): 53.

In our opinion, these answers show hidden fears behind it. Will use of mobile phones put some more pressure on them? Require some additional work? Or will it relax their studies and allow them to learn whenever they want and wherever they want?

And this is the key question and the key point of our research, giving us appropriate idea. We do not want to suggest introduction of mLearning into our studies as an obligatory form, as a system that will require shopping for the expensive and powerful equipment, learning of use of complicated applications, or ruining ones eye health by trying to read and study on a small screen. The idea is to organize mLearning as a welcomed supplement, as an ability to download, read, listen, or watch learning resources when it is convenient for a user, but with a plenty of other possibilities and types of learning materials. That will in our opinion attract

more students to use mobile phones in education, and connect the best of all worlds and types of learning. The power of mLearning is highly increased by enhancing existing blended learning courses with otherwise weakly existing features such as notifications, easy communication services, access to discussion/interaction services, or personalized agents in non-productive, "dead" times.

It is easy to recognize that both undergraduate and master students are not satisfied with the mobile learning and the fact that it is not offered currently at our Department. Still, collected data proves that almost all of them are both equipped for its use, and are using some of the services they chose. So, if we offer more services, and yet do not force their use, we expect much better opinions of our students considering mobile learning.

9.5 Conclusion

Lifelong learning, ubiquitous learning, learning anytime, by anyone in anyplace, we can pick any of those buzzwords, and still end up with the more-or-less similar concept. Today' economy is knowledge based, and it requires well-educated and flexible personnel, personas prepared to be continuously re-educated and re-trained, in order to be and stay competitive with the others. Also, the rapid development of learning theories and methodologies, together with the advances in information and communication "machinery", creates prospects for satisfying these needs, and enables abandoning of (only) the traditional learning models. Incredible growth of mobile and wireless technologies allows incorporation of learning into everyday surroundings.

At the Department of Mathematics and Informatics of University of Novi Sad, we created and distributed a survey to several generations of students of computer science study direction. Except for some minimal number of students who declare that they do not use mobile phones, the most of the other students' opinions and attitudes are almost unanimous. Collected answers to a survey about mLearning just slightly simplified, show that our students are technologically equipped for it, are accustomed to use of mobile phones, are not using services of mobile phones too much in education, but, the most importantly, are willing to use them more. It is simply our job to give them a better chance to do so.

This study is definitely limited not only in a sense of number of students surveyed, but more importantly in a type of students analyzed. Results we gained for students of computer science study direction may not be the same as for students of some other directions, especially for some human or social sciences, we expect. Still, as it was our hypothesis, students of computer science at the Department of Mathematics and Informatics of University of Novi Sad showed very similar opinions and attitudes to their colleagues of the same study direction all over the world reported in research papers. Being the area of fast development, mLearning requires constant insight into the views and beliefs of students, so an obligatory

future direction of this research should be repeated and more detailed survey each several years, or even more often. Advances in mobile technology and software applications for mobile phones and tablets, lowering of prices for mobile services, and constant unification and standardization attempts for information formats, require regular alertness of educators in order to make the best use of possibilities offered. Another possible direction of study that can be very interesting and perhaps give some different results is to extend the study to students that are not so much connected to technology by their interests and study direction.

Consequently, let us hereof forget about the assessments of mobile learning, comparisons with eLearning, distance learning, or even classic classroom teaching, and let us take what's usable from it. As cleverly noted long time ago in Tough (1979), "… when the person's central concern is a task or decision, he will not be very interested in learning a complete body of subject matter. Instead, he will want just the knowledge and skill that will be useful to him in dealing with the particular responsibility of the moment". To provide for such people, we should not stick just to a single, traditional learning model based on the concept of one tutor, helping students to acquire in-advance-defined knowledge, and later assessing and measuring their success. We should give students a chance to choose their time and amount of learning, select a problem or part of it to concentrate on, and present them with enough learning resources that will satisfy any learning style and philosophy. Mobile learning will never and should not replace either other types of eLearning approaches or classroom teaching in our opinion. Yet, if applied properly, it can complement and append value to existing learning models and practice.

To apply mLearning properly, we must also consider and answer several wider questions. How should a university lecturer plan hers/his activities to help students accept mobile learning as a natural extension of other activities? What type of resources and digital activities should be obligatory, what should be additionally available? Should some of the resources become strictly mobile, or should there always be a stable and classic variant of everything? Should lecturers wait for the official recognition of the need for mLearning at their institution, or should they act as enthusiasts and start offering services and resources in mobile forms by themselves? The most of these questions are not only philosophical, they invoke also some very practical, sensible, realistic, and useful conclusions, since dealing with the proper development of any type of learning resources requires a great deal of effort, and careful planning and realization.

Developments in information and communication technology, and particularly in wireless and mobile technologies, can help us go away from traditional learning models, because nowadays learning can be easily carried, brought or even implanted into everyday environment. What makes mLearning thrilling is the fact that even though most of the individual features contained in current mobile devices are around for years, bringing all of them together in one small, powerful, and always available device is new. Joining the features, functionalities, and ability to go online ensures adoption of such devices even by the most unwilling users.

References

Corbeil, J. R., Valdes-Corbeil, M. E. (2007). *Are You Ready for Mobile Learning*. Retrieved from the EDUCAUSE review website: http://www.educause.edu/ero/article/are-you-ready-mobile-learning.

Fayyoumi, A., Mohammad, H., & Faris, H. (2013). Mobile based learning and examination: students and instructors perception from different Arab countries. *Journal of Software Engineering and Applications, 6*, 662–669. doi:10.4236/jsea.2013.612079.

Frydenberg, M. E. (2007). Teaching and learning information technology with mobile devices. *IADIS International Journal of Internet /WWW, 4*(2), 34–45.

Homan, S., & Wood, K. (2003). Taming the mega-picture: Wireless quizzing. *Syllabus Magazine,* 7–8 October 2003.

Ivanović, M., Putnik, Z., & Budimac, Z. (2010). eLearning in Serbia: The state and development of e-Learning in Serbia. In *Cases on challenges facing e-learning and national development: institutional studies and practice* (Anadolu University-2010, pp. 773–797). Eskisehir, Turkey.

Ivanović, M., Putnik, Z., Komlenov, Ž., Welzer, T., Hölbl, M., & Schweighofer, T. (2013). Usability and privacy aspects of moodle—students' and teachers' perspective. *Informatica, An International Journal of Computing and Informatics, 37*(3), 221–230.

Ivanović, M., Budimac, Z., Putnik, Z., & Komlenov, Ž. (2014). Encouraging teamwork, Web 2.0 and social networking elements in distance learning. In *Overcoming challenges in software engineering education: delivering non-technical knowledge and skills.* doi: 10.4018/978-1-4666-5800-4.ch005, (pp. 26–45). Hershey, USA: IGI Global.

Litchfield, A., Dyson, L. E., Lawrence, E., Zmijewska, A. (2007). *Directions for m-learning research to enhance active learning*. Paper presented at the ascilite Singapore ICT: Providing choices for learners and learning, pp. 587–596, Singapore.

McConatha, D., & Praul, M. (2007). *Mobile learning in the classroom: An empirical assessment of a new tool for students and teachers.* Paper presented at the Washington Interactive Technologies Conference, Virginia, USA.

Motiwalla, L. F. (2007). Mobile learning: A framework and evaluation. *Computers & Education, 49*, 581–596. doi:10.1016/j.compedu.2005.10.01.

Organista-Sandoval, J., & Serrano-Santoyo, A. (2014). Appropriation and educational uses of mobile phones by students and teachers at a public university in Mexico. *Creative Education, 5,* 1053–1063. doi: 10.4236/ce.2014.512119.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, *9*(5) (MCB University Press). doi: 10.1108/10748120110424816.

Putnik, Z. (2014). *Contributions to the development of eLearning—Possibilities for conversion of learning activities and materials into electronic form*, (Doctoral Thesis, University of Novi Sad, Serbia) (in Serbian). doi: 10.2298/NS20140214PUTNIK.

Putnik, Z., Ivanović, M., & Budimac, Z. (2014). *Web 2.0 in educational practice—a decade of experience*. Paper presented at the international conference on e-Learning'14, Tenerife, Spain, (pp. 194–200).

SRI International. (2013). *Client Sponsored Research & Development*. Retrieved from http://www.sri.com/engage/client-sponsored-research-development.

Tough, A. (1979). The adult's learning projects: A fresh approach to theory and practice in adult learning, 2nd edn. Toronto: Ontario Institute for Studies in Education. Pfeiffer & Co. (April 1979).

Traxler, J. (2007). Defining, discussing, and evaluating mobile learning: The moving finger writes and having writ…. *International Review of Research in Open and Distance Learning*, *8*(2), (Special issue—Mobile learning).

Trninić, Ž. (2013, June). Jubilees—One hundred and thirty years of telephones in Serbia, JAT New Review.

Vavoula, G., & Karagiannidis, C. (2005). Designing mobile learning experiences. *Advances in Informatics. Lecture Notes in Computer Science*, *3746*, 534–544. Berlin: Springer.

Wikipedia. (2015). *Economy of Serbia*. Retrieved from https://en.wikipedia.org/wiki/Economy_of_Serbia.

Zanela Saccol, A., Reinhard, N., Barbosa, J. L. V., & Schlemmer, E. (2010). m-Learning (mobile learning) in practice: A training experience with IT professionals. *Journal of Information Systems, 7*(2), 261–280.

Zdravkova, K., Ivanović, M., & Putnik, Z. (2012). Experience of integrating Web 2.0 technologies. *Educational Technology Research & Development, 60*(2), 361–381. doi:10.1007/s11423-011-9228-z.

Author Biography

Zoran Putnik is an assistant professor at the Faculty of Science, Department of Mathematics and Informatics, University of Novi Sad, Serbia. He received doctoral degree (teaching computer science) in 2014. His research interest is currently focused on e-learning and virtual learning environments, and software engineering. He has published around 140 articles in proceedings of international conferences and journals, and written several university textbooks. He participated within 20 international and national projects, was a member of organizing committees of 17 conferences, and is a Managing Editor of Computer Science and Information Systems (ComSIS) Journal.