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SOME PRACTICAL ASPECTS OF BUSINESS INFORMATICS EDUCATION IN HOTEL MANAGEMENT AND TOURISM

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Abstract

We live in a digital era. There are many examples of degree in which our everyday life and business are dependent upon computers and similar devices. Information and communication technologies have significant impact on modern education and business environment. Practical education has important role in the learning process in informatics. If our goal is to prepare students for modern business environment, the emphasis should be given to practical training. This study briefly shows some aspects of practical education on the teaching course of Business Informatics that the authors find useful.

Keywords: *information and communication technology, education, business informatics, tablet computer, devices with touch screen*

Introduction

Information and communication technologies (ICT) is extended term for the information technologies (IT), which emphasizes the role of unified telecommunications, computer systems, necessary software, information storages and multimedia systems which all together allow access, storage, transmission and processing of information to the users.

Information and communication technologies have changed almost all spheres of life of the modern man. Even the life itself nowadays is dependent on these technologies, primarily because of their application in medical diagnostics and treatments (Krsmanovic et al., 2012; Filipovic et al., 2011a; Filipovic et al., 2011b). The influence of modern ICT is major

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in all forms of business, and consequently in the areas related to hospitality and tourism. Therefore, two objectives are clearly differentiated in the information education of the students of hospitality and tourism. The first concerns deepening the existing and acquiring new general IT knowledge and skills needed in everyday life. The second is teaching students of the importance and role of information systems and communication technologies in modern business, the basic principles of information systems development and examples of their use primarily in the hospitality and tourism, but also in other areas of modern business.

The impact of ICT on the extremely rapid development in all spheres of human activity is obvious. Although the education is activity whose real results cannot be so easily measured and seen, it is certain that ICT has a great influence on them. In addition, the speed of ICT development is amazing - processor speed is doubling every 18 months, data packing density is doubling every 12 months, whereas fiber-optic cables data transfer speed is doubling every 9 months.

What answer to rapid technical evolution has a today's higher education to offer?

Initial conditions

According to the entrance survey conducted on a sample of 94 first-year undergraduate academic studies (UAS) students at the Faculty for Hotel Management and Tourism in Vrnjačka Banja which assessed the general IT knowledge, the average number of correct answers was about 14 out of total 24.

Table 1: *Percentage of correct answers*

Text processing	Spreadsheet calculation	Presentations and multimedia	General topics	Total
24%	73%	69%	66%	58%

Source: *Entrance survey of first year UAS students, 2015*

In addition, the e-mail was used by 85% of students, 66% of which are active. As a primary activity in the use of ICT, 94% of students confirmed the use of social networks.

In the computer classroom, every student can use a desktop computer with the Internet access. Tablets are also available, while wireless access to the Internet is enabled at the Faculty premises.

Skills for the 21st century

The term "skills for the 21st century", in its broadest sense, refers to knowledge, skills, work habits and personal characteristics that are important for success in today's world. This applies not only to the academic life, but it is usually related to it.

The above-mentioned skills include (Stephen & Abbott, 2015):
- Critical thinking, problem solving, reasoning, analysis, interpretation and synthesis of information;
- Research skills and procedures, survey;
- Creativity, skill, curiosity, imagination, innovativity, personal expression;
- Perseverance, independence, planning, self-discipline, adaptability, entrepreneurship;
- Skills of oral and written communication, public speaking and presentations, listening;
- Leadership, teamwork, collaboration, cooperation, the ability to use virtual workspace;
- ICT literacy, literacy in the media and on the Internet, skills in interpreting and analyzing data, and computer programming skills;
- A sense of civic, ethical and social justice;
- Economic and financial literacy, business skills;
- Global awareness, multiculturalism, humanity;
- Scientific literacy and reasoning, respect of scientific methodology;
- Protection and preservation of the environment, understanding the ecosystem, and
- Health and wellness literacy, including nutrition, diets, exercise and public health and safety.

There is so much available information today, that it is almost impossible to learn everything about a topic.

Analyses (Manyika et al., 2011) show that firms and other organizations are already faced with a lack of analytical and managerial staff, which is necessary to take advantage of a large amount of data available. Only in

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the USA, there is a need for 140,000 to 190,000 of professional data analysts, and 1.5 million professional managers who will make decisions based on their findings.

In addition, information changes so rapidly that what is now considered as true would soon be seen as disputable. Therefore, it is important that students learn how to collect, process and interpret information. In addition, it is necessary to gain flexible skills that can be applied in different fields of work and everyday life.

These give a completely new role to teachers in relation to the traditional one, which involves the communication of information and preparation for good results in tests.

The role of information and communication technologies in higher education

The mistake that often makes when choosing the role of information and communication technologies in education is that the emphasis is on technological capabilities, rather than on educational needs, although ICT really make it possible to put the focus on students. An additional problem is that it still happens that some teachers and students show resistance to the use of ICT (Sukanta, 2012).

Regardless of whether the use of ICT in teaching is as an object of study or as an aid for the acquisition of knowledge in other areas, its application can certainly help in all four important aspects of learning and teaching (Vasović & Milašinović, 2014):
  - What is learned,
  - How it is learned,
  - When and where the learning takes place and
  - Who is learning and who is teaching.

By accepting the Bologna Declaration in Serbia, changes occur in these areas so that the focus from the learning content moves to its use, the aspect of problem solving is emphasized in developing certain competences; teachers are becoming less responsible for the presentation of information, as their new role implies encouraging students to seek them; along with an increased use of modern technology, the time and space limitation of learning become reduced; at the same time, more and

more people is getting a chance to find themselves in the role of teachers as well in the role of the students (Vasović & Milašinović, 2014).

Basically, in the educational context, ICT, develops skills for (Sukanta, 2012):

- Collecting and identifying information,
- Classification and organization,
- Summarizing and synthesizing,
- Analyzing and evaluating and
- Estimation and forecasting.

In addition, proper use of ICT makes it possible to increase the students' enthusiasm and commitment to learning and, at the same time, makes contribution to the abilities of teachers. This is how you generate a positive change in the environment that, ultimately, leads to students' better preparation for the working environment. A special feature is the fact that ICT today allows that classes should not be based solely on printed materials, as it enables teachers to make materials and education available through the Internet. In addition, at any time, a wide variety of additional materials for learning about any subject is also available.

The problems of the ICT use in higher education and the possible solutions

Teachers today meet students who are highly skilled in the use of computers, multimedia, smart phones and similar devices, because they surround them from the very birth. Teachers can face various difficulties in the transition from traditional ways of presenting educational content to the use the modern tools if they do not adopt new skills of technology use (Aksoy, 2003).

It is no longer a question if it is necessary to use ICT in teaching, but how to use it in the most appropriate way, how to select and procure them, how to manage them, and how and what effects of their use to monitor, and how to react to the results. This includes the use of these technologies in the education of teachers, institution management, and contacts with parents and the wider community (Sari & Mahmutoglu, 2013).

We are at the beginning of a long journey in the use of technology in the education system. Thus, every investment in technology requires new skills in workforce (teachers, instructors, etc.). Indeed, it is imperative for

every institution to carry out the appropriate training of teachers before investing in technological equipment.

Web 2.0 technologies in higher education

The name of Web 2.0 describes how the Web sites on the Internet are made and used, where the focus is on user-generated content, usability and cooperation. Users communicate and collaborate, create content independently or as members of virtual communities. Examples of Web 2.0 sites are social networks, blogs, wiki collection, folksonomies (user-defined metadata collections), and sites for sharing video content, web applications, and combinations thereof.

In education, ICT tools can enhance social cooperation and cooperation among students. The platforms on which the information from the lectures is regularly updated help to quality learning and facilitate communication between students and teachers (Venkatesh et al., 2014). Studies have shown that the most frequently used ICT tools in higher education are global network – the Internet, e-mail and various increase productivity tools (Kirkwood & Price, 2005; Conole et al., 2008).

Students find that searching the Internet increases the quality of learning and allows them to explore beyond the borders of the available literature. The most frequently mentioned Internet sites are Wikipedia and Google (Kirkwood & Price, 2005; Tang & Austin, 2009). The use of available ICT desktop tools should be added to these two.

On the other hand, poorly prepared and used multimedia presentations, creating badly structured sites too rich in contents, as well as insisting on mandatory participation in the forums are often cited as negative examples.

It is clear that the introduction of ICT in higher education is important, but its proper use is of primary importance. The results of analysis of 300 studies that measured the effects of combined modes of learning shows that students very positively evaluated the integration of ICT in teaching in the course of higher education (Sharpe et al., 2006). Students especially emphasize the usefulness of merging technology with classical teaching, and equipping the workspace with ICT resources.
Several studies have examined how students evaluate the effectiveness of using ICT in the classroom. According to students, tools for multimedia

presentations proved to be the most useful ICT, with positive effects on learning and motivation (Tang & Austin, 2009). One study shows that there are significant positive changes in the acquisition of skills of oral presentation in class when using multimedia, hands-on activities and feedback (De Grez, 2009). Students widely used productivity tools for the preparation of written papers, charts or oral presentations (Conole et al., 2008). The most commonly used tools are tools for word processing, spreadsheets and graphs (Kirkwood & Price, 2005). Virtual learning environments are particularly useful for students because it allows them to keep up with teaching content, information and tasks and gives them more freedom in choosing the way that suits them best to access the information they need (Conole et al., 2008).

Touch sensitive devices in modern business

The development of ICT today leads to the expansion of the Internet of Things (IoT) and touch sensitive devices. According to estimates (Gartner, 2014), till 2020, up to 25 billion interconnected devices will be on the Internet. Of that, 13 billion devices will be in the category of general consumption, and 8 billion will have business use. Touch sensitive devices will have a significant impact on both groups.

Figure 1: *The structure of devices connected to the Internet*
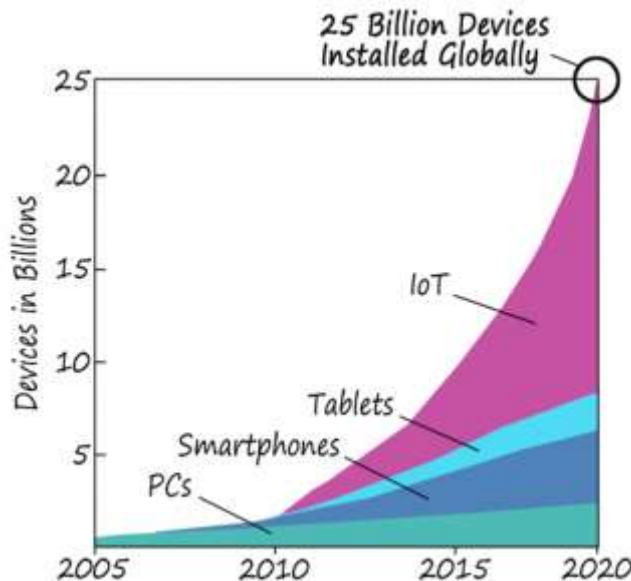
Source: *Integrated Computer Solutions, Inc. (Shamonsky, 2015)*

Even today, touch sensitive devices with their capabilities provide important support to daily operations. Higher education, as a last step before students enter the working environment, must quickly adapt to these trends.

Touch sensitive devices – the use of tablet devices in learning and teaching

In a study (Fabian & MacLean, 2014), the advantages and potential pitfalls of using mobile devices in learning and teaching activities are evaluated. This included the use of multimedia tools, applications, document sharing and the use of online content.

The received feedback was very positive, but there were problems with the use of tablets and administration, i.e. settings related to security and applications.

We have come up with similar results after the use of tablet devices in the teaching exercises of Business Informatics at the Faculty of Hotel Management and Tourism. Thirty tablets were used for this purpose. During practical sessions, each student had a tablet.

Despite the fact that students live with similar devices, they experienced problems in using the tools on the tablet. The problems in the operating system and wireless connectivity to the Internet also occurred. Such problems are relatively easily resolved by restarting the device that takes less than a minute, but it disrupts the continuity of work. While students in cooperation with the assistant solve the resulting problems immediately, they have the opportunity to link theoretical teaching materials with the practice connected to modes of operation and use of computer networks. This experience is something that will be certainly expected in the workplace.

Tablets, smart phones and other mobile devices are designed as personal devices. The good side of that is that over time the device adapts to the user and allows easier and faster work. The problem occurs when you need more students to interchangeably use the same device. Most personalized applications and settings for data protection and security must be switched off or to be locked thereby lose all their benefits. It is necessary to make additional network configuration to ensure that the Internet use remains within the limits acceptable for academic use.

Despite problems in these settings, it is necessary to constantly remind students that, after completion of the work, pictures and other personal documents should be manually deleted, and that they should logout the sites on which they are registered. During one semester, in using a tablet in practice, if it happened that someone is logged in after the completion of the work, there was not a greater invasion of privacy, because the students behaved in accordance with the set rules.

Preparation of tablets, setting of the environment, updating applications and regular deletion of personal data request quite engaged administrators and teaching personnel. It is expected that some of the technical issues with which we meet now will be resolved in the near future when the operating system manufacturers become more dedicated to the use of such devices for educational purposes, which should enable simpler administration and application management through centralized control.

Regarding the use of tablets in teaching, the emphasis is placed on the uses which are most likely to be met in the students' future working environment. This has necessitated some changes in the content of the exercises to be performed. For example, tablets are not adapted for text processing. The keyboard on the tablet typically has the same layout as the standard one, but the way of typing is very different. In addition, the tablet usually has spelling correction, which can be annoying.

Figure 2: *Online quiz implemented using the site www.kahoot.it*
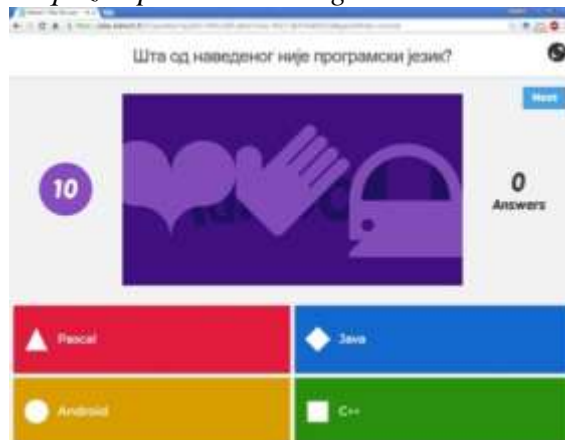
Source: *Screenshot from the exercises on the subject Business Informatics*

On the other hand, tablets proved to be the ideal tool in activities that required easy sharing of certain content, with the online quizzes and tests and in all cases when the teacher needed a quick insight into the degree of their attainment of some matter. In addition, all kinds of activities that require joint decision making and dialogue between members of the group were facilitated using a tablet.

In general, all activities related to the use and sharing of existing content is alleviated, while the activities in which it is necessary to create content are weighted using the tablet. It is particularly positive that the students said that the use of tablets in teaching and the new activities encourage them for more after-school self-study and for using their mobile devices.

It turned out that for this type of teaching, the teacher's extensive work is crucial, because the activities that the students best accepted were those that required major changes compared to traditional teaching. The applications used on the tablet generally have no accompanying detailed instructions for use, so it takes a lot of time and effort to find and try out the appropriate applications for the planned activity.

The experiment, where two students share one tablet, has quickly demonstrated that this is an extremely impractical solution. The students said that it was very hard to concentrate on reading and work, because it constantly happens that one student who is faster has to wait for the other, slower one. The result was that one of the students is more active, while the other withdraws from activities.

Practical exercises in teaching of business informatics

Below are a few examples of tasks that have been used in exercises in the main areas covered by the syllabus of the subject Business Informatics.

Hardware, Windows
1. Create a new administrator account under your name.
2. Create an account with limited privileges under the name "Student".
3. The account under your name changes to the following:
a) Change the name of the account so that, besides the name, it contains surname, too
b) Change the image of your account
c) Add the password to your account.

4. Delete the account under the name "Student" and all documents created under that account.

5. Change the desktop background.

6. Set the Screen Saver so that after 1 minute of inactivity starts the animation and after the re-activation the login screen appears.

7. Change the theme to "Windows Classic". Set Window Color to "Leaf".

8. Set the system to automatically update and clean the hard disk of unnecessary data.

9. Add the Serbian language and the Cyrillic script to the keyboard.

The Internet, the use of touch sensitive devices

1. Create a folder and name it after your name.

2. Within the created folder, create a text file called Impresije and enter your general impressions of the Faculty of Hotel Management and Tourism in Vrnjačka Banja, in up to 10 words.

3. Find a picture on the Internet, which, in your opinion, best describes Vrnjačka Banja and save it to the created folder.

4. From your Gmail account, send an e-mail message to a colleague, and a copy of the e-mail send to poslovna.informatika.hitvb@gmail.com, where the message should:

a) have subject Proba

b) contain a link that you think is interesting and relates to Vrnjačka Banja, hotel industry or tourism, as well as its short description

c) contain as an attachment a file whose contents match that of the originally created folder

d) contain a welcome message.

5. Check the Inbox, read incoming text messages, and view any attachments.

6. Respond with messages of gratitude, where these messages should be visible to all participants of communication.

7. To the contacts, add poslovna.informatika.hitvb@gmail.com under the name Business Informatics.

8. Wipe created from a computer.

Word Processing

1. On the Internet, on some of the specialized websites for employment mediation, find a template for writing CVs (resumes).

2. Based on the template write your CV. It should contain a photo, and the file which contains CV, name it by yourself.

3. Send CV to poslovna.informatika.hitvb@gmail.com.

Presentations

1. Create a new Microsoft Office PowerPoint document.

2. For presentation's design, choose a theme Concourse.

3. Set the presentation title as "Vrnjačka Banja".

4. The subtitle should be "Tourist Attractions".

5. The title of the second slide is "Bridge of Love", and the slide appears with the effect Wedge.

6. The second slide should contain some information about Bridge of love, no more than 30 words, and 2-3 images, where the presentation style Rotated, White should be allocated to one image.

7. To the slide, as well as to all the information and pictures assign arbitrary entry effects, whereby each information should appear after clicking, except the images which could appear simultaneously.

8. The title of the third slide is "Carnival of Vrnjci".

9. The third slide should contain at least two positive pieces of information about the event, which appear one after another, after clicking, with different entry effects, as well as the image that is displayed simultaneously with the first information.

10. The fourth slide of the same title should include an illustration that appears on the slide, after clicking, which after the next click slowly disappears from the slide and then reappears.

11. The fifth slide of the same title as the previous two contains information on awards received by this event with accompanying images, along with slide presenting the effect Dissolve.

12. Last is the Gratitude slide with text created using WordArt.

13. Name the presentation by your name and index number, save it in .pptx format and send it to poslovna.informatika.hitvb@gmail.com.

Spreadsheets

Šifra proizvoda	Naziv	Kategorija	Nabavna cena	Porez	Cena sa porezom	Marža	Prodajna cena	Količina u magacinu	Ukupna vrednost	Zarada	Potrebna nabavka (da/ne)
1111	hleb	prehrana	15.50 Din.	20.0%		8.0%		40.00			
1112	mleko	prehrana	16.00 Din.	22.0%		8.0%		35.00			
1113	jabuke	prehrana	55.00 Din.	20.0%		12.0%		25.00			
2111	sapun	higijena	23.30 Din.	18.0%		10.0%		30.00			
1115	pavlaka	prehrana	15.84 Din.	20.0%		8.0%		25.00			
3111	mala sveska	školski pribor	12.25 Din.	25.0%		10.0%		30.00			
2112	šampon	higijena	43.89 Din.	22.0%		10.0%		40.00			
2113	pasta za zube	higijena	39.55 Din.	22.0%		10.0%		45.00			
3112	olovka	školski pribor	12.20 Din.	25.0%		10.0%		55.00			
3113	gumica	školski pribor	13.25 Din.	25.0%		10.0%		60.00			

Broj prehrambenih artikala		*Vrednost robe u magacinu*	
Ukupna vrednost prehrambenih proizvoda		*Ukupna zarada*	
Broj proizvoda skupljih od 20 din			
Najveća marža			

1. Create a new Excel document and name it by your name and index number.
2. Create and format a table, and then enter the data as shown above. The row height is 16, except for the header. Font is Times New Roman, 12pt.
3. Calculate the value of the empty cells. Earnings are calculated as the difference between the total value of the sales price and the total value of the purchase price. The purchase is needed if the quantity in storage is less than 10.
4. Send the result to e-mail poslovna.informatika.hitvb@gmail.com.

The achievements of students

Two tests are taken as a part of the pre-exam requirements for the subject Business Informatics.

The theoretical part of the first colloquium covers the following areas: hardware, Windows, Internet, use of touch sensitive devices, image processing and word processing. The practical part is mainly related to word processing program Microsoft Word.

The theoretical part of the second colloquium covers the following areas: Multimedia presentations, spreadsheets, information security and a free alternative to Microsoft Office software package. The emphasis of practical part is on creating spreadsheets.

Table 2: *Percentage of points in colloquiums*

First test			Second test		
Theory	**Practically**	**Total**	**Practically**	**Theory**	**Total**
43%	74%	66%	38%	75%	66%

Source: *Results of the colloquiums for the subject Business Informatics, 2015*

In addition to the pre-exam colloquiums students have one practical work related to the presentations, multimedia, marketing and social networks. The percentage of points on practical work in 2015 was 83%.

These results show that students in the areas that are most common in the modern working environment, word processing, spreadsheets, presentations, and multimedia, achieved very significant results in practical work.

A significant indicator of readiness of students of the Faculty for the work in modern business environment is the estimates they receive on the professional practice. Students UAS at the Faculty of Hotel Management and Tourism in Vrnjačka Banja, starting from the second year have a mandatory work placement for a minimum of 30 days. Professional practice is carried out within the hotel industry, travel organizers, travel agencies and tourism organizations in the country and abroad (Sekulić et al., 2015). After the professional practice, mentors evaluate them. For years now, the average score is close to the maximum of 10, and from year to year it increases.

Table 3: *Average scores on professional practice*

2012/2013	2013/2014	2014/2015
9.85	9.91	9.97

Source: *Documentation of the Faculty, 2013-2015*

Conclusion

Due to the large amount of data available, it is important that students learn how to collect, process and interpret information, as well as to acquire the knowledge, skills, work habits and personal characteristics that are important for success in today's world. Teachers have a completely new role that is different from the simple transfer of information and preparation for good results in tests.

ICT should ensure that the focus of teaching is set to educational needs of students through all the important aspects of learning and teaching. It is necessary to serve to the strengthening of the teacher's competence to enable efficient use of modern educational tools. A particularly important role of ICT tools today is to enable effective cooperation among students and teachers and to improve the quality of learning using virtual learning environments and different platforms on which the information from lectures are regularly updated while preserving the irreplaceable quality of classical education.

Touch sensitive devices are an ideal tool in teaching activities that require content sharing, with the online quizzes and tests, when the teacher needed a quick insight into the degree of their attainment of some matter and when it requires joint decision making and dialogue between members of the group. In order to better prepare students for the working

environment that awaits them, it is necessary to insist on the use of these devices in various activities related to the use and sharing of the existing content. Their mass introduction to teaching will lead to students who do more self study after class, using their mobile devices for that.

The further steps in using tablets in teaching may relate to seeking ways to increase the use of these devices to create new content, as well as to facilitate their administration.

Acknowledgements

Literature

1. Aksoy, H., (2003): *Used of Technology in Educational Organizations and a Solution Regarding Their Effect*, Education Science Society, Ankara, Aşamam Press.

2. Conole, G., Delaat, M., Dillon, T., Darby, J. (2008): *"Disruptive technologies", "pedagogical innovation": What's new? Findings from an in-depth study of students'use and perception of technology*, Computers & Education, 511-524.

3. De Grez, L., Valcke, M., Roozen, I. (2009): *The impact ofan innovative instructional intervention on the acquisitionof oral presentation skills in higher education*, Computers& Education, 112-120.

4. Fabian, K., MacLean, D. (2014): *Keep taking the tablets? Assessing the use of tablet devices in learning and teaching activities in the Further Education sector*, Research in Learning Technology, 22.

5. Filipovic, N., Milasinovic, D., Jagic, N., Miloradovic, V., Hetterich, H., Rieber, J. (2011a): *Numerical simulation of the flow field and mass transport pattern within the coronary artery*, Computer Methods in Biomechanics and Biomedical Engineering, 14, 4, 379-388, DOI: 10.1080/10255842.2010.482526, ISSN 1025-5842.

6. Filipovic, N., Milasinovic, D., Zdravkovic, N., Böckler, D., vonTengg-Kobligk, H. (2011b): *Impact of aortic repair based on flow field computer simulation within the thoracic aorta*, Computer Methods and Programs in Biomedicine, 101, 3, 243-252, DOI: 10.1016/j.cmpb.2011.01.005, ISSN 0169-2607.

7. Gartner (2014): *Gartner Says 4.9 Billion Connected "Things" Will Be in Use in 2015*, http://www.gartner.com/newsroom/id/2905717, (11 March 2016).

8. Kirkwood, A., Price, L. (2005): *Learners and learning in thetwenty-first century: what do we know about students'attitudes towards and experiences of information andcommunication technologies that will help us designcourses?*, Studies in Higher Education, 257-274.

9. Koile, K., Singer, D. (2006): *Development of a Tablet-PC-based System to Increase Instructor-Student Classroom Interactions and Student Learning*, WIPTE 2006 - Workshop on the Impact of Pen-based Technology onEducation, Purdue University.

10. Krsmanovic, D., Koncar, I., Petrovic, D., Milasinovic, D., Davidovic, L., Filipovic, N. (2012): *Computer modelling of maximal displacement forces in endoluminal thoracic aortic stent graft*, Computer Methods in Biomechanics and Biomedical Engineering, DOI: 10.1080/10255842.2012.735661.

11. Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., Hung Byers, A. (2011): *Big data: The next frontier for innovation, competition, and productivity*, McKinsey Global Institute, http://www.mckinsey.com/business-functions/business-technology/our-insights/big-data-the-next-frontier-for-innovation, (11 March 2016).

12. Sari, A., Mahmutoglu, H. (2013): *Potential issues and impacts of ICT applications through learning process in higher education*, Procedia - Social and Behavioral Sciences, 89, 585-592.

13. Sekulić, D., Milovanović, V., Milićević, S. (2015): *Uloga stručne prakse u obrazovanju budućeg kadra u hotelijerstvu i turizmu*, Nastava i vaspitanje, Pedagoško društvo srbije, 64, 2, 371-383.

14. Shamonsky D. (2015): *Internet of Things: Are Your User Experience Design Skills Up to Speed*, http://www.ics.com/blog/internet-things-are-your-user-experience-design-skills-speed, (11 March 2016).

15. Sharpe, R., Benfield, G., Roberts, G., Francis, R. (2006): *The Undergraduate Experience of Blended E-Learning: AReview of UK Literature and Practice*, Higher EducationAcademy, York.

16. Stephen, E., Abbott, N. (2015): *21st Century Skills Definition*, The Glossary of Education Reform, http://edglossary.org/21st-century-skills/, (11March 2016).

17. Sukanta, S. (2012): *The Role of Information and Communication Technology (ICT) in Higher Education for the 21st Century*, The Science Probe, 1, 1, 30-41.

18. Tang, T., Austin, M. J. (2009): *Students' perceptions ofteaching technologies, application of technologies, andacademic performance*, Computers & Education, 1241-1255.

19. Vasović, N., Milašinović, D. (2014): *Modern information and communication technologies in higher education*, 7th International conference, Higher Education in Function of Sustainable Development, Užice, (ISBN 978-86-83573-44-8).

20. Venkatesh, V., Croteau, A.-M., Rabah, J. (2014): *Perceptions of Effectiveness of Instructional Uses of Technology in Higher Education in an Era of Web 2.0*, 47th Hawaii International Conference on System Science.