UNDERGRADUATE HEALTHCARE STUDENTS' ATTITUDE TO E-LEARNING AT MEDICAL UNIVERSITY - PLOVDIV

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Abstract: E-learning is seen as a possible solution to the problem of modernization of the university education in response to the changing needs of the society. In undergraduate healthcare training, e-learning is implemented predominantly as blended learning in addition to the traditional classroom teaching. A major factor in the success of e-learning are learners' attitudes, beliefs and concerns. The aim of the present study was to investigate undergraduate healthcare students' attitude to e-learning at Medical University – Plovdiv. In this case, e-learning is considered to be electronic educational resources organized as an interactive e-learning unit or course, provided through a learning content management system. The survey was carried out in 2016 through a self-reported questionnaire among 270 first year students from ten healthcare specialties. Participants were asked to express a degree of agreement with nine statements on a five point Likert scale. The influence of gender, age, specialty and previous e-learning experience on the opinion of students was investigated. The results showed that students' attitudes towards e-learning were positive, but learners were not enthusiastic about it. Genders have different views about e-learning implementation – women are more likely to accept it. The experience first year students had did not allow them to judge if e-learning supports better time-management or life-long learning skills. Students agreed that implementation of e-learning depends on the subjects and there are disciplines that can be provided as distant courses within the learning management system.

Introduction

The rapid development of technologies and their essential impact on almost all human activities change the way we live and work. Institutions of higher education are under pressure to transform to respond to the growing needs of the society. They function in a reality of vast amounts of information, global connectivity and increased mobility. Significant factors imposing change are increasing quality requirements and competition for students. Moreover, the students' pedagogical characteristics have changed – a generation with cognitive, emotional and psychomotor abilities influenced by gaming and social networking currently sits in the university benches.

Medical schools are not aside from this tendency. They face additional specific issues as changes in healthcare delivery, emerging new medical science areas, avalanche growth of medical information and access to hospital settings that result in a reduction of the time for teaching. E-learning is envisaged as a possible solution. Students are major participants in learning, so the aim of the present study was to investigate undergraduate healthcare students' attitude to e-learning at Medical University – Plovdiv.

Literature review

E-learning is a response to the problem of modernization of university education in the spirit of educational, technological and economic trends in the global information society (Kirkova-Bogdanova et al., 2016). One of the most productive initiatives related to e-learning is the one in the health sector (Cheng, et al., 2014) due to its advantages, some of which are:

- the educational process is realized through technologies that today's students are accustomed to and which are a part of their daily lives (Cazan et al., 2016);
- e-learning improves the skill to use information and communication technologies which is necessary for a successful career in healthcare (Abdelaziz et al., 2011, Hegarty & Stewart, 2007);
- e-learning encourages the development of critical thinking, time management skills, self-pacing and self-reflection (Abdelaziz et al., 2011, Williams, et al., 2011).

Institutional rationales for implementation of e-learning are contextualized and specific for each institution (Sharpe et al., 2006).

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Different notions and therefore definitions exist for e-learning. Khan considers the concept of e-learning as synonymous to web-based learning (WBL), internet-based learning (IBL), advanced distributed learning (ADL), web-based instruction (WBI), on-line learning (OL) and open/flexible learning (OFL) (Khan, 2005). According to other authors, e-learning is much more than teaching and learning via a computer (Pollard & Hillage, 2001, Ruiz et al., 2006). Apart from access to educational material, it includes management and monitoring of the study process. The learning management systems used today have all functionality to deliver and manage training. After comments, debates and arguments of experts in the field, Sangra et al. (2012) proposed the following definition: "E-learning is an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning.", acknowledging that the definition does not exhaust all aspects of the concept.

Medical and health education is traditionally carried out face-to-face. In many countries, including Bulgaria, regulations do not allow distant training in these areas at the undergraduate level. Studies conclude that e-learning is supplementary to university healthcare education (Ruiz et al., 2006), (WHO, 2015). In medical and health education e-learning is implemented in its blended modality (Sharpe et al., 2006) (WHO, 2015) – properly integrated into the traditional face-to-face curricula.

Because of the vague notion of e-learning, we feel it is important to clarify the idea of e-learning behind the present study. For the purpose of this research, e-learning is considered to be electronic educational resources organized as an interactive e-learning unit or course, provided through a learning content management system (LCMS). It consists of passive resources (readings, images, video, etc.), assignments, tests and teacher-students communication. It may be used in class, as well as for self-preparation.

Quite often in planning e-learning more attention is paid to technologies rather to education. Sometimes in our efforts to create a high-tech miracle, we tend to forget the needs and concerns of the participants – teachers and students. The most important issue in the design and implementation of e-learning is the focus on achieving the learning goals by the trainees. The instructional design models (Instructional Design Central, 2012) start with an analysis of auditory. Without students' understanding, wishes and willingness to be trained by technologies, expensive and time-taking activities for e-learning adoption are not justified. Taking learners' characteristics, attitudes, beliefs, and concerns into consideration is a major factor in the e-learning success. E-learning in healthcare education has no bigger priority than traditional training, but it should be used as an alternative only with a good understanding of the students' needs (Lahti et al., 2014). This is the rationale behind the present study.

Information and communication technologies (ICT) have been used for teaching healthcare students in various ways for many years at Medical University – Plovdiv. PowerPoint presentations, electronic materials, video clips, web resources, e-mail are widely spread. In the recent years, new technologies like interactive boards and electronic simulation mannequins have been installed. An e-learning site developed on the basis of LCMS Moodle has been open since 2010 (http://eomk.medcollege-plovdiv.org) as a joint project with "Pastel Studios" software company. A few e-courses with different degree of interactivity for compulsory and optional subjects have been created and used. Research suggests that this form of training is well accepted by our students (Kirkova-Bogdanova et al., 2015), they are satisfied with e-learning because of its advantages and an appropriately designed e-course favors students' learning (Kirkova et al., 2014).

Data and Methodology

The survey was carried out in 2016 through a self-reported questionnaire among 270 first year students from ten healthcare specialties – nurses, midwives, rehabilitators, radio-laboratory assistants, medical laboratory assistants, dental mechanics, health inspectors, pharmacy assistants, medical cosmetics and instructors in nutrition and safety of food. Participants were asked to express a degree of agreement with nine statements, which as in "e-learning" account the e-courses eventually undertaken on the e-learning site or any other similar experience. Students registered their responses on a five point Likert scale from 1, which stands for "strongly disagree" to 5, which is interpreted as "strongly agree."

The statements included in the questionnaire were:

S1. E-learning is just posting lectures and other readings on the site.

S2. E-learning should be interactive and must provide activities for the students.

S3. To be effective, the e-course should be interesting, friendly with easy navigation.

S4. Some subjects can be learned from a distance on the e-learning site.

S5. E-learning is just a supplement to traditional training.

S6. The extent to which e-learning could be used depends on the subject.

S7. I would prefer to study in an electronic environment because this way I can better manage my time.

S8. I am afraid my computer skills are not good enough to study in an electronic environment.

S9. E-learning in pre-graduate training helps the development of life-long learning skills.

S10. E-learning is not applicable in my specialty.

Students were also asked if they have prior experience with forms of e-learning either during their secondary studies or with the LCMS of the university. Gathered data were processed statistically with SPSS v.19. Students' agreement with the statements is presented through mean values. Dependencies of students' attitudes on gender, specialty, prior experience with e-learning and age were analyzed with nonparametric tests of Mann-Whitney and Kruskal-Wallis.

Results and Discussion

Participants were mostly women – 211 (78.15%) to 59 (21.85%) men. The age range is from 18 to 50 years with $\bar{x}=22.44$, Me=20.00, Mo=19 years.

Students' attitudes expressed by their responses are described with mean, SEM, STD and mode and presented in Table 1:

Table 1: Means of students' responses										
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
N Valid	267	266	265	265	266	264	265	264	266	266
Missing	3	4	5	5	4	6	5	6	4	4
Mean	2.87	3.98	4.41	3.47	3.56	4.10	2.77	2.17	3.39	2.21
Std. Error of Mean	0.078	0.077	0.068	0.093	0.078	0.071	0.080	0.087	0.074	0.081
Mode	3	5	5	5	5	5	3	1	3	1
Std. Deviation	1.272	1.254	1.112	1.508	1.270	1.156	1.304	1.418	1.206	1.324
Source: Authors										

Statements S1, S2, S3 investigate students' impressions and understanding of e-learning. The level of agreement with the first statement $\bar{x}_{s1}=2.87$ indicates that though 38.89% show disagreement, many learners cannot decide what e-learning is, taking into consideration the e-courses they have been registered to. Nearly one third (31.11%, Mo=3) indicate "neutral". There is no statistically significant relation between responses to this item and gender – p=0.948, age – p=0.169 and previous experience – p=0.062, but speciality affects students' impressions at p=0.046. This can be expected due to unequal distribution of e-courses with various qualities in the specialities.

Students, however, have clear idea about the active nature of this modern educational method and they agree with the statement that e-learning should be interactive – $\bar{x}_{s2}=3.98$, Mo$_{s2}=5$, given by 48.52%. Answers were not affected by age – p=0.907, but we found a statistically significant impact of gender – p=0.009, speciality – p=0.012 and previous experience – p=0.039. Women had more accurate judgement – $\bar{x}_{s2women}=4.07$ than men – $\bar{x}_{s2men}=3.66$. Those who have been assigned to e-courses agree to a greater extent about necessity of interactivity – $\bar{x}_{s2exp}=4.07$ than those who have not – $\bar{x}_{s2notexp}=3.75$. The influence of speciality can be explained with the different ratio of men/women and the different number of e-courses available in each speciality.

There was even higher consensus on the third statement – $\bar{x}_{s3}=4.41$, Mo$_{s3}=5$ – 70.57% strongly agree that factors for the effectiveness of e-learning are usability, friendliness, easy navigation and interest.

Students opinion about this e-learning feature did not depend on gender – p=0.070, speciality – p=0.462, age – p=0.360 and previous experience – p=0.361.

Different notions of genders about interactivity are interesting, but we can only speculate about the reasons. Interactivity is a typical feature of e-learning. A quality e-course incorporates various activities for the trainees. This is one way to provide active student-oriented learning. Julie & Fakude emphasize the need for interactive instructional media in the learning environment because of students' active participation and different learning styles (Julie & Fakude, 2006). However, sometimes when e-learning supports classroom teaching as in our case, a tendency to employ LCMS mainly to publish readings and other passive resources can be noticed (Moule et al., 2011) (Kirkova-Bogdanova et al., 2016), while pedagogical interaction takes place only in class. Unfortunately, not all e-courses in the university platform integrate activities, and this is why students cannot judge about their purpose. Though they do not see many good practices (Kirkova-Bogdanova et al., 2016), trainees are aware of the need for interactivity. As e-learning experience largely determines students' views (Figure 1), interactivity should be a highlight in planning and developing of e-learning.

Like all young people, our students are acquainted with computers well enough, but technologies are not in the scope of their interests – they have chosen the humanitarian profession of the healthcare specialist. Teachers and e-learning designers must keep the e-learning units as simple as possible in the meaning of computer-students interaction so that students focus on content and make least efforts to cope with the technology.

Figure 1: Students' agreement with the statement that e-learning should be interactive

Source: Authors
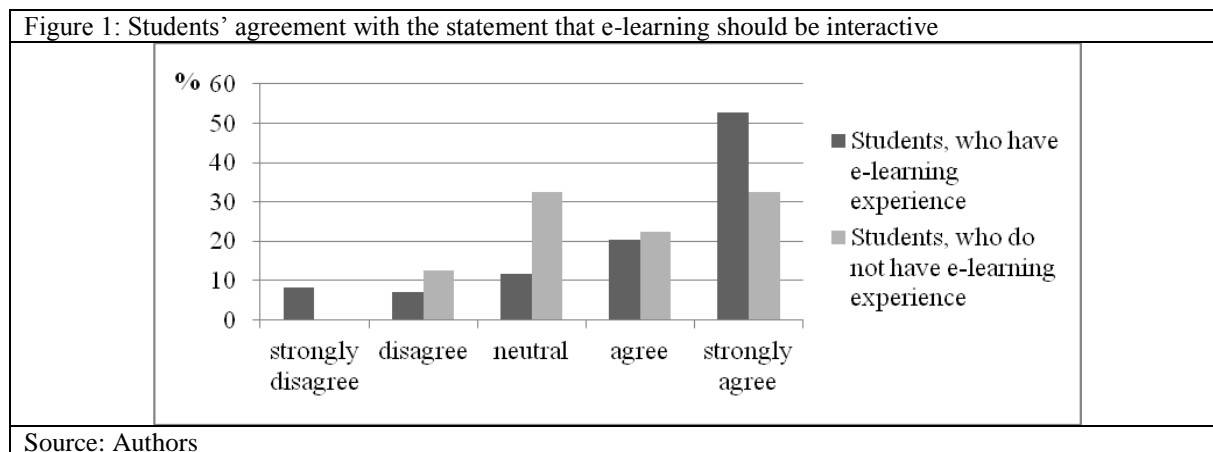
The next group of statements S4, S5 and S6 identifies the place of e-learning from the students' perspective. We did not find any statistically significant relationship between students' reactions to these propositions and gender, specialty, age or prior e-learning experience. The level of agreement with the provoking statement about disciplines that allow distant learning was positive – $\bar{x}_{s4}$=3.47, most (38.15%) responded with "strongly agree" – Mo=5. Undergraduate healthcare education in Bulgaria is conducted face-to-face only. The presence on lectures and practical classes in all subjects is compulsory. However, this result indicates that soon policy makers will face the need to reconsider the regulations.

The degree of agreement to S6 was higher – $\bar{x}_{s6}$=4.10, 51.11% answered with "strongly agree" – Mo=5, which shows that our students have a clear and realistic judgement that the extent of the e-learning component differs in each subject. There is a common understanding that e-learning is supplementary to traditional undergraduate healthcare education (Rigby, et al., 2012) (WHO, 2015) (Sharpe, Benfield, Roberts, & Francis, 2006). The results of our survey showed that also our students considered e-learning in this manner – $\bar{x}_{s5}$=3.56, Mo_{s5}=5, but they were not unanimous in their thinking – the highest percentage is of those who strongly agree – 29.63%, followed by freshmen, who still have no opinion – 26.67%. In the light of the responses to S4 and S6 we may conclude that to a considerable number of students, e-learning is not compatible with the notion of being only supplemental – it could be a significant and valuable training component in itself (Figure 2).

Figure 2: Students' notion about e-learning as a supplement to traditional classes

Source: Author
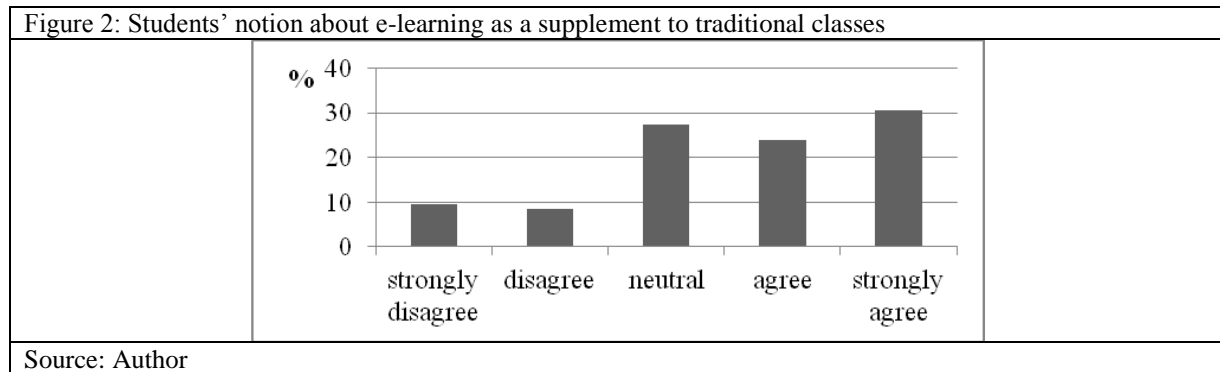
One of the biggest advantages of e-learning, especially its distant form is its availability, that allows learners to study when and where they wish. This is one of the drivers for the success of e-learning in postgraduate healthcare education (Cheng, et al., 2014). Organization of everyday tasks and time management are crucially important for students to cope with their commitments at the university. This is why we asked our first-year students for a feedback whether e-learning, offered at the university helps them to manage their time better. The results we received were not positive (Figure 3). The average level of agreement with S7 is $\bar{x}_{s7}$=2.77, Mo_{s7}=3. Students' evaluation did not depend on gender – p=0.943, speciality – p=0.248, age – p=0.363 and previous experience – p=0.061. More than a quarter of the investigated students could not judge, and the majority of students did not agree that the e-learning they were exposed to did not contribute to their better time management. The reason for this reaction may be the compulsory face-to-face training that does not allow benefit from the e-learning platform by saving time from non-attendance. Moreover, students clearly indicated, that there were disciplines that can be taught through distance learning.

S9 studies students' views about e-learning and its connection with long-life learning. The level of agreement is positive – $\bar{x}_{s9}$=3.39, Mo_{s9}=3. Though 44.36% agree or strongly agree with this position, many of our students – 31.58% – feel that they cannot judge whether e-learning experience at the university may help them to create long-life learning skills (Figure 4). Students' opinion is not affected by gender – p=0.512, age – p=0.370 and previous experience – p=0.505. Students from different specialties have different notions about this advantage of e-learning – p=0.008. Future health inspectors agreed at $\bar{x}_{s9}$=4.05±1.026, while rehabilitators did not consider e-learning experience would influence any future education – $\bar{x}_{s9}$=2.74±1.109.

Computer literacy is essential for ICT enhanced training. According to Abdelaziz et al. (Abdelaziz, Kamel, & Karam, 2011) a disadvantage of e-learning is the need for good computer skills. Students should focus on content and not make efforts to study how to work with the computer or the platform. Students in Bulgaria receive good training in ICT in secondary school and healthcare students continue studying informatics at the university. The respondents were not afraid that their computer skills were insufficient for e-learning experience – $\bar{x}_{s8}$=2.17, Mo_{s8}=1. Their self-assessment did not depend on gender – p=0.145, speciality – p=0.180 and previous experience – 0.410, but there was statistically significant difference – p=0.019 in the mean age of trainees, who demonstrate disagreement (64.82%) – 21-22 years and those, who indicate agreement (20.45%) – 24-25 years (Figure 5). We may conclude that inadequate computer skills cannot be an obstacle to implementation e-learning for healthcare students.

The overall students' attitude to the place of e-learning in healthcare education was in favor of this form of training. The level of agreement that e-learning has no application in their studies was low – $\bar{x}_{s10}$=2.21, Mo_{s10}=1. The majority of students – 62.41% consider e-learning appropriate, 14.54% - do not. The attitude of the future healthcare specialists to the place of e-learning did not depend on speciality – p=0.226, age – p=0.793 and previous experience – p=0.098. Genders showed statistically significant difference in their views about e-learning application – p=0.002 (Figure 6). As about interactivity in e-learning, predominantly male healthcare students found it difficult to decide whether e-learning is an adequate form of training. This might be due to the personal characteristics of men choosing healthcare as a career, but could be a result of that women tend to be more active in internet usage for academic purposes than men (Kirkova-Bogdanova, Tsokova, Taneva, Katsarska, &

Marchev, 2016).

Results demonstrated that students' attitudes towards e-learning were positive, but learners were not enthusiastic about it. This is confirmed by Stoyanova and Kilova (2016). Research outside Bulgaria also shows a similar tendency (Abdelaziz et al., 2011, Moule et al., 2011).

Figure 3: Students' agreement with the statement that e-learning is not applicable in their training
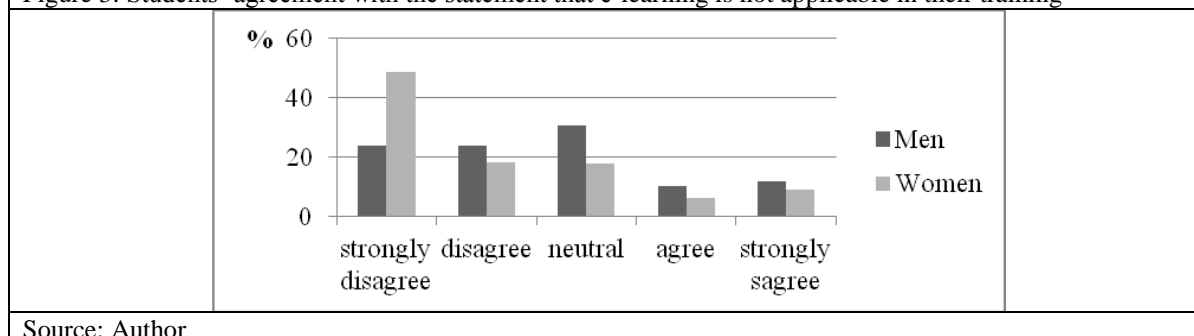
Source: Author

Conclusion

The investigation of attitudes of first year healthcare students to e-learning at Medical University – Plovdiv allow the following conclusions to be made.

More than half of the students agree that e-learning is an appropriate form of training in the specialty, genders have different views about e-learning implementation;

The experience first year students have does not allow them to judge if e-learning supports better time-management or life-long learning skills;

Students feel their computer skills are good enough to manage with e-learning, older students express greater uncertainty;

Interactivity, friendliness and ease of use are important e-course characteristics;

Students agree that implementation of e-learning depends on the subjects and some disciplines can be provided as distant courses within the learning management system.

The success of e-learning strongly depends on students' acceptance and attitudes. E-learning has a future if it is carefully planned and consistent with the requirements of students.

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