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ONLINE COURSES IN MEDICAL EDUCATION: BENEFITS AND CHALLENGES

Continuing education ((life-long learning approach) is important in every field, but especially for medical professionals. The aim of this paper is to analyse an inside experience of undergraduates and PhD students obtained when taking online courses and scrutinize the competencies necessary for successful online learning as well as functions required for proper management of courses. We also set up the task to clear out to what extent taking online courses at English as a medium of instructions are challenging for Ukrainian students. Though taking online courses was very demanding for most participants, all they would recommend online courses to their peers as an effective way to develop profession-related knowledge and skills as well as to gain experience in collaborating with international team and to raise their awareness of the conventions of academic English language and culture.

Key words: online learning, online courses, medical students, natural and medical sciences, English as a medium of instruction, digital tools.

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ОНЛАЙН КУРСИ В МЕДИЧНІЙ ОСВІТІ: ПЕРЕВАГИ ТА ВИКЛИКИ

Неперервна освіта (концепція навчання упродовж життя) є важливою в усіх сферах діяльності, але для працівників охорони здоров'я вона набуває

особливої актуальності. Метою запропонованого дослідження було проаналізувати досвід студентів та аспірантів медичних та стоматологічних спеціальностей, вперше залучених до проходження он-лайн курсів, та виявити компетенції, необхідні для успішного онлайн-навчання, а також функції, необхідні для належного управління курсами. Ми також поставили завдання з'ясувати, наскільки інтернет-курси, що викладаються англійською мовою, є складними для українських студентів. Хоча проходження онлайн-курсів було справжнім викликом для більшості учасників дослідження, усі вони рекомендували інтернет-курси для своїх однолітків як ефективний спосіб розвинути знання та навички, пов'язані з професією, а також отримати досвід співпраці з зарубіжними колегами та підвищити рівень обізнаності щодо конвенцій академічної англійської мови та культури.

Ключові слова: онлайн навчання, онлайн курси, студенти, природні та медичні науки, англійська мова як засіб навчання.

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ОН-ЛАЙН КУРСЫ В МЕДИЦИНСКОМ ОБРАЗОВАНИИ: ПРЕИМУЩЕСТВА И ВЫЗОВЫ

Непрерывное образование (концепция обучения в течение жизни) является важным во всех сферах деятельности, но для работников здравоохранения это направление приобретает особую актуальность. Целью предлагаемого исследования было проанализировать опыт студентов и аспирантов медицинских и стоматологических специальностей, впервые привлеченных к прохождению онлайн курсов, выявить компетенции, необходимые для успешного онлайн-обучения, а также функции, необходимые для надлежащего управления курсами. Мы также поставили задачу выяснить, насколько интернет-курсы, преподаваемые на английском языке, являются сложными для украинских студентов. Хотя прохождения онлайн-курсов было настоящим вызовом для большинства участников, все они рекомендовали интернет-курсы для своих сверстников как эффективный способ развить знания и навыки, связанные с профессией, а также получить опыт сотрудничества с зарубежными коллегами и повысить уровень

осведомленности о конвенциях академического английского языка и культуры.

Ключевые слова: онлайн обучение, онлайн курсы, студенты, естественные и медицинские науки, английский язык как средство обучения.

Introduction. The landscape of higher education is changing and reshaping worldwide, and according to numerous reports, digital technologies are increasingly at the heart of these changes (L. Endrizzi, 2012, S. Guri-Rosenblit, 2010, V. Slotte et al. 2001, M. Roszak et al., 2015). New technologies challenge higher education institutions to redefine their student and staff constituencies, and to redesign their research infrastructures and teaching practices. Some futurists state that the information and communication technologies produced an era of a 'digital tsunami' and triggered the restructuring of academe by forcing educators to realign and redesign their academic work dramatically, while others contend that the use of technology has remained, and will remain, on the margins of the academic activities and is unlikely to change in any fundamental way the dominant campus cultures [5]. This has resulted in the paradigm shift making educational institutions be charged with developing students' digital citizenship, ensuring mastery of responsible and appropriate technology use, including online communication etiquette and digital rights and responsibilities in blended and online learning settings and beyond.

Nowadays, online credit and non-credited courses, integrating formal and informal learning, are becoming more and more popular mode of learning. Nearly 50% of higher education institutions currently engage in some type of online learning [4]. Academic and professional organizations agree that using web-based learning environments can offer sound pedagogical benefits [2; 8]. Online courses represent comfortable self-paced methods to achieve or upgrade knowledge in almost every field, including sciences and technologies. Their mission is to help professionals throughout the world acquire the skills they need to succeed in today's highly dynamic and competitive environment.

Rapid pace of change in science and technology, professional communication and public communication, implementation of GILT (Globalization, Internationalization, Localization, Translation) conception and the recognition of English as a global reality of knowledge transfer create strong incentives for Ukrainian scholars to improve their digital proficiency, mastery of English for occupational purposes and academic multi-literacy in order to keep a finger on the pulse of the latest discipline-related achievements and global trends. As it has been reported the largest share of disciplines taught through e-learning includes business and management, education and teacher training,

mathematics, while medical and natural sciences are somewhat below the average ranking of all disciplines [4, p.33].

For the two past decades Ukraine has initiated the number of EMI (English as a medium of instruction) degree programmes and faced the growth of international student population. Therefore, the most effective faculty and administrative staffs in Ukrainian educational institutions consider English as indispensable part of their job. Moreover, English is a tool to overcome language and cultural barriers between domestic and international students. "The need to understand other cultures and languages" was identified by Daniel Yankelovich [10] as one of five imperative needs to which higher education must respond in the next ten years that remains highly relevant for Ukrainian graduate and post-graduate education.

The **aim** of this paper is to analyse an inside experience of undergraduates and PhD students obtained when taking online courses and scrutinize the competencies necessary for successful online learning as well as functions required for proper management of courses. We also set up the task to clear out to what extent taking online courses at EMI (English as a medium of instructions) is challenging for Ukrainian students.

People throughout the world are increasingly becoming technologically advanced. The growth of technology for educational use has transformed the way in which people learn and access education. There is still an increased interest in 'self-directed, curiosity-based learning. This is particularly true for languages, an area in which the explosion of mobile apps and interactive software has provided choice to a range of people who were previously unable to access foreign language education. There is a wide range of educational platforms and recourses, well-reputable universities provide online courses (often for free) in almost every field, including human sciences, natural sciences, medicine, etc. The most well-known among them are MOOCs (Massive Open Online Course), first emerged in 2012, which collaborate with the various commercial or non-profit platforms. There are about 31 institutions throughout Europe that have already reported the practical experience of offering MOOCs [4].

The purpose of this section is to consider the practical experience of the 31 institutions that have reported offering MOOCs.

Coursera, Novoed, Futurelearn, Myngle, Simplilearn platforms, courses provided by the British Council, by prestigious universities over the world as Stanford University (USA), Harvard University (USA), Massachusetts Institute of Technology (USA), the University of Iowa (USA), Trinity College Dublin, King's College London, the University of Edinburg, the University of Cambridge, Cardiff University, the University of New England (Australia), the Australian National

University, Monash University and the University of Queensland, The National University of Singapore, and others.

Coursera is an education platform that partners with top universities and organizations worldwide, to offer courses online for anyone to take, for free. *Udemy*, being a part of the growing MOOC movement, serves as an online learning platform, providing a variety of courses aimed at improving job-related skills and advancing career opportunities. The *British Council*, known in over than 110 countries, creates international opportunities for the people. The organization has won recognition by offering high-quality English language services and various programs. British Council aims to bring high-quality English courses and materials to every learner or teacher. It works with governments to transform whole education systems to increase opportunity and employability through English language resources and courses. It also delivers English teaching and trains teachers by radio, web and broadcast in developing and post conflict countries. *FutureLearn* is an education platform founded in December 2012. It is a company launched and wholly owned by The Open University in Milton Keynes, England. In January, 2017, it included 109 UK and international partners and unlike similar platforms includes non-university partners such as: the British Museum, European Space Agency, UNESCO, Cancer Research UK, the National Film and Television School and the American Association of Colleges for Teacher Education. *Simplilearn* is one of the world's leading certification training providers that partner with companies and individuals to address their unique needs, providing training and coaching that helps working professionals achieve their career goals. All the courses rely upon cognitive or constructive pedagogy; set clearly determined learning objectives and tasks, provide well-crafted filmed lectures and videos, readings. The course design involves user forums, which are one of the key ways of promoting peer interaction and ensuring quality of discussions and e-learning collaboration. Instructor feedback, a type of personalized instruction, is a particularly valuable feature of the courses. Instructor feedback is constructive and specific information that is provided by the instructor to the student on his or her course work, reflects on what has been learned and give suggestions for improvement in relation to the course objectives and expectations.

Study design. This study is an empirical applied research of a qualitative type based on data collection approach. The data were obtained from volunteer informants of the Ukrainian Medical Stomatological Academy, medical / dental undergraduates (n=30), postgraduate students (20), as well as junior medical / dental researchers (n=20). Both subjective and objective information was obtained through the observation, data from questionnaires, interviews, including self-ratings and judgmental ratings. They were offered to take free online courses

covering English for Academic Purposes, data science and discipline-related sciences conducted exclusively in English. It is a well-known fact that of the roughly 15 million people worldwide directly involved in scientific work at least two-thirds are non-native speakers and users of this lingua franca [7]. For all the participants taking online courses was the new and fresh experience, though they described themselves as fairly good at using the computer and as experienced Web surfers. They were able to get access to the courses through smartphones, tablets, or laptops.

English language proficiency of the participants was assessed prior being enrolled the courses in accordance with The Common European Framework of Reference for Languages: Learning, Teaching, Assessment [1] and ranged from A2 to B2 levels. They were offered to select any online courses within menu of the above mentioned platforms, and to create account and to sign in the course. The junior undergraduates preferred to take the courses in language and culture, general anatomy, biology, e.g. Exploring English: Language and Culture (British Council), Challenges In Antibiotic Resistance: Gram Negative Bacteria (Futurelearn), Exercise Prescription for the Prevention and Treatment of Disease (Futurelearn). Senior students were more interested in particular medical problems, for example, Dementia and Diversity in Primary Care: A Primer - Guidelines, Ethnic Differences, and Assessment (Novoed, Stanford University), Congenital Hypothyroidism: What Every Primary Care Provider Needs to Know (Novoed, Stanford University), courses on Physiology, Biochemistry, Genetics, and Immunology provided by Harvard Medical School. They also chose the courses relating research activity and opportunities to participate in exchange programs or to continue their training abroad, e.g. Understanding IELTS: Techniques for English Language Tests (Futurelearn), How to Succeed in the Global Workplace (British Council), Managing Big Data with R and Hadoop (Novoed), Academic Integrity: Values, Skills, Action (Futurelearn, Learning Online: Searching and Researching (Futurelearn). PhD students and teaching staff demonstrated keen interest in the courses designed to improve skills in academic writing and communication, e.g. Writing in the Sciences by Kristin Sianani (Stanford University, Novoed), Technical Writing (New Jersey Institute of Technology), Critical Reading and Writing (University of Massachusetts at Boston). These courses taught the scientists to become more effective writers by using practical examples and exercises. Topics included principles of good writing, tricks for writing faster and with less anxiety, the format of a scientific manuscript, and issues in publication and peer review. The students with more modest language proficiency benefited from the training provided in the first four weeks (on general principles of effective writing).

The courses run for six to ten weeks with weekly lessons (6 – 8 hours per week) that could be viewed at participants' convenience. Some participants of all three groups, up to 39%, left the courses for various reasons, among which poor time management and language-related difficulties were leading ones. These courses did not offer credits. The students were involved in various activities including quizzes to optimize learning, interactive case scenarios, expert interviews, essay writing, peer-reviewing, problem-solving, voicing their opinions in discussion forums, social media and round-tables. Those (45%) who scored at least 60% on the entire online activity and post-tests got a certificate. None of the students achieved the highest rank of 90 % and, therefore, none received a certificate with distinction.

The participants were approached with the request that they be interviewed through the questionnaire loosely grouped around issues on how the courses were appropriate for them, to what extent the courses lived up to their expectations, and would they recommend the courses to others and why.

Results and Discussions. Research results indicate that online courses have considerably promoted English language use and built up strong motivation to improve English language proficiency. It has found out that interaction in English language helps learners to gain input in language learning process. These courses provided the learners with a challenge and motivated them to use English in their daily routines. Communication with native speakers greatly contributed in overcoming language anxiety; allowed the learners to practice specific academic skills such as persuading, clarifying meaning, requesting information, and engaged them in true-life, authentic discipline-related discussion. The participants have noted that they have become more confident when communicating in English. It is necessary to say that several students (60.7%) failed to interact in the online discussions and found this activity difficult or demanding because of their low English language proficiency. Thus, we may suggest that the participants were primarily passive as they functioned as starter, as well as they were challenged by language demands and a new educational environment.

In generally, the participants enjoyed the experience and demonstrated willingness to continue learning subject content using online methods. Most of the interviewees (85%) have found that the online courses filled in the gaps in their knowledge, gave them a solid grounding in topics important to their education and career, because they received the latest first-hand information from the field insiders and authoritative scholars. The courses were also reported to advance providing relevance and integration of knowledge. In addition, the student benefited from free access to the useful resources and links. All the participants acclaimed that main concepts and complex processes were taught through step-by-

step digestible way; complicated materials came through visually enhanced explanations rather than traditional lectures and Power Point slideshow. They admitted that didactic videos with dynamic animations, illustrative drawing, short modules with role-play demonstrations of interaction between patients and physicians, case-studies, real-world stories helped understand principles and concepts instead of memorizing facts, brought them closer to the practice of medicine and science and gave them a glimpse into their future. Active learning by using simulations and responsive videos as well as true-to-life scenarios gave a sense of involvement into professional environment.

Though taking online courses was very challenging for the participants, all they would recommend online courses to their peers as an effective way to develop profession-related knowledge and skills as well as to gain experience in collaborating with international team and to raise their awareness of the conventions of academic English language and culture.

Conclusions. Continuing education ((life-long learning approach) developing as a worldwide trend, is important in every field, but especially for medical professionals, where the doubling time of medical knowledge in 2010 was 3.5 years [2]. This means that knowledge is expanding faster than our ability to assimilate and apply it effectively. Online learning provides significant new functionality in transmitting information. Online format allows students and young busy individuals already working in health care to pursue their goals in professional development. By browsing the wide variety of courses offered by educational platforms, they can find out which topics university educators and medical experts consider the most central and relevant, thus forming the essential core of what they must learn.

Flexibility, autonomy, ability to choose the content focus based on different learning needs and interests as well as to cater to individual learning style make online learning ideal for fostering students for progressive independency, for developing career or preparing for future study. Among the other attractive features of online learning, the participants accentuate clear organization of the courses, and namely integration and sequencing of information, discussion forums, instructional and counselling assistance, technical support, including videos, navigation panes, useful links. Moreover, they note the high quality of instruction and crucial role of instructors, whose personality extended beyond the cognitive coach or resource provider and greatly influenced the students' achievements and satisfaction with the courses. The participants also regard the courses as a good experience in training on self-discipline and time management skills. The most challenging aspect of the courses for most students was English as a medium of instruction. Coping with the quantity of reading, writing essays, passing through

quizzes, struggling with understanding lectures and interacting with peers through forums were described by the participants as rather demanding. Thus, the taking online courses and interacting with international colleagues has become a strong motivation for improving English proficiency. Additionally, the Internet promotes higher thinking skills, enriches their technical and conceptual experiences.

Educators, mentors and tutors play an important role in promoting, engaging the undergraduates and postgraduates with online technologies, in providing them with the skills in how-to-learn in a networked environment. Universities should enhance the development of digital communication skills in both students and faculty, including how to seek information, create personal learning environments and collaborate virtually with peers. Moreover, online courses may help to develop new directions in pedagogy and professional training based on complementarity between online and traditional learning. Pedagogical criteria should be elaborated in order to support, to monitor, and to assess the benefits from the implementation of novel technologies into medical training. The issues on online testing and examinations deserve particular attention.

Students, researchers endorse the development and incorporation of more information technologies and various apps to ensure successful learning and teaching.

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