МЕДИЧНІ НАУКИ

DOI: https://doi.org/10.32839/2304-5809/2020-3-79-69
UDC 61:378.014.6(477)=111

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CHALLENGES FOR UKRAINIAN MEDICAL EDUCATION

Summary. The autonomous existence of universities required to remain the flagship of scientific research through the commercialization of scientific enquiry – entrepreneurial University, which promotes the product of intellectual work and attracts new material resources for new developments. Continuous professional development (CPD), Continuing medical education (CME) accompanies the clinical field and focuses on self-directed lifelong learning. Independent improvement of any skills requires the feedback process and active learning. Up-to-date medical education creating the special digital environment integrates current learning technologies and new media. The essential contributions to organizational success are effective leadership and healthcare management. Associations of Universities could sustain the potency of medical education and collaborate with commercial interests to promote the utilization of discoveries arising from governmental funding that could have revolutionized medicine. Ukraine's Universities could have followed approved worldwide experience to develop accepted approach for significant changes, which will facilitate the integration our Universities in world's system education.

Keywords: medical education, entrepreneurial University, continuous professional development, active learning, associations of Universities.

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ВИКЛИКИ ДЛЯ УКРАЇНСЬКОЇ МЕДИЧНОЇ ОСВІТИ

Анотація. Автономне існування університетів, здатних створювати інтелектуальний продукт, та реалізовувати ці ідеї в ринкових умовах, останнім часом стало дуже важливим. З швидким розвитком економіки та цифрових технологій університети зобов'язані залишатися флагманом наукових досліджень за рахунок комерціалізації наукових досліджень, що сприяє просуванню продукту інтелектуальної праці та залученню нових матеріальних ресурсів для нових розробок. Це відповідає моделі підприємницького університету 3.0. Особливістю медичної освіти є високий професіоналізм викладача як педагога, так і лікаря. Безперервний професійний розвиток (БПР) належить до освітньої діяльності, яка допомагає медичним працівникам підтримувати професійний рівень, розширювати знання, відпрацювати навички та здійснювати догляд за пацієнтами. Безперервна медична освіта (БМО) супроводжує не тільки клінічну область, але й фокусується на самостійному безперервному теоретичному навчанні та навчанні на практиці. Останнім часом з'явилися новітні педагогічні практики активного навчання, які застосовуються і в медичних університетах. Ідея активного навчання разом з перевернутим класом може призвести до зміщення пріоритетів – від простого розуміння матеріалу до вивчення семінару для коректування очікувань студента. Сучасна медична освіта вимагає створення спеціального цифрового середовища, яке залучає сучасні технології навчання та нові медіа, розширює співпрацю, практичне використання, дистанційне навчання, мислення та прийняття рішень відповідно до критичних та клінічних підходів. Сучасна медична освіта повинна підготувати фахівців охорони здоров'я до складності управління і нюансів менеджменту, тому практика управління охороною здоров'я може бути інтегрована в медичну програму. Асоціації університетів могли б також підтримувати потенціал медичної освіти. Університети заохочуються до співпраці з комерційними підприємствами з метою сприяння до використання винаходів, що отримані у результаті державного фінансування, які можуть зробили революцію в медицині. На сьогодні Міністерство охорони здоров'я України реалізує комплексний підхід та пропонує стратегію розвитку медичної освіти для громадського обговорення. Українські університети змогли б наслідувати випробований світовий досвід медичної освіти, щоб знайти власний шлях і розвинути прийнятний підхід до суттєвих змін, які сприятимуть інтеграції наших університетів у світову систему освіти.

Ключові слова: медична освіта, підприємницький університет, безперервний професійний розвиток, активне навчання, асоціації університетів.

Introduction. The autonomous existence of universities capable of creating both an intellectual product and implementing these ideas in market conditions has recently become very important. There is a concept of conditional division of universities' activity into three levels designated 3.0. University 1.0 is related to the professional activities of the future. University 2.0 pursues not only an educational goal, but also closely related to the development of research, attracting talented students to promote research areas. However, with the rapid development of the economy and digital technologies, universities are required to remain the flagship of scientific research through the commercialization of scientific enquiry, which promotes the product of intellectual work and attracts

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new material resources for new developments. This corresponds to the model of Entrepreneurial University 3.0.

Analysis of recent research and publications. The issue of integrating science into the world community has became an acute since the beginning of Ukraine's independence. «University 3.0 not only changes the individual, but also fundamentally changes society. It creates the basic components of the knowledge society – new industries, innovative ecosystems, promising technology markets, economically leading regions, culturally enriched spaces… The fundamental function of University 3.0 is to generate and support startups» [1].

Selection of previously unresolved parts common problem. This approach closely contacts with medical education, which requires the modifications of quality in Ukraine drawing on international experience.

Results of the study. The primary goal of Medical Schools is to address the clinician`s role as a teacher. Teachers have to identify their personal requirements, determine preferred methods of learning, and select an approach that adjusts their personal goals and objectives. At the corporate communication, all the teachers' in a university development can promote and help to value educational innovation and scholarship, take part in and reward teachers for their contributions to the educational purpose, and generate opportunities for curricular development and change. In different ways, becoming an experienced teacher is a developmental process that requires individual and organizational responsibilities and growth.

Teaching skills have to imply also developing your intelligence and communication skills via established techniques used for running different educational training and most teachers do not start their careers with a complete set of these skills; becoming an effective teacher is a process of continual sophistication. The peculiarity of medical education includes the high professionalism of the teacher as a teacher and as a doctor. Continuous professional development (CPD) refers to educational activities, which assist health professionals to conduct developing, enhancing the knowledge, maintaining skills, and perform care for patients. Continuing medical education (CME) accompanies not only the clinical field, but it focuses on self-directed lifelong learning and learning from practice. The goal of effective teaching is to collaborate with knowledge related to healthcare and associated technological advancements with an innovative way of teaching science. Transforming content of current educational approaches for physicians through changing and adjusting programs to new management is a crucial step of effective learning. These programs should be gained due to learning that transfers to practice, that emphasizes on the translation of knowledge to individuals and maintains a culture of lifelong training in which future doctors lean in a range of professional way. This culture contributes to quality enhancement, opens collaboration. The understanding of the maintenance of competence, communication, and openness to criticism drives to a willingness to generate and provide the innovative service. Teaching inspiration enhances by attending medical educational multi-professional conferences. Educational medical organizations enrolled members who continue their learning from the wider healthcare profession to teaching skills. Taking advantage of this training doctors show evidence of their ongoing learning.

Our Government and Ministry of Health accept the concept of lifelong education confirming it by documents adopted in the last years. Doctors should receive given points during their activities whether improving skills in a workplace or learning online and participating in conferences per annum.

Independent improvement of any skills requires the feedback process due to which person can grasp how he is currently performing. Effective feedback facilitates the advanced training and growth of any teaching activities whether it is a specific lecture or a whole curriculum. "Appropriate feedback can be gained through several methods: feedback from students; self (reflection); feedback from other teachers or colleagues. They all have their own merits and drawbacks, but a combination of all three will result in the most reliable opinion" [2].

The feedback process should reflect treating without bias by implementing the same policy for grading and communication regardless of the personality should be interactive with clear explanation and should give advantage to the teacher to facilitate effective teaching and learning. However, feedback is an essential part of a complicated system. In addition to medical education, culture, beliefs, values, associations, communities, influence this system and relationships that consider the transmission of information, create learning environments. Quality and quantity of learning environments exert influence on learner's experiences, shape personal development, and may play a key role as a tool for improving results at all stages of medical education.

Reflective practice develops teaching approaches, purposes, and priorities. This process encourages every teacher to provide new ideas regarding teaching.

"The idea is to have students spend their class time solving problems and engaging in activities that are designed to help them think like scientists instead of listening passively to an expert. At the most general level, the classroom is really the best opportunity for students to be interacting with the professor, who's the expert in the subject, and their fellow students," – said the Nobel Prize winner in Physics in 2001year Carl Wieman, who accepted a joint appointment at Stanford lately [3]. Students take responsibility for the result there preparing and activities through discussion and feedback with the teacher represented himself as a mentor, who tries to help students understand where are wrong and where they are right and how to get it better. This method requires students to perform a simulation environment through a range of problems that produce the education of professionals with substantial potentialities for feedback. Thus, students can create a background in the practice by forming scientific, including critical, thinking.

"Active learning is an umbrella term that embraces a variety of teaching and learning techniques. These include case-based learning, experiential learning, peer problem solving, and project-based learning" [4].

In recent times, the latest teaching practices of active learning have emerged that utilizes in medical universities as well. The flipped classroom is a pedagogical illustration when the typical lecture and homework assignments of a course are turned. There are diverse ways to flip a class. In this approach, the advantage of a flipped class consists of the repurposing of class time into a practical session where students can acquire knowledge from lectures, application, using readings, associate with one another in hands-on projects, assessment to engage better the needs of individual learners. During class time, tutors promote the learning process by assisting students work per course material individually and in groups. The prime objective of flipping class is to encourage deep and high-grade learning experiences for students and guide them to preserve the value of the lecture. Attention is paid to evolving thinking skills and the utilization of complex problems.

"Current evidence suggests that the flipped classroom approach in health professions education overall yields a statistically significant improvement in learner performance compared with traditional teaching methods. In addition, the flipped classroom would be more effective when instructors use quizzes at the start of each in-class session. Future research can be conducted to examine the possible effect of specific types of teaching method or presentation on student learning" [5].

The idea of active learning including the flipped classroom has the potential to produce a shift in priorities – from simple way understanding material to inquiring into a workshop to adjust student's expectations.

One of the main teaching skills for education of doctors acquire to be focused on the learner [6]. People are identified in four basic types of learners: visual, auditory, reading/writing, and kinesthetic. Different method of teaching matches to each learning type respectively. The preparation have to adapt to an individual's learning style that broad teaching's experience. To establish different digital techniques used for running different sorts of educational sessions and developing teaching materials is usually very important for satisfaction of various types learners. All tools and equipment should aim the learners' respond to images, verbal presentations, and a physical, hands-on approach that facilitates the valuable feedback process.

Effective learning for medical students happens under certain conditions. It includes the real-world relevance, competency based, collaboration, deliberate practice, technology/multimedia [4].

Lately, interest has moved towards the adoption of technology-enhanced active learning to gain training. Educational modern digital technology may include mobile apps, videoconference, virtual simulations, online quizzes, and exercises through the internet, bio instruments, or electronic health records (EHRs). EHRs involve communications with primary health care doctors, prescriptions, payments, and every document connected to a medical attention such as lab reports, appointment schedules, CT/MRI scans, echocardiograms, all of which can be quickly obtained by authorized users.

Up-to-date medical education creating the special digital environment integrates current learning technologies and new media into engagement, expanded collaboration, practical utilization, distance training, thinking and making a decision under critical and clinical approaches. It can transform education; track learning progress that may observe at learner's own pace and speed that allows doctors to drive their education. Lecturers are no longer the main source of information and they should develop their attitudes such as collaborators and facilitators to solve problems by connecting people and knowledge from multiple disciplines and fields of thought. Education shifts from the traditional top-down model into an interconnected button-up model of learning, when students build up expectations about what they bring to the situation through experience to acquire knowledge and focus on the minor details via decoding and simplifying each component. Learners can be encouraged to combine both strategies and to promote innovations sharing knowledge through open educational resources.

Health care professionals at all levels are seeking out medical education in various online formats. The past decade has seen broader growth and availability of Internet access, and this has been paralleled by enhanced and more readily available online content. Thus, students are finding alternative resources online and are sharing them with classmates through social media. Medical students often prefer to stream live lectures online in a location of their choice. Clinicians are expanding their network and using online resources to keep up to date with current data. There has also been an unparalleled shift to reading journal articles online rather than using the paper format. Learning can be the potential to increase the validity of content and depth of knowledge for dissemination on a global scale. National and international medical societies are creating online communities that facilitate discussions of evidence-based medicine, opinion of experts on challenging medical questions, networking, and collaborations [7].

The essential contributions to organizational success are effective leadership and management of educational organizations, and accordingly in the future of healthcare system. "The concept of leadership overlaps with two similar terms, management and administration. The former is used widely in Europe and Africa, while the latter is preferred in the USA, Canada, and Australia. Some leadership researchers distinguish them and have suggested leadership is synonymous with change, while management and administration are considered maintenance. The terms "leadership" and "management" are sometimes used interchangeably, but within the healthcare literature, they tend to describe different approaches to how change can be achieved" [8].

These achievements are vital for the continued growth and extension of the means due to which doctors are educated. The strong personal and professional excellence, understanding of advanced technologies allow doctors to lead across professional boundaries and comprehension of the challenging the complex environment in which medical care is provided. Different learning methodologies such as mentoring, reflective practice, experiential training, action education, and networking

could provide the framework of leadership development. Despite developing these attributes of leading doctors, have to face complex strategy experiences regarding the involvement of these skills in a professional carrier. Gaining adjustment between collaboration and financial incentives may require facilitative conditions into the health care system, such as openness, clarity, and stability of policy. Current medical education has to prepare healthcare professionals to manage the complexity and sophistication of healthcare delivery systems following their educational skills. Consequently, practice in healthcare management could be introduced in the medical curriculum.

It is a necessary step toward elevating management abilities onto more equal footing with clinical knowledge for the majority of medical school graduates, and appropriately preparing these graduates to administer the delivery of high quality, safe care in the modern medical enterprise [9].

"Medical leadership is an increasingly important aspect of hospital management. By engaging physicians in leadership roles, hospitals aim to improve their clinical and financial performances.

Medical students would like more management and leadership training at medical school, as now they feel partially unprepared for a future career that is moving beyond clinical boundaries. Personal features concern the skills, attitude, knowledge, experience in management and credibility a medical leader should have, and include a wide range of character traits, such as communication skills, motivation and clinical knowledge. Secondly, context-specific features refer to management experience, role ambiguity, support and time, and include a variety of institutional and cultural characteristics of the hospital where a medical leader works related to an assumed dichotomy between the managerial and medical world. Finally, the third area consists of the activities and roles required to carry out the role of medical leader, such as strategy and decision making, networking and responsibility for the performance of the department" [10].

Associations of Universities could sustain the potency of medical education as well. The Harvard-MIT Program in Health Sciences and Technology is an especial collaboration that draws together Harvard University, Harvard Medical School, Harvard-affiliated teaching hospitals, the Massachusetts Institute of Technology, and local research centers to become integrated medicine, engineering, and science to resolve concerns in human health. Borders blurred between individual academics and multifunction institutional agreements due to collaboration that supports Cambridge to provide the best inquiry through international engagement. Cambridge is an essential part of the International Alliance of Research Universities (11 of the world's leading research universities) and the League of European Research Universities (an alliance of 23 European research-intensive universities), promoting it to distribute most high-grade practices with equal institutions around the world.

Academic medical centers and teaching hospitals are called Association of American Medical Colleges (AAMC) impact on the investigation, education, and clinical services of AAMC-member medical schools, such as the Stanford University School of Medicine. Every dollar spent by the academic medical center leads to an additional $1.30 spent. This is ultimately a full impact of $2.30. Medical schools and hospitals produce finance through income tax of different services and business taxes.

A significant recent event was the signing of an agreement on cooperation between the National medical academy of postgraduate education named after P.L. Shupik and the leader of the European educational system Karolinska Institute (Sweden). This suggests that an understanding of such cooperation has been existed in the Ukrainian educational environment and, of course, this should be developed.

The acceptance of monitoring the clinical researchers may improve the connection with practical activity. Universities in the US after the adoption of the Bayh-Dole Act of 1980 have created more than 2 thousand companies within a few years (260 thousand workplaces), which were engaged in the commercialization of technologies. Bayh-Dole allowed schools and other institutions with federal government funding to own title to the patents arising directly from their study activities and license of rights to the promising technologies to private sector partners for commercialization. Universities are encouraged to collaborate with commercial interests to promote the utilization of discoveries arising from governmental funding that could have revolutionized medicine. If necessary, the government may supervise the invention in different cases, such as safety concerns or a need to mitigate health-associated risk. The Bayh-Dole Act is the mainstay of the acceleration economy connects with the academic transfer, which drove a tenfold rise in academic patenting in its first 20 years including over 12,000 start-ups. University research brought to companies up to 1,000 start-ups and nearly 800 business items until 2016 year. The Bayh-Dole act regulates the American model of Entrepreneurial University and drives economic growth. Universities would not venture that lead to innovations without the system set up by the Bayh-Dole Act.

Recently, the government and the ministries of health and education of Ukraine have adopted a number of resolutions and orders on granting autonomy to universities and the possibility of forming special funds. However, it is quite difficult to promote commercialization projects in our country taking into account the background of low economic growth and lack of international and economic stability. Graduates of Ukrainian medical universities who have successfully completed a full course of medical education, having gained successful experience through conferences and their individual projects, often have difficulties in their further implementation as a leader and a professional. A complex management system, unclear reporting on resources spent in the health system can diminish the commercialization of innovations of medical universities. No matter it, Ukraine is on the threshold of inevitable changes associated with the integration of society into the European space.

«Since the publication of the Lancet Commission Report (Frenk et al. 2010), follow up activities have revealed widespread interest in innovation and reform in health professional education. How these

activities will eventually generate change depends upon five key forces that will shape both the context of health professional education and impose demands upon the educational process: epidemiologic–demographic transitions, explosion of knowledge, market forces, public policy, and professional leadership. Reform must begin with a change in mindset that acknowledges problems and seeks to solve them» [11].

Conclusions. Nowadays the Ministry of Health of Ukraine is implementing a comprehensive approach and proposing a strategy for the development of medical education for public discussion. The strategy will be implemented within 10 years that occurs for the first time in the history of independent Ukraine. The improvement quality of high medical education, qualitative changes of postgraduate education, effective financing and management, developing the academic culture and scientific research are priorities of current conversion that will lead to internationalization of medical education. The tendencies of organizational, academic and financial autonomy of Universities can create competition and expanding mobility of students and faculty members that may bring support for participating in different projects such as Erasmus or for sponsorship. No doubt, the Strategy for the Development of Medical Education in Ukraine is a plan for complex changes. Some of them have taken place. Conditions for admission to medical universities are changed (minimum passing score of 150 in biology/chemistry, as well as in mathematics/physics for all specialties of the field of knowledge "Health"), new educational standards are approved for the specialties "Medicine", "Dentistry", "Pediatrics" and the first stage of the new qualification exam for the third course was held in 2019. There are first steps towards the integration of the country into the scientific world community and understanding of the ways to achieve this goal.

Ukraine's Universities could have followed approved worldwide experience of medical education in order to elaborate own way and develop accepted approach for significant changes, which will facilitate the integration our Universities in world's system education. It also should be encouraged by Universities that excel at technology transfer to share best practices to other Universities.

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