https://www.proconference.org/index.php/usc/article/view/usc22-00-038
DOI: 10.30888/2709-2267.2024-22-00-038

APPLICATION OF THE PARETO PRINCIPLE FOR CONCENTRATION OF BASIC KNOWLEDGE OF MEDICAL STUDENTS IN ONLINE LEARNING

Rybin A.I. / Рибін А.І.
d.med.s., prof. / д.мед.н., проф.
ORCID ID: https://orcid.org/0000-0002-1145-6690
Kuznetsova O.V. / Кузнецова О.В.
c.med.s., as.prof. / к.мед.н., доц.
ORCID ID: https://orcid.org/0000-0003-3778-4868
Patskov A.O. / Пацков А.О.
c.med.s., as.prof. / к.мед.н., доц.
ORCID ID: https://orcid.org/0000-0002-5621-8207
Odessa National Medical University, Odesa, Valichovsky lane 2, 65029
Одеський національний медичний університет, м. Одеса, Валіховський пров.2, 65029

Abstract. *Education is of primary importance to those seeking education in wartime. Attacks on schoolchildren, students and teachers are not only attacks on their right to education, but also on their future. The protracted nature of conflicts today affects the future of entire generations of people. Medicine in general, and oncology in particular, requires knowledge of a huge amount of interdisciplinary information, principles of diagnosis, methods of treatment and prevention, as well as human psychology. If you try to learn everything at once, in the shortest possible time, in the conditions of constant air alarms, problems with the Internet and long-term distance learning without practicing practical skills, you can not wait for the result. The application of the Pareto principle in wartime is not only a concentration of basic knowledge, communication skills and educational tools that a student can acquire in a short period of time due to active military operations, daily repeated air alarms, lack of constant Internet connection, lack of access to professional literature and /or libraries, the lack of opportunity to practice practical skills in real life, but also an attempt not to postpone education "for later". The main components of remote online learning in an extreme situation are first of all high-quality modern lectures, online tests and clinical tasks, a simulated patient (recorded in Microsoft teams), video films demonstrating practical skills, videos from the operating room, independent projects for students in the form of PDF presentations, anonymous survey of students after the end of the cycle.*

Key words: *medical education, distance learning, training during war in Ukraine, online learning.*

Резюме. *Освіта має основне значення для здобувачів освіти під час війни. Атаки на школярів, студентів та викладачів — це не лише нападки на їхнє право на освіту, а й на їхнє майбутнє. Характер конфліктів, що затягнувся, сьогодні впливає на майбутнє цілих поколінь людей. Медицина взагалі, і онкологія зокрема вимагає знання величезної міждисциплінарної інформації, принципів діагностики, методів лікування та профілактики, а також психології людини. Якщо спробувати вивчити все одразу, в найкоротші терміни, в умовах постійних повітряних тривог, проблем з інтернетом та тривалого дистанційного навчання без відпрацювання практичних навичок, результату можна не дочекатися. Застосування принципу Паретто в умовах війни це не лише концентрація основних знань, комунікативних навичок та освітніх інструментів, які здобувач освіти може отримати в короткій термін через активні воєнні дії, щоденні повітряні тривоги, що повторюються, відсутність постійного інтернет сполучення, відсутність доступу до професійної літератури та/або бібліотеки, відсутність можливості відпрацювати практичні навички у реальному житті але і спроба не відкладати освіту «на потім». Основні складові дистанційного онлайн навчання в екстремальній ситуації це насамперед якісні сучасні лекції, онлайн-тести та клінічні завдання, симуляційний пацієнт (запис у Microsoft teams), відеофільми з демонстрацією практичних навичок, відеозаписи з операційної, самостійні*

проекти для студентів у вигляді Pdf-презентацій, анонімне опитування студентів після закінчення циклу.

***Ключові слова**: медична освіта, дистанційне навчання, навчання під час війни в Україні, онлайн-навчання*

Actuality.

Education is of fundamental importance for students in times of war. In addition to learning, schools and universities can provide students with routine, preserve a sense of "past peaceful life" and connect them to vital resources, such as mental health care. Fortunately, since March 2022, students at Odesa National Medical University, like students at all Ukrainian universities, have had access to online and distance learning. This has reduced learning gaps and, more importantly, preserved a sense of normalcy. However, the long-term impact of the war on the quality of education and access to it remains worrisome. According to the Ministry of Education of Ukraine, more than 2,000 schools and universities have been damaged or destroyed since Russia's invasion on February 24. Russian troops shelled and bombed numerous schools and universities. The application of the Pareto principle in war conditions is not only a concentration of basic knowledge, communication skills and educational tools that a student can obtain in a short time due to active hostilities, recurring daily air raids, lack of constant Internet connection, lack of access to professional literature and/or libraries, lack of opportunity to practice practical skills in real life, but also an attempt not to postpone education "for later" [12].

Ukraine has also taken important steps to fulfill its 2022 commitments to the Declaration in the midst of conflict, such as introducing distance learning and collecting data on attacks on education.Education must be protected at all times in Ukraine because our children - schoolchildren and students - are our future.Education must remain our top priority, and we cannot leave this issue "for later" - when the war is over [1; 3].

Since the beginning of Russia's invasion of Ukraine, Odesa and Odesa region residents have heard air raid alarms 645 times as of November 16. In the first days of the war, air raids sounded in the city 2-3 times, and in the following days - from 3 to 8 times a day.The longest air raid in Odesa lasted 5 hours and 44 minutes on November 15, the day of the largest massive missile attack. The average duration of air alerts in Odesa and Odesa region was 55 minutes.

Methods and objectives.

The regularity called the Pareto principle is named after an Italian economist and sociologist, which translates as follows: "20% of effort produces 80% of the result, and the remaining 80% of effort produces only 20% of the result." Legend has it that in 1897, Wilfredo Federico Damaso Pareto, while having fun observing the pea plantings in his garden, noticed that only one-fifth of the pods produced most of the peas.

The Pareto Law is not just a theoretical rule.By knowing and applying this principle to achieve results, you can prioritize your work and identify processes that waste resources.Of course, it's impossible to make sure that 1% of the effort yields 99% of the result, and that the rest of the tasks don't need to be done at all.Striving for utopia is futile, but achieving productivity gains is quite realistic.Our time is limited,

it will never be enough to complete all the tasks and implement all the projects that seem interesting.That's why it's important to focus on what gives you the most return.When you start something new, especially when it comes to working on yourself, the hardest part is determining the first steps.There are so many courses, opportunities, and advice out there that it's easy to get sidetracked by the abyss of information.All you need to do is identify 20% of the key actions that you can start with in practice [15].

Medicine in general, and oncology in particular, requires knowledge of vast interdisciplinary information, diagnostic principles, treatment and prevention methods, and human psychology. If you try to learn everything at once, in the shortest possible time, in the face of constant air raids, problems with the Internet, and long distance learning without practicing practical skills, you may not get results.

First of all, we decided to define the minimum to start studying oncology, and then combine other people's experience and experiment.The main task that the entire staff of the Department of Radiation Diagnostics, Therapy, Radiation Medicine and Oncology at ONMedU faced during the Russian-Ukrainian war was to find out what kind of educational materials and skills could lead to results in the fastest way.We analyzed the literature, took advantage of other people's knowledge of how to preserve education during a crisis, war or epidemic, and chose the main areas of our work.Pareto's law cannot be outsmarted or defeated.With some effort, it is possible to achieve a higher percentage of return with less effort.

The main components of distance online learning in an extreme situation of the COVID-19 pandemic or war are, first of all, high-quality modern lectures, online tests and clinical tasks, a simulation patient (recording in Microsoft teams), videos demonstrating practical skills, videos from the operating room, independent projects for students in the form of PDF presentations, anonymous survey of students after the end of the cycle.All of this enables medical teachers to share their clinical experience with students when they cannot communicate face-to-face [2, 3].

Educational tools. The first thing we propose to emphasize is the lecture. Let's take, for example, 3 classic full-length lectures according to the oncology cycle curriculum at the Department of Radiation Diagnostics, Therapy, Radiation Medicine and Oncology at Odesa National Medical University. Previously, some lecturers simply dictated to students all the necessary information: etiology, carcinogenesis, statistics, modern classification, algorithm of patient examination and abbreviated principles of treatment of a specific pathology.Therefore, very often the lecture became just a process of transferring the lecturer's notes to the student's notes without both participants realizing this process.It's no secret that there are lecturers with poor presentation skills and objectively poor Power Point presentations. All of this underestimates the value of the lecture as a teaching tool and cannot interest students.

It is important to divide the lecture into fragments, interrupting to perform small interesting tasks, and ask questions about the material that has been listened to, which stimulates active learning.In online lectures, you can use the Flipped classroom method, when during the lecture, various types of activities are conducted on the topic of material previously studied by the student (for example, textbook chapters, articles, or videos) [4; 9].

The second thing to pay attention to is the control of the knowledge gained.Unfortunately, the last two years of distance learning due to the COVID-19 pandemic have also revealed the disadvantages of online learning. Unscrupulous students speculate on the situation, do not prepare for practical classes under the pretext of bad Internet or lack of electricity, or disappear from the air during the survey [5, 6].

To this end, we have completely updated the database of tests for each discipline, namely Oncology and Palliative Hospice Care. The staff of the Department of Radiation Diagnostics, Therapy, Radiation Medicine and Oncology developed clinical tasks for each topic of the discipline in accordance with the work program, accompanied by illustrative material.

In online learning, there are basic principles of knowledge control that can be implemented in the form of tests (activation of existing knowledge), video guidance (explanation and demonstration), and final tests (application of acquired skills) [7]. Of course, there are limitations here: in this mode, it is impossible to fully teach patient examination or master practical skills (for example, palpation of the mammary glands, or peripheral lymph nodes, or thyroid gland).However, the first 2 principles (activation and explanation) can be effectively applied until the moment of returning to the classroom mode of training, when only the practical component remains to be mastered [4]. Another tool that increases students' interest and engagement in the learning process is the creation of educational resources (projects, presentations) by students on their own.In addition to involvement in the educational process and receiving a grade for the project, this has a number of other benefits: students' understanding of their own effectiveness and experiential learning.

Communication skills. The most famous such technology is simulated and standardized patients (SP). Most often, these are professional actors who imitate the manifestations of diseases and syndromes through their behavior and answers to questions. Communication with such patients helps the future doctor to improve the skills of taking anamnesis, resolving conflict situations, communicating negative news, and forms behavioral constructs that he or she will be able to effectively apply in practice in dealing with real patients in the future. Moreover, the methodology allows not only training, but also assessment of communication skills.OSCI stations with the participation of SPs have been used for many years all over the world, and in the last 4 years, at Odesa National Medical University as the second stage of accreditation of medical specialists. Traditionally, the SP methodology involves face-to-face communication between SP and students in a clinical setting with direct visual, verbal, and often tactile contact [10].In the context of self-isolation and distance learning, it would seem that this technology has no place.However, we started using this method online during the war at the Department of Radiation Diagnostics, Therapy, Radiation Medicine and Oncology thanks to interns who willingly help the department staff and play the role of patients online.

Third, to assess the effectiveness and quality of distance learning, we returned to the anonymous survey of students conducted at our department. To this end, all fifth-year students filled out a questionnaire after completing the Oncology cycle and sent their answers online to their professor.

The experience of the Department of Radiation Diagnostics, Therapy, Radiation Medicine and Oncology of Odesa National Medical University demonstrates that despite all the limitations of distance learning, it can be not only interesting but also effective. The results of the last 18 months of distance online learning of the Oncology cycle by fifth-year students of Odesa National Medical University during the war showed that for most students this format of learning seemed effective, the goals of the class were achieved, and no one noticed any technical difficulties in its implementation. The students themselves noted that the cycle was more intensive, productive and informative. The opportunity to make a project or a presentation helped students to be more focused and involved in the learning process than during a face-to-face session.

Conclusions:

1) Education should remain our top priority, we cannot leave this issue "for later" - when the war is over. It is very important to focus on education from the beginning of the crisis, because the war creates chaos, and we have to think about the future.

2) The Pareto principle provides an opportunity to focus on what gives the greatest return and will have results today.

3) The use of modern technologies in the educational process, the emphasis on lectures by leading researchers with extensive clinical experience, online demonstrations of surgical interventions and an online simulation patient, and the opportunity for students to complete projects independently allow students to adapt and continue their education in the face of war and other unusual situations.

References

1. Bondar O.V., Rybin A.I., Kuznetsova O.V. Medical education during the COVID 19 pandemic: problems and solutions / Scientific Bulletin of the South Ukrainian National Pedagogical University named after K.D. Ushynsky. 2021. - Issue 4 (137). - P. 26-31. https://doi.org/10.24195/2617-6688-2021-4-2

2. Bondar O.V., Rybin A.I., Patskov A.O. Emotional burnout and issues of professional psychological training of oncologists / Medical education. 2021. - №3. - P. 23-30. DOI 10.11603/m.2414-5998.2021.3.12424.

3. Bondar O.V., Rybin A.I., Kuznetsova O.V., Patskov A.O. Our experience of medical online education during the war / Actual problems of transport medicine. - 2022. - №4 (70) - P.142-151. http://dx.doi.org/10.5281/zenodo.7495399

4. Sandars J., Correia R., Dankbaar M., de Jong P., et al. Twelve tips for rapidly migrating to online learning during the COVID-19 pandemic. MedEdPublish. 2020; 9 (1): 82. DOI: 10.15694 / mep.2020.000082.1

5. Eachempati, P., & Ramnarayan, K. (2020). Ten maxims for out of class learning to outclass the academic challenges of COVID-19. *MedEdPublish*. Vols. 9 (1): 89. DOI: 10.15694/mep.2020.000089.1

6. Kachra R., & Ma I. (2020). Practical tips for faculty development workforce training under pressure in the time of COVID-19 pandemic. *MedEdPublish*. Vols. 9 (1): 81. DOI: 10.15694/mep.2020.000081.1

7. Khalafalla, H., & Taha, M. (2020). The assessment clock: A model to

prioritize the principles of the utility of assessment formula in emergency situations, such as the COVID-19 pandemic. *MedEdPublish*. Vols. 9 (1): 88. DOI: 10.15694/mep.2020.000086.1

8. Sabzwari, S. (2020). Rethinking Assessment in Medical Education in the time of COVID-19. *MedEdPublish*. Vols. 9 (1): 80. DOI: 10.15694/mep.2020.000080.1

9. Taylor, D., Grant, J., Hamdy, H., Grant, L. & et al. (2020). Transformation to learning from a distance. *MedEdPublish*. Vols. 9 (1): 76. DOI: 10.15694/mep.2020.000076.1

10. World Health Organization. URL: https://www.who.int/ru/about/governance/world- healthassembly/seventy-second-world-health-assembly 25.01.2020.

11. https://reliefweb.int/report/world/ukraine-points-threat-education-during-war

12. https://educateachild.org/explore/barriers-to-education/fragile-and-conflict-affected-situations/armed-conflict

13. https://www.unicef.org/education-under-attack

14. https://www.unisender.com/ru/glossary/zakon-pareto

15. https://www.nrc.no/perspectives/2018/education-during-wartimenew-page/