

SIMULATIONAL TECHNOLOGIES AT THE DEPARTMENT OF HISTOLOGY, CYTOLOGY AND EMBRYOLOGY DURING DISTANCE LEARNING

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Nowadays progress of technologies and innovations has led to the search and implementation of new technologies in the educational system for training purposes and professional skills development. Moreover, this topic is becoming increasingly important for most specialties, and especially medical field. One of the practical questions that arise while working with students online — which tools of simulation technologies better to use at the theoretical departments? This work is aimed to answer this question with the use of our experience.

Rapid development of medical science provokes adjustments in the training of medical students during distance learning. The COVID-19 pandemic has been going on for the second year now, which has significantly affected the educational process in Ukraine. In the spring of 2020, all educational institutions in Ukraine have been switched to distance learning. Practical classes of the «Histology, Cytology and Embryology» discipline for medical students («Medicine» specialty) have practical part, which includes the acquisition of practical skills – differentiation of histological specimens. These skills are the object of educational process at the Department and the most important objective model, which reflects the structural and functional relationships at all organizational levels of the organism as the most complex biological system. That is why aim of a teacher was to provide a qualified acquisition of these skills by students during online format of practical classes, which means without light microscopes and offline group discussions of histological cases.

In conditions of remote online learning, practical classes were conducted in the «Google Meet» program using computer and corporative cloud Internet technologies. One of the important tools that we used during practical classes was work with histological flash cards, made at the Department on the base of our histological microspecimens bank. Flash cards are based on digital images taken with a digital CCD camera by using light microscope and a list of specimens, needed for studying a specific module of the discipline. For example, there are several blocks of flash cards, devoted to the topics of embryology, cytology, general histology and special histology. By using this tool we can easily replace and simulate an offline work with a light microscope in a class, by demonstration flash cards, zooming tissue on different magnifications on the screen; give students opportunity to learn and develop practical skills of histological slides differentiation by using even more morphological material as compared to classical

offline class. This method also shrinks the time of managing microscope and finding the correct area of tissue — during online practical classes students are able to cover and compare bigger amount of samples thanks to this.

Another simulation method was an online translation from an actual pathologist's case from BSMU scientific lab. Histological laboratory of the Department of Histology, Cytology and Embryology is equipped with modern engineering for an accurate diagnostic of biopsy material with histological, cytological and immunohistochemical methods. By the means of «Zeiss» visual system, histopathologist is able to share his screen with students during online class and diagnose a real case in a synchronous regime together with academic group. This allows students to actually use their theoretical knowledge from the discipline in a real-patient case in a synchronous regime with doctor. Besides hematoxylin and eosin slides, students can get familiar with immunostains on the same biopsy case — this provides a better understanding in specific methods of visualization, as panels of markers show up cells or some of their components (membrane, nucleus, cytoplasm components), that are essential in diagnose conformation and further case management.

In conclusion, we can summarize that improvement of professional competencies of medical students during distance learning at the Department of Histology, Cytology and Embryology of BSMU is realized through successful combination of simulation, interactive and distance learning tools by the means of effective organization and informatization of the educational process, high professionalism of teachers and creation of modern educational and methodical base.

References

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