

ГУМАНІТАРНІ ПИТАННЯ МЕДИЦИНИ І ПРОБЛЕМИ ВИКЛАДАННЯ В ВИЩІЙ ШКОЛІ

DOI: 10.26693/JMBS02.05.162

UDC 378.016: 611

Navarchuk N., Guzik O.

NEW COMMUNICATIVE EDUCATIONAL TOOLS USAGE IN THE STUDY OF HUMAN ANATOMY

Higher State Educational Establishment of Ukraine “Bukovinian State Medical University”,
Chernivtsi, Ukraine

navarchuk.nata@bsmu.edu.ua

Improvement of pedagogical skills in a high school is one of the most important tasks for the modern educational modernization. Future doctors' training presupposes reliable digestion and retention in memory of the large information volume, which is necessary for their further professional activity. Different students learn anatomy in different ways. Most adopt a style that is the result of several attempts to develop a successful strategy, and that leads to a consolidated body of knowledge that can be applied successfully in a clinical context.

The purpose of the research was to examine the selection of anatomy teaching methods and to ensure their efficiency for mentoring students to the terms and conditions of the educational process in a medical university.

Materials and methods. The study and analysis of local and foreign literature sources was conducted.

Art-based approaches to teaching and learning add new dimensions to the educational environment and to the students' experience. Its main advantage is the creation of so called “learning landmarks”: vivid experiences which are memorable and which provide access to the educational content associated within that context. In particular, students acquire a good understanding of dimensions and positions of anatomical structures using this method while studying.

One of the methods widely used in educational process is mnemonics – the set of methods and techniques, facilitating memorizing and increasing memory volume by creation of artificial associations. Mnemonics use permits to transfer information to forms, easily retained in the long-term memory. It should be noted, that only small percentage of required information

may be remembered with logic links assistance. The most part of it does not lend itself to logical systematization. By means of these methods emotional memory is developed, which preserves sensations, feelings, emotional coloring of events, and determines the ability to experience situations which seem to have been forgotten.

The anatomy demonstrator has traditionally been a medically qualified individual, with some clinical experience and who completed a training to become a surgeon, anesthesiologist, or radiologist. The clinically trained anatomy demonstrator is placed to highlight to students the importance of integrating clinically relevant anatomy into their learning, and is recognized by students. Using such an approach allows students to realize the importance and relevance of anatomy knowledge in their later learning and practice.

Team-based learning is a student-centered instructional strategy that allows one instructor to facilitate a large class. This helps to ensure that students develop highly functioning teams. Students are held individually accountable for their own preparation and contribution to team performance, receive immediate and frequent feedback about their performance. Finally, assignments are designed to promote learning and team development.

Conclusions. Students can be engaged in the learning process by a variety of learning styles. New integrative teaching methods have to be ancillary and complement the anatomy education and the lecture experience. The modern way of anatomy teaching encompasses these paths as well as the most advanced teaching and learning techniques that comprehend the most efficacious pedagogic methods proven

to maximize the teacher's activity and the learner's performance. For students, four main objectives require feedback during the anatomy course as well as upon completion: consistent demonstration of professional and ethical behavior, effective communication, display of effective teamwork and display of leadership.

Keywords: anatomy, learning styles, pedagogics, students.

Introduction. Human anatomy has historically been a milestone in medical education regardless of nation, racial background, or medical school system. By learning anatomy medical students get a first "impression" about the human body structure which is the basis for understanding pathologic and clinical problems. During the last century, lectures and discussions were commonly used in pedagogy worldwide. Nowadays, number of innovative methods of anatomy teaching appeared and proved to be more efficient than standard ones [22, 23]. Traditional anatomy education was based on topographical structural anatomy taught in lectures and practical classes has been replaced by a multiple range of study modules, including problem-based learning, plastic models or computer-assisted learning, and curricula integration [5]. Anatomical knowledge is fundamentally important for the learning and practicing medicine. However, there is considerable discussion among doctors towards the level of anatomical knowledge required for general and specialist medical and surgical practice. For many years clinical tutors discuss their concerns about the level of anatomical knowledge of undergraduate medical students [6, 13]. These requirements were proved recently based on a study of clinical tutors. The results of the research showed that 2/3 of students studying medicine possess poor level of anatomical knowledge. Thus, there is a concern that anatomical knowledge amongst medical students and newly qualified doctors may be at the low level. In addition, number of reports was made suggesting the lack of students' and young specialists' anatomical knowledge and increasing number of clinical errors in their medical practice [14].

The aim of our research is to enhance the knowledge level in clinically focused anatomy and other basic sciences, by developing learning packages, which will form an integral part of medical students' clinical attachments [21]. This will allow vertical integration of the basic sciences through the entire undergraduate medical curriculum in a clinically based sphere. Different students learn anatomy in different ways [7]. Most adopt a style that is the result of several attempts to develop a successful strategy, in terms of outcome for assessment, and that leads to a consolidated body of knowledge that can be applied

successfully in a clinical context. It takes time, and it may not happen until the second semester when the most successful strategy is identified [12, 15].

The purpose of the research is to examine the selection of the anatomy teaching methods and to ensure their efficiency for mentoring students to the terms and conditions of educational process in a medical university.

Materials and methods. The study and analysis of local and foreign literature sources was conducted.

The anatomy demonstrator has traditionally been a medically qualified individual, with some clinical experience who also passed a training to become a surgeon, anesthesiologist, or radiologist [17, 19]. The clinically trained anatomy demonstrator is placed to highlight to students the importance of integrating clinically relevant anatomy into their learning, and is recognized by students. Using such an approach allows students to realize the importance and relevance of the anatomy knowledge to their later learning and practice [27]. In addition, demonstrators are in an appropriate position to act as role models for students and should be able to exhibit a range of desirable attributes such as leadership, professionalism, and support and can provide opportunities for challenging the ethical awareness of students [18].

Art-based approaches to teaching and learning can add new dimensions to the educational environment and expand students' experience [8]. Body painting remains one of the most popular art-based modalities used within anatomy education. Body painting is a useful tool for learning gross and surface anatomy. It actively engages students in the learning process and enables long-term retention of knowledge [10]. The use of bold color promotes memorability and adds an element of fun. Utilizing body painting encourages students to confront issues associated with clinical examination such as vulnerability, communication, professionalism, and body image in a positive and safe learning environment. Life drawing, clay modeling, and other art-based approaches are also educationally beneficial due to their engagement, memorability, and context outside of the dissecting room. Students have reported body painting as a highly motivating exercise [9]. Its main advantage appears to be the creation of so called "learning landmarks": vivid experiences which are memorable and which then provide access to the educational content associated within that context. In particular, students acquire a good understanding of dimensions and positions of anatomical structures using this method while studying. It is a highly memorable experience, which gives students an appreciation of the links between the visual, tactile, and auditory aspects of human anatomy [11, 26].

One of the routes in the educational process is mnemonics – the set of methods and techniques, facilitating memorizing and increasing memory volume by creation of artificial associations [28]. Mnemonics use permits to transfer information to forms, easily retained in the long-term memory. Peculiarity of human anatomy studying is the fact, that only small percentage of required information may be remembered with logic links assistance. The most part of it does not lend itself to logical systematization. Just to remember such information blocks in the process of human anatomy studying we've offered various mnemonic and interactive methods of teaching, based mostly on imaginative thinking [3]. Some of them are: 1. Transformation of memorized information into bright concrete images (teacher's demonstration of the structural parts of the organ with analogy in human body structures (the teacher says: «I am uterus» – shows arms as uterine tubes analogues, body – as uterine body, and the waist is the cervix). 2. Mnemonic abbreviations (for example, liver port composition parts – DVA, where D – ductus hepaticus communis, V – vena portae, A – arteria hepatica propria). 3. Position of memorized terms letters (composition parts of roots of lung in the right side BAVV, in the left side – ABVV, where A – pulmonary artery, B – primary bronchus, V – pulmonary veins); upper extremity skin innervation «UMRU» – U – n. ulnaris, M – n. medianus, R – radialis). 4) Associative visual and auditory methods. Use of anatomic “tales” and animated cartoons. 5) Role-playing games method – Imitation of in-hospital and resuscitation conditions with use of anatomy and topology knowledge and skills [2]. Due to these methods emotional memory is developed, which preserves sensations, feelings, emotional coloring of events, and determines ability to experience again situations which seem to have sunk into oblivion [1].

Team-based learning (TBL) is a student-centered instructional strategy that allows one instructor to facilitate a large class. First, teams of students are purposefully created and managed throughout the duration of the course. This helps to ensure that students develop into highly functioning teams. Second, students are held individually accountable for their own preparation and contribution to team performance. Third, students receive immediate and frequent feedback about their performance. Finally, assignments are designed to promote learning and team development. TBL is an effective way to augment the traditional dissection laboratory experience. TBL may also

improve long-term retention of anatomical knowledge, although more research is needed to confirm this finding. Finally, TBL improves students' perceptions about teamwork, which otherwise are decreased in second- and third-year students [16].

Millennial generation learners sometimes referred to as digital natives [20] – individuals whose development has been infused with technology – have had extensive experience with digital exploration, gaming, and communication and are purported to be adept with user friendly digital devices. Despite the pervasive use of technology by this generational cohort, data indicates that their proficiency with commonplace digital devices does not necessarily translate into an aptitude for educational technology. Educators should not presume that all next-generation learners, let alone learners from previous generations, will be skilled in the use of educational technology such as integrated educational content platforms, anatomical simulators, and virtual anatomy programs [24]. Sufficient instruction must be available to appropriately prepare learners in the use of technology that is employed to deliver content. Time management is crucial to millennial generation learners who feel under great pressure to achieve and are always attempting to expedite successful completion of their requirements. Clear directives on the use of educational technology will maximize learner engagement with and benefit from these resources. Upfront instruction on technological applications can reduce invested effort and help learners facilitate time management [25].

Conclusions. Students can be engaged in the learning process by a variety of learning styles. New integrative teaching methods have to be ancillary and complement the anatomy education and the lecture experience. The modern way of anatomy teaching encompasses these paths as well as the most advanced teaching and learning techniques that comprehend the most efficacious pedagogic methods proven to maximize the teacher's activity and the learner's performance. For students, four main objectives require feedback during the anatomy course as well as upon completion: consistent demonstration of professional and ethical behavior, effective communication, display of effective teamwork and display of leadership.

Further research prospects. Questions of innovative methodology and digital technology linked with traditional pedagogy can be researched in future. They can be used to create advancing sequential cycles of conceptualization, experience, and reflection which will advance the learner's knowledge level.

References

1. Gayvoronskiy IV, Nichiporuk GI, Tikhonova LP, i dr. Sovremennyye podkhody k organizatsii uchebnogo protsessa na kafedre anatomii cheloveka. *Zhurnal teoreticheskoy i prakticheskoy meditsiny*. 2010; 8: 292-5. [Russian].

2. Navarchuk NM. Rozvytok kreatyvnykh yakostey navchannya z vykorystannyam interaktyvnykh metodiv. *Aktualni pytannya vyshchoi medychnoi ta farmatsevtichnoi osvity: dosvid, problemy, innovatsiyi ta suchasni tekhnolohiyi*: materialy navchalno-metodychnoi konferentsiyi (Chernivtsi, 19 kvitnya 2017 r.). Chernivtsi, 2017. s. 494-5. [Ukrainian].
3. Fomin NF. Problemy podgotovki professorsko-prepodavatel'skogo sostava anatomicheskikh kafedr v svete sobstvennogo i zarubezhnogo opyta. *Vestnik rossiyskoy voenno-meditsinskoy akademii*. 2016; 2 (54): 254-6. [Russian].
4. Bergman EM, Prince KJAH, Drukker J, van der Vleuten CP, Scherpbier AJ. How much anatomy is enough? *Anatomical Sciences Education*. 2008; 1 (4): 184–8. DOI: 10.1002/ase.35.
5. Bolender DL, Ettarh R, Jerrett DP, Laherty RF. Curriculum integration - course disintegration: what does this mean for anatomy. *Anatomical Sciences Education*. 2013; 6 (3): 205-8.
6. Camp CL, Gregory JK, Lachman N, Chen LP, Juskewitch JE, Pawlina W. Comparative efficacy of group and individual feedback in gross anatomy for promoting medical student professionalism. *Anat Sci Educ*. 2010; 3 (2): 64-72. DOI: 10.1002/ase.142.
7. Engels PT, de Gara C. Learning styles of medical students, general surgery residents, and general surgeons: implications for surgical education. *BMC Med Educ*. 2010; 10 (1): 51-2. doi: 10.1186/1472-6920-10-51.
8. Finn G, McLachlan J. A qualitative study of student responses to body painting. *Anat Sci Educ*. 2010; 3: 33-8. DOI: 10.1002/ase.119.
9. Finn G. Twelve tips for running a successful body painting teaching session. *Med Teach*. 2010; 32 (11): 887–90. DOI: 10.3109/0142159X.2010.507708.
10. Fraher J, Evans DJR. Training tomorrow's anatomists today: a partnership approach. *Anat Sci Educ*. 2009; 2: 119-25. DOI: 10.1002/ase.81.
11. Fruhstorfer BH, Palmer J, Brydges S, Abrahams PH. The use of plastinated prosections for teaching anatomy — the view of medical students on the value of this learning resource. *Clinical Anatomy*. 2011; 24 (2): 246–52. DOI: 10.1002/ca.21107.
12. Gogalniceanu P, Palman J, Madani H, Sheena Y, Birch W, Paraskeva P, Douek M. Traditional undergraduate anatomy education—a contemporary taboo? *ANZ Journal of Surgery*. 2010; 80 (1): 6-7. DOI: 10.1111/j.1445-2197.2009.05167.x.
13. Hildebrandt S. Lessons to be learned from the history of anatomical teaching in the United States: The example of the University of Michigan. *Anat Sci Educ*. 2010; 3: 202–12. DOI: 10.1002/ase.166.
14. Johnson EO, Charchanti AV, Troupis TG. Modernization of an anatomy class: From conceptualization to implementation. A case for integrated multimodal-multidisciplinary teaching. *Anat Sci Educ*. 2012; 5: 354–66. DOI: 10.1002/ase.1296.
15. Klement BJ, Paulsen DF, Wineski LE. Anatomy as the backbone of an integrated first year medical curriculum: design and implementation. *Anat Sci Educ*. 2011; 4: 157-69. PMID: 21538939. DOI: 10.1002/ase.217.
16. Koles PG, Stolfi A, Borges NJ, Nelson S, Parmelee DX. The impact of team-based learning on medical students' academic performance. *Acad Med*. 2010; 85: 1739–45. DOI: 10.1097/ACM.0b013e3181f52bed.
17. Lachman N, Christensen KN, Pawlina W. Anatomy teaching assistants: facilitating teaching skills for medical students through apprenticeship and mentoring. *Med Teach*. 2013; 35 (1): e919–25. DOI: 10.3109/0142159X.2012.714880.
18. Lockwood AM, Roberts AM. The anatomy demonstrator of the future: An examination of the role of the medically qualified anatomy demonstrator in the context of tomorrow's doctors and modernizing medical careers. *Clin Anat*. 2007; 20 (4): 455-9. DOI: 10.1002/ca.20427.
19. Louw G, Eizenberg N, Carmichael SW, et al. The place of anatomy in medical education. *Medical Teacher*. 2009; 31 (5): 373–86.
20. Margaryana A, Littlejohn A, Vojt G. Are digital natives a myth or reality? University students' use of digital. *Comput Educ*. 2011; 56: 429-40.
21. McHanwell S, Davies DC, Morris J. A core syllabus in anatomy for medical students - adding common sense to need to know. *Eur J Anat*. 2007; 11 (Suppl 1): 3-18.
22. McKeown PP, Heylings DJA, Stevenson M, McKelvey KJ, Nixon JR, McCluskey DR. The impact of curricular change on medical students' knowledge of anatomy. *Med Educ*. 2003; 37: 954–61.
23. Naylor RA, Hollett LA, Castellvi A, Valentine RJ, Scott DJ. Preparing medical students to enter surgery residencies. *Am J Surg*. 2010; 199: 105–9. DOI: 10.1016/j.amjsurg.2009.09.003.
24. Prensky M. H. Sapiens digital: From digital immigrants and digital natives to digital wisdom. *Innovate*. 2009; 5 (3): 1–9.
25. Rizzolo LJ, Rando WC, O'Brien MK, Haims AH, Abrahams JJ, Stewart WB. Design, implementation, and evaluation of an innovative anatomy course. *Anat Sci Educ*. 2010; 3: 109–20. DOI: 10.1002/ase.152.
26. Smith CF, Mathias HS. What impact does anatomy education have on clinical practice? *Clin Anat*. 2011; 24: 113–9. DOI: 10.1002/ca.21065.
27. Vasan NS, DeFouw DO, Holland BK. Modified use of team-based learning for effective delivery of medical gross anatomy and embryology. *Anat Sci Educ*. 2008; 1: 3-9. DOI: 10.1002/ase.5.
28. Waterston SW, Stewart IJ. Survey of clinicians' attitudes to the anatomical teaching and knowledge of medical students. *Clin Anat*. 2005; 18: 380-4. DOI: 10.1002/ca.20101.

УДК 378.016: 611

**ИСПОЛЬЗОВАНИЕ НОВЕЙШИХ КОММУНИКАТИВНЫХ СПОСОБОВ ОБУЧЕНИЯ
В ИЗУЧЕНИИ АНАТОМИИ ЧЕЛОВЕКА**

Наварчук Н. Н., Гузик А. В.

Резюме. Преподавателям медицинских вузов необходимо мотивировать студентов, как к усвоению конкретной дисциплины, так и развивать интерес к продолжению обучения в будущем, а для этого сам процесс обучения должен стать интересным. К факторам, которые стимулируют активность студентов, относятся: познавательный и профессиональный интерес, творческий характер учебно-познавательной деятельности, элемент соревновательности для создания здоровой конкуренции, игровой характер проведения занятий; эмоциональное воздействие указанных факторов. Ряд исследователей видят источники активности в их взаимосвязи с личностью преподавателя и способами его работы.

Ключевые слова: анатомия, методы обучения, педагогика, студенты.

УДК 378.016: 611

**ВИКОРИСТАННЯ НОВІТНІХ КОМУНІКАТИВНИХ ЗАСОБІВ НАВЧАННЯ
У ВИВЧЕННІ АНАТОМІЇ ЛЮДИНИ**

Наварчук Н. М., Гузик О. В.

Резюме. Викладачам медичних вишів необхідно мотивувати студентів, як до засвоєння конкретної дисципліни, так і розвивати інтерес до продовження навчання в майбутньому, а для цього сам процес навчання повинен стати цікавим. До факторів, які стимулюють активність студентів, належать: пізнавальний і професійний інтерес; творчий характер навчально-пізнавальної діяльності; елемент змагання задля створення здорової конкуренції; ігровий характер проведення занять; емоційний вплив зазначених чинників. Ряд дослідників вбачають джерела активності в їх взаємозв'язку з особистістю викладача та способами його роботи.

Ключові слова: анатомія, методи навчання, педагогіка, студенти.

Стаття надійшла 19.09.2017 р.

Рекомендована до друку на засіданні редакційної колегії після рецензування