

## REFLECTIONS REGARDING ANATOMY TEACHING WITH THE USE OF DIGITAL TOOLS

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### ABSTRACT

On March 11, 2020, the World Health Organization - WHO declared COVID-19 as a pandemic. To maintain interaction and ensure that students access quality content, teachers have started to use digital platforms. The purpose of this work is to report on the experience provided by the III Workshop of Maranhense Anatomical Techniques. The Center for Advanced Morphophysiological Studies - NEMO of the State University of the Tocantina Region of Maranhão - UEMASUL and State University of Maranhão - UEMA, held the workshop associated with the discipline of Anatomical Techniques of the Postgraduate Course in Animal Science, being one international online event through the YouTube platform. The way of teaching animal and human anatomy has evolved towards active methodologies, to accompany the didactic-pedagogical evolution with the advances in digital technology. Anatomy teachers feel the need to redefine the objectives of this discipline. The professors showed mastery over the lectures and the use of the platform used to broadcast the event, managing to talk about Animal and Human Anatomy in a completely different way, combining theory

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with practice. Under these circumstances, an innovative teaching-learning method, supported by the internet, has been serving an unlimited number of students interested in short courses.

**Keywords:** Anatomical techniques. Continuing Education. Web conference.

## REFLEXÕES SOBRE O ENSINO DE ANATOMIA COM USO DE FERRAMENTAS DIGITAIS

### RESUMO

No dia 11 de março de 2020, a Organização Mundial de Saúde - OMS declarou a COVID-19 como uma pandemia. Para manter a interação e garantir que os estudantes acessem conteúdos de qualidade, professores passaram a recorrer a plataformas digitais. O objetivo deste trabalho é relatar a experiência proporcionada pela realização do III Workshop de Técnicas Anatômicas Maranhense. O Núcleo de Estudos Morfofisiológicos Avançados - NEMO da Universidade Estadual da Região Tocantina do Maranhão - UEMASUL e Universidade Estadual do Maranhão - UEMA, realizou o workshop associado à disciplina de Técnicas Anatômicas do curso de Pós-Graduação em Ciência Animal, sendo um evento online internacional através da plataforma YouTube. A forma de ensinar anatomia animal e humana tem evoluído seguindo para metodologias ativas, para acompanhar a evolução didático-pedagógica com os avanços da tecnologia digital. Os professores de anatomia sentem a necessidade de redefinir os objetivos desta disciplina. Os professores mostraram domínio sobre as palestras e o uso da plataforma usada para transmissão do evento, conseguindo falar sobre Anatomia Animal e Humana de uma forma completamente diferente compactuando a teoria com a prática. Sob essas circunstâncias, um método inovador de ensino-aprendizagem, com suporte da internet, vem atendendo a um número ilimitado de alunos interessados em cursos de curta duração.

**Palavras-chave:** Técnicas Anatômicas. Formação Continuada. Webconferência.

## REFLEXIONES SOBRE LA ENSEÑANZA DE ANATOMÍA CON EL USO DE HERRAMIENTAS DIGITALES

### RESUMEN

El 11 de marzo de 2020, la Organización Mundial de la Salud (OMS) declaró la pandemia de la Covid-19 como una pandemia. De esa manera, para mantener la interacción y garantizar que los estudiantes accedieran a los contenidos de calidad, los profesores han comenzado a utilizar plataformas digitales. El propósito de este artículo es informar sobre la experiencia aportada por el III Taller de Técnicas Anatómicas Maranhense. El Centro de Estudios Morfofisiológicos Avanzados (NEMO) de la Universidad Estatal de la Región Tocantina de Maranhão (UEMASUL) y la Universidad Estatal de Maranhão (UEMA), realizó el taller asociado a la asignatura de Técnicas Anatómicas del Curso de Posgrado en Ciencia Animal, uno evento internacional online, transmitido a través de la plataforma YouTube. La forma de enseñar anatomía animal e humana ha evolucionado hacia el uso de metodologías activas, para acompañar la evolución didáctico-pedagógica ocurrida por los avances de la tecnología digital, y los profesores responsables por la asignatura de anatomía sintieron la necesidad de redefinir los objetivos de ella, demostrando dominio sobre las conferencias y el uso de la plataforma de transmisión del evento, logrando hablar de Anatomía Animal y Humana de una forma completamente distinta, combinando teoría con práctica. En estas circunstancias, un método innovador de enseñanza-aprendizaje, apoyado por Internet, ha estado sirviendo a un número ilimitado de estudiantes interesados en cursos cortos.

**Palabras clave:** Técnicas anatómicas. Formación Continuada. Webconferencia.

### 1 INTRODUCTION

Coronaviruses are a large family of viruses common in many different species of animals, such as camels, cats or bats. However, in December 2019, a new coronavirus was transmitted (SARS-CoV-2), which was initially identified in Wuhan in China and caused COVID-19 and was then disseminated and transmitted person to person (BRASIL, 2020). Probably of zoonotic origin, but still unknown, the first cases had in common the Wuhan Seafood Wholesale Market (SCHUCHMANN *et al.*, 2020).

On March 11th, 2020, the World Health Organization - WHO declared COVID-19 as a pandemic. In this condition, the status of the disease has changed, due to the high rate of virus transmission and its worldwide spread (PEREIRA *et al.*, 2020).

The virus has been registered in more than 180 countries worldwide, and in view of the great advance of the disease contamination, many government authorities have been adopting several strategies, in order to reduce the rate of the disease development (KRAEMER *et al.*, 2020).

Through this tragic scenario of global public health, strategies were adopted to stop the virus transmission among the population. The first is social distance, avoiding crowds in order to keep at least five feet between people, as well as the prohibition of events that cause a large number of individuals to gather (as in schools, universities, concerts, malls, gyms, sporting events, among others) (REIS FILHO; QUINTO, 2020).

The first confirmed case of COVID-19 in Latin America was registered in Brazil on February 26th, 2020 (PEREIRA, 2020). Up to 9/2/2020, 3.950.931 cases confirmed were recorded, and 122.596 deaths by Covid-19, with a 3.1% lethality rate (BRASIL, 2020). In this scenario, researchers and health professionals are in a continuous challenge as new cases advance, because the disease has no defined clinical risk, as there are no specific vaccines or medications available so far (LIMA *et al.*, 2020).

Social isolation was also adopted, conceptually, when people cannot leave their homes as a way to prevent the proliferation of the virus. There is also a recommendation that people suspected of carrying the virus remain in quarantine for fourteen days, which corresponds to the SARS-CoV-2 incubation period, that is, the time for the virus to manifest itself in the individual's body (OLIVEIRA, 2020).

Thus, people are in a period of seclusion to protect their own lives and those of others, reduce hospitalizations and socioeconomic impacts, and drastically reduce mortality and repercussions of this pandemic (CANUTO *et al.*, 2020).

With the majority of the population at home, consumption of traditional and digital media increases (SOUSA JÚNIOR *et al.*, 2020). The use of tools provided by online social media is an important digital marketing strategy to improve organizational performance (SOUSA JÚNIOR; SILVA JUNIOR, 2018).

With regard to Education, according to the United Nations Organization for Educational, Scientific and Cultural - Unesco, the crisis caused by Covid-19 resulted in the closure of classes at schools and universities, affecting more than 90% of the world's students (DIAS; PINTO, 2020).

Coronavirus advancement is forcing schools and universities to revise their teaching methodologies. Education is being modified by the adaptation of teachers and students, about different programs, applications, tools that started to be used in education (PASINI *et al.*, 2020).

Technology, information and communication continue to push education in new directions, focusing on the use of tools that are constantly evolving in the teaching process. Among them, virtual reality plays an important and decisive role in this development.

To maintain interaction and ensure that students access quality content in times of social isolation, teachers from all segments started to use digital platforms. This process is made easier and more effective by the use of communication technologies that allow the occurrence of classes and scientific events live, which give the chance for interaction in real time, provided by videoconferences, for example, in which people, spatially separated, attend a class synchronously (JESUS *et al.*, 2020).

Faced with this new scenario, the effort to adapt and learn to the “new normal” is noticeable. There is an urgent need to master online tools. In this moment of being connected and digitalized, finding new means of communication that attract students to keep them active in their studies and enthusiasm for learning is extremely important (DAROS, 2020).

Given the above, the objective of this work is to report the experience provided by the III Workshop of Maranhense Anatomical Techniques as a way to motivate and pass on situations related to this type of teaching / learning, since during the Workshop the themes dealt with were practical, especially despite being online, there was progress in learning.

## **2 III WORKSHOPS OF MARANHENSE ANATOMIC TECHNIQUES**

The Center for Advanced Morphophysiological Studies - NEMO of the State University of the Tocantina Region of Maranhão – UEMASUL and State University of Maranhão - UEMA held, during the period of June 1st to June 25th, 2020, the III Workshop on Anatomical Techniques of the Veterinary Medicine Course, which was linked to the Anatomical Techniques subject of the Postgraduate Course in Animal Science from the State University of Maranhão.

Being an international online event, 1,099 students from all over Brazil participated, in addition to the contribution of professors from some neighboring countries such as Argentina, Uruguay, Paraguay, Peru and Chile. All lectures were broadcast live on the official UEMASUL channel, on Youtube. Among the highlights of the event, among the highlights of the event was the participation of Professor Emeritus König Horst Erich, from the University of Veterinary Medicine, Vienna/Austria, and author of the book “Veterinary Anatomy of Domestic Animals”, one of the world’s bestsellers. Another outstanding participation was made by Professor Rafael Senos dos Santos, from Tufts University/Medford/Somerville, Massachusetts/EUA.

The workshop lasted for four consecutive weeks, with two lectures per week, each lasting 1 hour, covering various themes: taxidermy, active methodologies (anatomy and modeling), plastination, la bolsa gatural del equino, dissection, angiotecnicas, osteotechnics and the importance of animal anatomical study. In addition, it is important



to note that all interaction took place via online chat and this was a key point to enrich the event.

### 3 REMOTE TEACHING OF ANIMAL AND HUMAN ANATOMY

#### 3.1 Advances x Limitations

With the recent changes in education, in which students now access content online, Anatomy teaching has been one of the most affected. However, this area has been rethought in recent years, analyzing and introducing new technologies that replace the traditional method based on fixed cadavers and maintaining the quality of learning (MASSARI *et al.*, 2018).

The way of teaching animal and human anatomy has evolved towards active methodologies, to keep up with the didactic-pedagogical evolution caused by digital technology, including advances in digitized images that allow visualization of 3D anatomical structures and immersive virtual environments such as virtual reality, augmented reality and computer simulations, difficulty in obtaining cadavers for dissection due to greater inspection of the origin of the corpses, etc. (FOUREAUX *et al.*, 2018).

Anatomy teachers feel the need to redefine the objectives of this subject, which shows the need for a permanent expansion of knowledge within the general context of this field and its related areas, in addition to scientific processes produced and spread in different times and spaces. Teachers must be safe in their performance, which implies having the essential knowledge to carry out the necessary didactic transpositions, constructing, developing and evaluating teaching materials based on new methodologies (UNINTER, 2016). Real learning means knowing how to solve the problem alone, that is, for the learning process to become meaningful, it is necessary to motivate students to develop knowledge (SANTOS *et al.*, 2017).

Under these circumstances, an innovative teaching-learning method, supported by the internet, has been serving an unlimited number of students interested in short courses. These Virtual Learning Environments - VLE have a differentiated and innovative approach. The space in which its users are engaged is highly attractive for customization and interaction to meet individual learning needs.

However, not all teachers are prepared for this reality. With remote education, the greatest challenge for these professionals is the so-called didactic transposition, which consists in taking all the teaching practice and activities from the face-to-face environment to the virtual one. The tools and time the educator would have in the classroom are different in the virtual environment, challenging them to create new approaches (ASSIS, 2020).



There are also external factors that hinder learning, such as the reality of some students who have a deficit when it comes to access to digital technologies that also affects university life. Remote activities, in these cases, further exclude those already excluded. In addition, there are teachers who fail to behave didactic appropriately, with monotonous, boring, improper, poorly prepared classes.

The frustration of students and teachers with online teaching can be caused by several factors: non-adaptation of students to the pedagogical model, which can often be uninteresting and excessive, creating difficulties for students to follow the activities proposed by online courses (such as receiving and send e-mail, participate in chats, discussion groups or visit suggested links); vague guidance during the course and technical problems, such as lack of teacher competence; disconnection between online and face-to-face teaching; poor initial training that educators go through; lack of equipment; difficulties related to all aspects of student's life (social, family and personal) that often are not prepared for this way of teaching; and poor time management (during their initial study process, students experience difficulties in organizing and planning when and how to study) (GARCIA; BIZZO, 2013).

A unique opportunity to analyze the teaching-learning process of anatomy is flourishing. The continuous development of educational technology has caused the need to understand, clarify and adapt teaching methods and, because of this, the educator must understand today's pedagogy, and a reflective re-reading of teaching is needed in order to think about what pedagogical planning encompasses, for it is not limited to imposing ideas based on self-knowledge, but also includes the educator's stance on self-evaluation of teaching practice. Anatomy teaching needs to be rethought in order to meet the expectations of this new educational context (FORNAZIERO *et al.*, 2010).

#### **4 COST x BENEFIT:** online practical teaching

The transmission of data via web (streaming) is a new approach to conduct educational events. The transmission is continuous, online, and users can watch it at any time, without having to download the file. All this in real time and instant, providing a very practical and positive multimedia experience. This promotes acceptance of the content and interaction with Internet users, who are no longer just spectators, but become interlocutors.

For students, the benefits can be divided into multiple areas, for example, with the possibility, through the help of the Internet, to ask questions related to the subject, and access to classes anytime and anywhere. There is also the possibility of watching lessons for a long period of time because they will always be available. For teachers, the advantage is that they can offer more content than what is distributed in the classroom, creating a favorable dialogue environment. In this environment of

dialogue, criticism can be impersonal, including information that can stimulate students' interest and contextualize them with academic news, unlike books that undergo minor changes with each edition.

Added to these considerations is the fact that the cost of distance learning courses and online events is much lower than the cost of in-person courses and events, because not only do they not require physical structures (tables, chairs, projectors, among others), but also favor the students economically, since they do not have to commute from one location to another, which will not necessarily impact the exchange of information, that is, the networking among the participants. So, all the ceremonies that used to take place in person can now be performed online, such as exclusive chats for the exchange of information and presentations of papers.

The online workshop provides convenience for those who want to learn about a specific topic, just access the content whenever and wherever they want. Furthermore, this flexibility is greatly beneficial for the organizers of the event, after all, it is not necessary to use a large structure to transmit what is intended to be taught. However, it is important to develop a strategy that attracts students' attention and make a live moment, to allow a greater degree of interaction. Compared to face-to-face events, the virtual environment allows greater reach and influences. This is because it allows people from different cities, states and even countries to participate in the same event. Online activities are more inclusive, diverse and popular, with lower cost and the possibility of issuing a certificate at the end of the course.

Comments from workshop organizers emphasized the higher levels of participation and the diversity of participants worldwide, due to the non-need to travel and the subsequent cost savings. In addition, participants commented on the greater possibility and ease of access, reduced travel costs, quality of presentations, platform effectiveness and ease of asking questions, as well as comments on unexpected benefits like the relaxed dress code and the option to present interesting slides to follow. There is also a particular benefit for students, to participate and have the opportunity to present for a wider audience (NUNES et al, 2020).

## **5 FINAL CONSIDERATIONS**

In general, the III Workshop of Maranhense Anatomical Techniques, was a fully online live event, considered an innovative and valid experience for the current global situation and that can be applied in in-person courses as a form of interactivity and applicability of the content. Both teachers, students and listeners reported the diversity of techniques and participation as strong points of the event. Teachers showed good proficiency in the lectures and in the use of the platform through which the event was transmitted. Furthermore, it provided, in a completely different way, discussions



about Animal and Human Anatomy, combining theory with practice. It is concluded, therefore, that distance education has become an absolutely relevant means when considering the current context of Brazil and the world and, also, an effective vehicle for teacher-student and teaching-learning relationships. One of the challenges is to define an efficient methodology that guarantee results, especially with regard to the practice of human and animal anatomy. Therefore, digital acculturation is necessary and mandatory since this modality of teaching was awakened and has received notoriety by promoting extra moments for the subject of Anatomy even in non-pandemic times.

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