






Characterising the need for anatomy teaching videos in a South African university: Lecturer perspective

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Background. Human anatomy is central to health professions education. However, recently anatomical education has faced increased challenges in the form of enlarged class sizes, reduced lecturer-to-student ratios, limited training time and variable practical exposure. Technological advances, particularly tailor-made video-based content, may enhance the anatomy teaching experience by providing an interactive and engaging visual experience, without compromising the quality of optimal education.

Objective. The aim of this study was to define the ability and affinity of lecturing staff at the Faculty of Medicine and Health Sciences, at a large South African university, and their need for the use of anatomy teaching videos as educational material.

Methods. To achieve this, an observational, survey-based design tool incorporating both quantitative and qualitative research elements was administered.

Results. Twelve responses were used for final analysis. Results revealed an increased use of online and video-based content by lecturing staff to structure and create teaching material; however, videos for anatomy-specific teaching purposes are underutilised. This can possibly be attributed to a lack of available, reliable and relevant anatomy teaching videos. There is a great need for such a resource with results showing an enthusiastic response from participants at the prospect of creating and integrating tailor-made, subject-specific videos for anatomy learning in current curricula.

Conclusion. This initiative will help address the challenges currently faced in medical and health professions education and lead the way for future transformative learning, bridging the gap between traditional teaching methods and interactive technology-assisted education.

Keywords: anatomy education; video-based learning; health professions education; technology integration

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Anatomical science education underpins the training programmes of medical and rehabilitation health science specialities.^[1] At the start of a student's career, it forms the substratum on which future clinical practice will be built. A strong foundational knowledge of anatomy facilitates the understanding of the pathophysiology of diseases and aids in the acquisition of clinical skills necessary to effectively examine, diagnose and treat patients. It forms a stepping stone that directs and enables the educational journey from student to practising clinician. Therefore, the quality of anatomy education of students directly impacts healthcare and patient outcomes. In recent years anatomical education has faced unique and substantial challenges in the teaching and learning environment, including large classes coupled with limited training time and variable practical and clinical exposure.^[2] These challenges were amplified during the recent COVID-19 pandemic. Cumulatively, these and other factors necessitate an adaptation or change to traditional teaching methods that can address these modern obstacles.

Dissection has been the primary teaching method in anatomy for decades and remains widely utilised today.^[3] However, resource demands have influenced curricula, causing medical schools to develop methods to augment anatomy instruction and facilitate anatomical understanding outside the dissection laboratory.^[2,4] As the landscape of higher education and health professions education (HPE) continues to evolve, anatomy teaching also needs to progress and incorporate technological advances

to improve the learning of students.^[5] This has brought forward a strong emergence of anatomy teaching videos^[2,4] which address the increasing predilection for graduates to gravitate towards the use of digital tools to aid in education and learning.^[6] Integrating audiovisual technological advances into HPE has the potential for multiple applications within anatomy teaching, and can provide supplementary learning material towards self-learning and revision by students. Such videos allow review of dissections or prosections without being physically present and have been used in varied programmes.^[4] Learners have the opportunity to view a complicated concept repeatedly within their own timeframe with unlimited access via a learning management system or video repository.^[7]

A further advantage is the recording of theoretical concepts within clinical practice. This will aid in concept-based learning that allows students to appreciate the real-world application of theory, foster deep learning that goes beyond just the pure memorisation of facts, and facilitate the development of clinical judgement.^[8] The use of multiple training tools to consolidate knowledge and technical skills acquisition is essential to link the concept with the context of the programme and module. However, video-based education is hindered by the need for extensive resources. These challenges may be accentuated in low- and middle-income countries with limited infrastructure. However, it can also help navigate some of the previously mentioned challenges like constrained personnel, which are emphasised in these settings.^[9] Furthermore, it can present challenges with

editing of video learning material and the potential to limit teamwork and discussion among students.^[10] Other matters requiring consideration are the ethical and social issues surrounding the circulation of images from cadaveric and donor material, as digital technology has an increased risk of inappropriate use of these teaching resources. Anatomy videos should therefore be created and consumed within a robust ethical framework that can guide responsible utilisation of such resources.^[11]

The Faculty of Medicine and Health Sciences (FMHS) at Stellenbosch University runs seven undergraduate programmes (Bachelor of Medicine and Bachelor of Surgery, Bachelor of Science in Dietetics, Bachelor of Science in Physiotherapy, Bachelor of Speech-Language and Hearing Therapy, Bachelor of Occupational Therapy, Bachelor of Science, and Bachelor of Nursing). All of these programmes require anatomy teaching at various levels of detail and complexity as it relates to their specific course. The Division of Clinical Anatomy is responsible for the anatomy education of all undergraduate health professions students in the FMHS, but also runs honours, masters, and doctoral programmes in anatomy, graduating on average 10 - 15 postgraduate students per year. Over the last 15 years, intake in the seven undergraduate programmes within the FMHS have increased by 40.6%, which directly impacts learning and teaching of anatomy. Time and resource constraints have led lecturers at FMHS to enhance their delivery repertoire within the course and programme, beyond traditional teaching strategies. They now use a combination of different teaching modalities that encompass traditional methods like didactic lectures, practical dissection and prosection sessions, but also institutionally licensed software and web-based programs. Utilising tailor-made anatomy teaching videos might provide the next logical expansion that addresses the needs of students and staff by providing an interactive and engaging visual experience, without compromising the quality of optimal education.

This study aims to define the profile of lecturing staff in the FMHS at a large South African (SA) university, their ability, affinity with, and need for anatomy teaching videos as educational material for practical and theory sessions using cadaveric material and models as resources. Based on the results and need identified, a proposal for the development and implementation of structured content-specific videos for the teaching of anatomy can be made. Such customised videos may allow students to engage with specific content in their own time and at their own educational pace, which can facilitate learning alongside traditional didactic lectures and recordings thereof. This innovation can be an opportunity to accommodate the increase in student numbers, allow for increased student-to-content contact time, while optimising utilisation of lecturers' time.

Methods

Study design

The study was designed and conducted from the constructivist theory, which states that reality is assembled by individuals within their respective social, historical, and individual contexts.^[12] The aim was to assess the perceived need, accessibility, and feasibility of anatomy teaching videos as a supplementary educational tool at the FMHS, Stellenbosch University. This information was obtained through a cross-sectional, observational survey-based design tool, incorporating both quantitative and qualitative research elements.

Sample population and ethics

All academic teaching staff employed in the respective degree programmes at the FMHS were invited to participate in the study and thereby

complete the study survey. Staff were recruited via emails that were sent to divisional or department heads, programme co-ordinators and relevant administrative staff to distribute to teaching staff. Participation was voluntary with no incentives provided, and completion of the survey constituted informed consent. Confidentiality was ensured by de-identifying all responses before analysis and allocating participant numbers to protect the identity of participants. Data were stored securely on a password-protected cloud. Ethical clearance was obtained from the Stellenbosch University Health Research Ethics Committee (ref. no. N21/07/063) with permission to survey the participants. Additionally, institutional ethical clearance and permission were also obtained from the Division of Information Governance (IG-4857).

Survey design

The survey was hosted on the research electronic data capture (REDCap) platform. It consisted of four main sections. The first section focused on the background of the participant, such as which programmes they teach and for which academic year(s). The second and third parts contained questions relating to the teaching characteristics and the barriers and enablers experienced in the teaching environment when using technological advances to create or complement teaching offerings. The fourth and final part was specifically focused in exploring audiovisual approaches and content currently utilised by staff for teaching purposes and yielded the subjective perspectives regarding the perceived need of anatomy videos as learning material. Some questions were single-selected answer only (multiple-choice or a Likert-scale format), while others were multiple-selected answers. In all questions where participants could select the option 'other' (in the case where they felt that no specific answer supplied was sufficient), text boxes were provided in which they could provide additional descriptions or answers using their own words.

Data analysis

As previously stated, this study employed a survey to gather data and was administered via a REDCap tool. No previously validated survey-questionnaire met the requirements of this study; therefore, a bespoke self-developed one was created by the research team, designed to understand the barriers, enablers, and needs in the context of technology and online anatomy educational resources. Validation was performed according to the validation framework constructed by Tsang *et al.*^[13] which consists of three phases: preliminary consideration, development process, and validation. Data were exported to and analysed in Microsoft Excel (Microsoft, USA) and the Statistical Package for Social Sciences (SPSS) Statistics (IBM, USA) and then summarised using mainly descriptive statistics, tables and graphs. Data are also presented as number (n), frequency (proportion (n) divided by total (N) = (n/N)) and percentage (%) where applicable.

Results

Seventeen responses were received, of which 12 were valid (completed each question), and were used for further analysis.

Background information of participants

Educators reported teaching in both undergraduate and postgraduate programmes across the FMHS. As shown in Table 1, the majority of participants reported teaching in the undergraduate medical programme ($n=7/12$, 58.3%) or at a postgraduate level ($n=7/12$, 58.3%). More

respondents taught students at first- ($n=6/12$, 50.0%), second- ($n=6/12$, 50.0%), and third-year levels ($n=5/12$, 41.7%).

Teaching environment and characteristics

An overview of the available and preferred tools for producing educational content is summarised in Table 2. Most participants reported using a laptop for teaching purposes ($n=11/12$, 91.7%), more than a smartphone, desktop computer or tablet. Many reported having access to the device at all times ($n=9/12$, 75.0%). Regarding internet connectivity, half the participants reported having a 'mostly reliable' internet connection ($n=6/12$, 50.0%), closely followed by a 'very good' internet connection ($n=5/12$, 41.7%). Half used fibre for internet connection ($n=6/12$; 50%), or a wireless connection (WiFi, $n=5/12$, 41.7%).

Regarding computer literacy, participants mostly described their abilities at the higher end of the scale; as proficient ($n=5/12$, 41.7%) or advanced ($n=4/12$, 33.3%). All participants reported an increase in using online resources to structure lectures, more so since the start of the pandemic, even if only in the case of certain modules. With reference to preferred learning modalities, participants indicated a partiality for hybrid working conditions ($n=8/12$, 66.7%), where teaching can take place online or face-to-face. The most productive working hours reported were between 7h00 and 12h00 ($n=7/12$, 58.3%). Table 3 provides a summary of participants' teaching profiles in relation to technological resources.

Resources used and needed for teaching

Regarding the use of video-based learning materials as a resource in anatomy education, 5 participants (41.7%) reported not using them, while 4 participants (33.3%) made use of these materials and the remaining 3 participants (25.0%) indicated that they used them selectively for certain modules. When participants were asked to rate the use of particular teaching resources (least to most used), they indicated using textbooks often; however previous lecture slides and online resources and videos were the most frequently utilised resources. Regarding institutionally funded software (Primal Pictures), participants reported using this the least. A schematic representation of this can be seen in Fig. 1.

When looking at specific resources used to prepare lectures, the majority of respondents reported using YouTube videos or websites

Table 1. Background information of participants

	Selected responses, <i>n</i> (%)
Degree being taught	
Bachelor of Medicine and Bachelor of Surgery	7 (58.3)
Bachelor of Science in Physiotherapy	3 (25.0)
Bachelor of Occupational Therapy	3 (25.0)
Bachelor of Nursing	4 (33.3)
Bachelor of Speech-Language and Hearing Therapy	3 (25.0)
Bachelor of Science in Dietetics	1 (8.3)
Bachelor of Science	3 (25.0)
Postgraduate degree	7 (58.3)
Other	0 (0)
Undergraduate level, year of study	
1st	6 (50.0)
2nd	6 (50.0)
3rd	5 (41.7)
4th	2 (16.7)
5th	3 (25.0)
6th	3 (25.0)
7th	0 (0)
Other	4 (33.3)

Table 2. Summary of availability and accessibility of resources to create teaching material

	Selected responses, <i>n</i> (%)
Devices used to teach or create teaching material	
Desktop	5 (41.7)
Laptop	11 (91.7)
Smartphone	5 (41.7)
Tablet	5 (41.7)
Other	0 (0)
Access to teaching device	
Yes, all the time	9 (75.0)
Yes, most of the time	2 (16.7)
Sometimes, but it is old / gives problems / is frustratingly slow	1 (8.3)
No access	0 (0)
Other	0 (0)
Adequate internet access	
Mostly reliable	6 (50.0)
Very good	5 (41.7)
Sometimes	1 (8.3)
Poor	0 (0)
None	0 (0)
Type of internet connection	
Wireless/WiFi	5 (41.7)
Fibre connection	6 (50.0)
Cellular (hotspot)	0 (0)
Monthly data from service provider or university	1 (8.3)
Other	0 (0)

(both $n=8/12$, 66.7%), most preferring content in the form of videos ($n=10/12$, 83.3%) over written material ($n=8/12$, 66.7%) and 3D models ($n=3/12$; 25.0%). When asked about whether they thought that tailor-made teaching and learning videos in the teaching of anatomy could

be a valuable educational tool, the majority of participants responded positively and either agreed or strongly agreed that they could be ($n=8/12$, 66.7%), while the rest remained neutral. Considering the ideal video length, participants either preferred videos of 5 - 10 minutes ($n=4/12$,

Table 3. Summary of teaching characteristics of participants related to technological resources

	Selected responses, n (%)
Computer literacy	
Poor	0 (0)
Elementary	1 (8.3)
Comfortable	2 (16.7)
Proficient	5 (41.7)
Advanced	4 (33.3)
Increased inclination to use online resources since pandemic	
Yes, a lot more	8 (66.7)
For some modules	4 (33.3)
No	0 (0)
Preferred educational modality	
Hybrid of the two learning modes	8 (66.7)
Face-to-face/contact teaching	3 (25.0)
Asynchronous/distance teaching	1 (8.3)
Preferred working hours	
Morning (7h00 to 12h00)	7 (58.3)
Afternoon (13h00 to 16h00)	3 (25.0)
Early night (18h00 to 23h00)	0 (0)
Late night (24h00 to 06h00)	2 (16.7)
Other	0 (0)

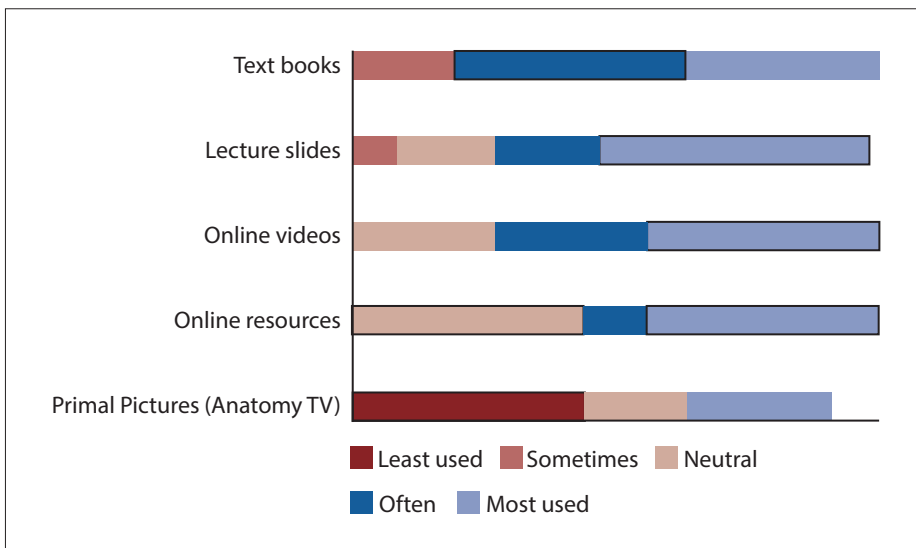


Fig. 1. Resources used for teaching. Black boxes indicate the choice selected most often.

33.3%) or 15 - 20 minutes ($n=4/12$, 33.3%) long.

Respondents listed the following subjects and content topics within anatomy that they would like to use video learning material for:

- Neuroanatomy and neurophysiology, specifically, the base of skull, circle of Willis, spinal cord, spinal cord blood supply, epidural space, lumbar plexus
- Cardiovascular system
- Respiratory system with focus on airway – larynx-trachea-bronchial tree
- Gastrointestinal system
- Musculoskeletal system

- Brachial plexus
- Embryology, infants, children
- Anatomy and physiology of the auditory system
- Reproductive health.

The survey allowed for additional comments by respondents:

- *Creating videos aligned with the outcomes to cover the content is crucial for standardisation of clinical training for the first two years of MB ChB.*
- *Tailored-made videos on difficult concepts such as embryology would be beneficial.*

Discussion

This article forms part of a multistep research design that aims to diversify teaching and learning delivery of anatomy across the FMHS, at our local university by incorporating a hybrid approach that combines traditional teaching methods with the use of technology as a supplement. This specific study aimed to profile and outline the characteristics of teaching staff in the FMHS, examining their skills, preferences, and necessity for using technology-driven methods and videos as educational tools. Furthermore, it emphasised the need for the creation and integration of tailor-made, subject-specific videos for anatomy learning.

When exploring the profile and teaching characteristics of lecturing staff at our faculty, respondents to the survey represented lecturers from all undergraduate programmes and included some postgraduate programmes. It was important for us to include lecturing staff representing all degree programmes offered at FMHS. This was done as all students in medical and allied health sciences undertake anatomy courses at different times throughout their training. We believed these lecturers could provide valuable insight on the relevancy of anatomy teaching videos for students in their respective degree programmes and future clinical practice.

The results strongly emphasised that there is an increased inclination to utilise online resources, more so since the pandemic. This is not surprising as there has been a vast amount of research conducted on the impact of the pandemic on the anatomical pedagogy, which supports this paradigm shift.^[14-17] In the first report to detail the academic vision of anatomical teaching in a postpandemic world, it was emphasised that academic staff supports the teaching of theoretical anatomy-related content in an online format, yet acknowledges the limitations of pure online education when it comes to practical sessions. However, the same study also underscores the usefulness of online resources like videos to aid in but not necessarily replace practical sessions.^[17] Another study by Khan *et al.*^[16] exploring students' perspectives on online anatomical education, suggested that it can serve as a valuable tool in postpandemic settings, particularly when complemented by other parallel approaches that offer practical, hands-on experience. The recent pandemic led to a digital alteration where accelerated integration of technology into anatomy education was

expedited.^[14,15] The COVID-19 learning era might have provided the stimulus for change out of necessity; however, by forcing the condensation of technological applications into a very limited time period in challenging circumstances, the enactment of this was sometimes less than ideal. However, the post-COVID-19 learning era creates the opportunity to capitalise on a blended educational model comprising traditional classroom models and refined video-based education that together propose advancements and cultivate a metamorphosis in anatomical education.^[15] Providing further motivation for the employment of alternative online resources to aid in anatomical education, participants in this study also displayed a preference for an educational model consisting of hybrid learning, which encompasses both online and traditional face-to-face learning. The idea of formulating a blended medical educational model has once again gathered support in previous research, both from a staff and student perspective.^[18] It enables productive variation in teaching and evaluation methods, and can motivate students to participate in learner-centred education where they can draw from their own experiences and backgrounds, while providing comprehensiveness, flexibility, and the opportunity to exploit modern and novel virtual methods.^[18]

The bulk of lecturers who participated in this study also made use of their primary device, namely a laptop, to prepare teaching material and they mostly felt that they were either proficient or advanced in their ability to use it (technological literacy). Access to devices and a reliable internet connection were also readily available to most participants. Based on these results, it is evident that access to technological devices and proficiency in technology should not be seen as a prominent barrier to the scalability of video-based content and learning on a large scale for lecturers. Staff exhibited a clear and defined ability and affinity for technological integration. However, the video editing, recording, and scripting skills may require additional expertise that lecturers do not uniformly possess. This also highlights an important point when utilising and implementing digital anatomical platforms, for both staff and students. In a study conducted by Foiret and Volschenk,^[19] it was found that use of platforms like Primal Pictures was severely limited by students because of their lack of understanding on how to use it. Interestingly enough, Primal Pictures was also not a platform frequently utilised by teaching staff in this study, and this might indicate that staff members experienced the same difficulties as students when it comes to this platform. Therefore, students and staff both need easy access and a supportive approach when first implementing a new method or platform, especially in developing countries like our local context.^[19]

Upon further enquiry regarding resources utilised to structure and compile lectures, only a third of participants reported that they currently employ video learning material as an anatomy teaching resource for students. However, online videos and other online resources, such as YouTube and websites, are used frequently by lecturing staff to help set up and structure lectures in other areas of study. This can possibly be a reflection on the lack of reliable and relevant anatomy teaching videos currently available, whereas in other learning areas the need is more fulfilled. Alternatively, appropriate anatomy videos may be behind paywalls that educators are unable to subscribe to (e.g. Osmosis). The internet is a major platform of resources, with a recent study showcasing that 97.4% of medical students use it as a source of information for academic purposes, with 35.7% of students being described as frequent users.^[20] The challenge for both educators and students in utilising and relying on the internet as a teaching tool is the continued exposure to

a surplus of unfiltered and what could be seen as unreliable content.^[21] The internet provides a wide variety of resources for students to learn anatomy. Some resources, such as videos, are more suitable for the individualised need of today's technocratic students than traditional study aids constituting of textbooks and lecture notes. However, the lack of credible and verified content remains an invariable impediment to student learning. In an attempt to attain online resources to aid their studying, students will often make use of intuitive search strategies, which may yield numerous results; however, many will be of questionable relevance and inconsistent quality. Students still lack the skills to critically evaluate information and manage the risk of information overload or 'filter failure'.^[22] Digital tools like those of artificial intelligence (AI) technologies also present a lot of promise for personalisation of learning; however, like web-based sources they also lack the ability to produce content which accounts for the unique contextual and resource-specific factors faced in SA and the global south.^[23] Tailor-made videos produced by faculty members, customised to institutional learning outcomes and the clinical landscape, can therefore address the gap that generic web-based resources and AI in its current capacity create, while simultaneously providing students educational tools that suit their preferred learning styles. This hypothesis is supported by the majority of respondents in this study, who indicated that they agree or strongly agree that the use of tailor-made teaching and learning videos in the teaching of anatomy within the FMHS curricula can be valuable as an educational tool.

The progression and continued advancement of medicine and healthcare are reliant upon innovative and breakthrough technologies.^[24] Technological transformation drives the progression of healthcare and has been emphasised in recent years as we observed the rise of digital health platforms^[25] and how they are being utilised to make health systems more efficient and sustainable. For that reason, it comes as no surprise that HPE should also remain in fluid evolution, and strategic changes are required to improve teaching delivery with the integration of technology.^[5] Anatomy has often been referred to as the fundamental crux of medical education, making it essential for anatomy educators to be agile in the design and provision of learning material to students.^[1] The supplementation of technology-based learning material to traditional teaching techniques in anatomy will help facilitate the next generation of health professionals to embrace digital health technologies when studying, while acting as a transformational tool that can promulgate research and insights into healthcare advancements for the future.^[24]

Limitations

While this study provides novel knowledge of educator perspectives of video-based education in an SA setting, it acknowledges the following limitations. The sample size was limited and, combined with the fact that this was a single centre study, caution is advised when generalising results. Furthermore, the experience levels of the lecturers were not covered in the survey, and thus it was not possible to discern if some traditional teaching methods are more preferred by senior staff members, as opposed to technological integration being more readily embraced by a younger demographic of lecturing staff. Exploring this dynamic can be the focus of future research. Additionally, this study also only addressed the lecturer's perspective regarding the need for the implementation of customised tailor-made teaching and learning videos. In order to obtain a holistic view on its necessity and current effectiveness of its implementation, future research should include a student's perspective in addition to that of staff.

Conclusion

Medicine and the scope of health sciences is a dynamic and ever-evolving field. Technocratic students and future healthcare professionals prefer to access and consume knowledge in a different way from their predecessors. Medical schools and other health-related programmes are pressurised to increase the annual intake of students on a structured basis to help satisfy the growing need for healthcare practitioners globally. Educators need to adopt new and innovative solutions that can be administered at large and align the learning preferences of current students, while simultaneously addressing the educational outcomes defined by the curricula followed. Tailor-made video-based content can address these educational challenges and lead the way for future transformative learning, bridging the gap between traditional teaching methods and interactive-based technology-assisted education.

Declaration. This study was performed in line with the principles of the Declaration of Helsinki. Ethical clearance was obtained from the Health Research Ethics Committee at Stellenbosch University (ref. no. HREC N21/07/063) with permission to survey the participants. Institutional permission was also obtained from the Division of Information Governance (IG-4857). Participation was completely voluntary and by completing the survey-questionnaire, participants consented to participate and have results published.

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- Schaefer AF, Wilson AB, Barger JB, Azim HM, Brokaw JJ, Brooks WS. What does a modern anatomist look like? Current trends in the training of anatomy educators. *Anat Sci Educ* 2019;12(3):225-235. <https://doi.org/10.1002/ase.1806>
- Saxena V, Natarajan P, O'Sullivan PS, Jain S. Effect of the use of instructional anatomy videos on student performance. *Anat Sci Educ* 2008;1(4):159-165. <https://doi.org/10.1002/ase.38>
- Onigbinde OA, Chia T, Oyeniran OI, Ajagbe AO. The place of cadaveric dissection in post-COVID-19 anatomy education. *Morphologie* 2021;105(351):259-266. <https://doi.org/10.1016/j.morpho.2020.12.004>
- Hulme A, Strkalj G. Videos in anatomy education: History, present usage and future prospects. *Int J Morph* 2017;35(4):1540-1546. <https://doi.org/10.4067/S0717-95022017000401540>
- Patra A, Asghar A, Chaudhary P, Ravi KS. Integration of innovative educational technologies in anatomy teaching: New normal in anatomy education. *Surg Radiol Anat* 2022;44(1):25-32. <https://doi.org/10.1007/s00276-021-02868-6>
- Ahmet A, Gamze K, Rustem M, Karaborklu Argut S. Is video-based education an effective method in surgical education? A systematic review. *J Surg Educ* 2018;75(5):1150-1158. <https://doi.org/10.1016/j.jsurg.2018.01.014>
- Beheshti M, Taspolat A, Kaya SO, Sapanca FH. Characteristics of instructional videos. *WJET* 2018;10(1):61-69. <https://doi.org/10.18844/wjet.v10i2.3418>
- Nielsen A. Concept-based learning in clinical experiences: Bringing theory to clinical education for deep learning. *J Nurs Educ* 2016;55(7):365-371. <https://doi.org/10.3928/01484834-20160615-02>
- Chang Chan AYC, van Leeuwen M, Custers E, Bleys R, ten Cate O. Anatomy education in low-resourced countries: What are challenges and effective and affordable educational strategies? A qualitative study. *Med Teach* 2024;47(5):883-893. <https://doi.org/10.1080/0142159X.2024.2383373>
- Messerer DAC, Behr JL, Kraft SF, et al. The gross anatomy course: SARS-CoV-2 pandemic-related effects on students' learning, interest in peer-teaching, and students' perception of its importance. *Anat Sci Educ* 2023;16(4):629-643. <https://doi.org/10.1002/ase.224>
- Cornwall J, Callahan D, Wee R. Ethical issues surrounding the use of images from donated cadavers in the anatomical sciences. *Clin Anat* 2016;29(1):30-36. <https://doi.org/10.1002/ca.22644>
- Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3(2):77-101. <https://doi.org/10.1191/1478088706qp0630a>
- Tsang S, Royse CF, Terkawi AS. Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. *Saudi J Anaesth* 2017;11(1):S80-S89. https://doi.org/10.4103/sja.SJA_203_17
- Ortadeveci A, Ozden H. Social media as a learning tool in anatomy education from the perspective of medical and dental students. *Clin Anat* 2023;36(5):809-817. <https://doi.org/10.1002/ca.24046>
- Singal A, Bansal A, Chaudhary P, Singh H, Patra A. Anatomy education of medical and dental students during COVID-19 pandemic: A reality check. *Surg Radiol Anat* 2021;43(4):515-521. <https://doi.org/10.1007/s00276-020-02615-3>
- Khan J, Baatjes KJ, Layman-Lemphane JI, Correia J. Online anatomy education during the Covid-19 pandemic: Opinions of medical, speech therapy, and BSc Anatomy students. *Anat Sci Educ* 2023;16(5):892-906. <https://doi.org/10.1002/ase.2271>
- Bond A, Kelsey A, Aitken G. The future of anatomy teaching post-pandemic: An academic viewpoint. *Anat Sci Educ* 2023;16(6):1121-1133. <https://doi.org/10.1002/ase.2308>
- Jebrailey M, Pirnejad H, Feizi A, Niazkhani Z. Evaluation of blended medical education from lecturers' and students' viewpoint: A qualitative study in a developing country. *BMC Med Educ* 2020;20(482). <https://doi.org/10.1186/s12909-020-02388-8>
- Foiret JR, Volschenk M. Exploring the use of a digital anatomy learning platform in a second-year medical student cohort. *Anat Sci Educ* 2024;17(3):591-604. <https://doi.org/10.1002/ase.2384>
- Venkatesh S, Chandrasekaran V, Dhandapani G, Palanisamy S, Sadagopan S. A survey on internet usage and online learning behaviour among medical undergraduates. *Postgrad Med J* 2016;93(1099):275-279. <https://doi.org/10.1136/postgradmedj-2016-134164>
- Leung BC, Williams M, Horton C, Cosker TDA. Modernising anatomy teaching: Which resources do students rely on? *J Med Educ Curric Dev* 2020;7: 238212052095515. <https://doi.org/10.1177/2382120520955156>
- Mathew R, Ramakrishnan N, Boland F, Pawlikowska T, Holland JC. Learning cardiac embryology on YouTube: What videos are there to view? *Anat Sci Educ* 2024; 7(7):1495-1508. <https://doi.org/10.1002/ase.2467>
- Lazarus MD, Truong M, Douglas P, Selwyn N. Artificial intelligence and clinical anatomical education: Promises and perils. *Anat Sci Educ* 2024;17(2):249-262. <https://doi.org/10.1002/ase.2221>
- Wickramasinghe N, Thompson B, Xiao J. The opportunities and challenges of digital anatomy for medical sciences: A narrative review. *JMIR Med Educ* 2022;36(3):471-491. <https://doi.org/10.2196/preprints.34687>
- Thimbleby H. Technology and the future of healthcare. *J Public Health Res* 2013;2:e28(3):160-167. <https://doi.org/10.4081/jphr.2013.e28>

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