

# Surgical education on YouTube

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The increasing popularity of internet social media is likely to present new opportunities and challenges to current paradigms in medical education.<sup>1</sup> Some advocate that social media (YouTube, Facebook, Twitter, and so forth) can enhance learning opportunities outside the classroom, and can be especially helpful to promote self-directed learning.<sup>1</sup> YouTube ([www.youtube.com](http://www.youtube.com)) was created in 2005, and rapidly became the fourth most visited website in the world, and was honored as invention of the year in 2006.<sup>2</sup> YouTube, a free online site, is yet to be explored as an educational tool. More recently, universities, hospitals, and other organizations have established YouTube channels to deliver their own ideas worldwide.<sup>3</sup> The objective of this paper is to explore the current use of YouTube as a tool in medical education to enhance learning. A second objective was to see whether YouTube videos can replace the 2-dimensional surgical atlas. Some of the published literature looked at YouTube as an educational tool for patients regarding disease, but the focus of this review is on education of surgical trainees, especially focusing on preparation for surgical procedures.

A Medline database search using the keyword "YouTube" was carried out. The initial search revealed 7634 articles. The literature search was then limited to education and English language. The search was mapped to subject heading. The citation lists of 230 articles were read to sort out relevant articles discussing YouTube and medical education. A PubMed database search was also carried out to ensure inclusion of relevant articles, and 259 articles were found. After removing duplicates and unrelated articles, an additional 18 abstracts were included. A total of 85 original articles and commentaries were included in this review. While

many tackled patient education, only few specifically discussed YouTube as an educational tool to enhance learning.<sup>2-6</sup>

Clifton and Mann<sup>3</sup> discussed the use of YouTube in nursing education. They started by arguing that universities remain driven by historical pedagogies, while technologies are advancing, and students are requesting interactive and interesting models of teaching.<sup>2</sup> They stressed on the importance of staying in pace with their internet generation students. The authors clearly explain why using YouTube is beneficial for education. For example, YouTube is a recognized digital environment for students that could be utilized as a tool for learning and teaching, as well as, entertainment. It is available for students anytime and everywhere, allowing them to engage in their learning whenever, and wherever they wish to do so.<sup>2</sup> This is important in health education, since students from medical, nursing, and other applied sciences spend variable time, and sometimes late shifts in hospitals. Keen students wishing to spend more time with patient contact, maybe disadvantaged with scheduled lectures. The authors also discussed how YouTube could enhance deep learning - defined as the ability to apply new knowledge in context.<sup>2-4</sup>

YouTube videos focus the attention of students and allow them to interact (comment), therefore engaging students in their own learning. YouTube allow students to compare and analyze multiple videos' viewpoints, and fostering critical thinking. Another advantage of YouTube discussed was distant learning for nursing education.<sup>2</sup> Finally, the authors directed attention to important information, that is, "visual delivery is an established method of keeping material memorable."<sup>2</sup>

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Agazio and Buckley<sup>2</sup> used YouTube videos in their undergraduate and graduate nursing education. They used already published videos to enhance the image of nursing for undergraduates, and help convey nursing theories, and history to graduate students. The authors and their faculty incorporated YouTube videos into classrooms, pausing at important moments to jump-start a discussion, or have a small group exercise. They also used videos as a basis for student assignments. In addition, the authors discussed YouTube's role in distant learning, as many professional learning organizations post their presentations and seminars from conferences that were inaccessible in the past except for those who attended.<sup>3</sup> Similarly, Cox<sup>4</sup> used YouTube videos in class and embedded these videos in archived PowerPoint presentations for review by students later on. The author used videos to link and integrate basic science material in organic chemistry with clinical scenarios allowing students to see "the big picture".

Burton<sup>5</sup> discussed the use of YouTube channels to organize educational material for learners and patients alike. The author pointed out that trainees and patients can sort out videos by topic, date uploaded, or by channel (theme). Channels provide information for the viewer regarding the content of these videos, provided they trust the source of the channel. The author also warned from having pharmaceutical companies backing up these channels, as bias may exist towards such companies. Nonetheless, similar to evaluating readable material and web pages, students should take care in evaluating the accuracy, currency, and objectivity of the videos.

Hughes and Quraishi<sup>6</sup> discussed the value of YouTube in Otolaryngology-Head and Neck (OTL-HNS) surgery. They tabulated available YouTube channels as resources that can be visited in every sub-specialty in the field. These channels provide, for example, videos demonstrating how to perform a clinical exam maneuver (for example, Dix-Hallpike testing), or a treatment maneuver (Epley maneuver) for dizzy patients. The authors directed attention to the importance of future innovation in online surgical education, and clear advantage over drawings and sequential photos of surgical operations.<sup>6</sup> There are some drawbacks for using YouTube in surgical education. The first drawback of using YouTube for educational purposes is that YouTube does not require references, disclosure of the source of data, and is not peer reviewed.<sup>3</sup> Yet, this may not be a big issue for surgical procedures as many surgeons use different techniques and instruments. The second drawback is the breach of professionalism.

Some authors have warned that the use of YouTube could create additional complications for the field of medical education, which is responsible for teaching and training of medical professionalism.<sup>1</sup> Farnan et al<sup>1</sup> looked at ethical issues regarding professionalism and posting videos on YouTube. They discussed a video posted by medical students that were created for an end-of-year ceremony. The faculty requested removal of the video because the content of the video was felt to be unacceptable for public viewing. Although the content was for entertainment purposes, the faculty was worried that those in the general public, with little knowledge of the details of undergraduate medical education and residency training, would find some content offensive and unprofessional.<sup>1</sup> Similarly, surgical procedures may be bloody in nature, and too offensive for viewers.

Although patients' identities are kept secret (body covered and only the surgical field is visible) in a video, we may need to obtain consent from patients for recording, and publishing these videos online in the future. The third drawback is that YouTube videos can send the wrong message indirectly to the public. In a recent article by Vogel,<sup>7</sup> she pointed out that patients, because of expenses of the United States health system, started performing procedures, and even filmed themselves doing minor procedures like removing stitches, or even removing their toenail at home; a behavior she termed "Backyard Medicine". She added that the actual effect of these videos was giving viewers a sense of security, and "I can do it attitude".

We, as surgical educators still recommend reading a surgical atlas in preparation for surgery. The OTL-HNS surgery is a unique field of surgery because of the complexity of human head and neck anatomy, and 3-dimensional structures encountered during surgery. The field of OTL-HNS has embraced new technologies and equipment to help in such procedures. Microscopes and endoscopes are being used, and details of the surgery can be viewed and recorded on a TV monitor. Many other surgical specialties are on the same track. Posting these recorded surgeries on YouTube allows trainees to view them at their convenience with no interruption, as well as reflecting and discussing certain steps with colleagues and mentors; therefore, shifting from passive learning, that is, watching, into active learning. This andragogical behavior enhances adult learning. These videos put viewers in a similar context as the actual surgery, which enhances the recall of information when needed. Finally, watching a video of a similar surgical procedure not only show viewers exactly how it is carried

out, but also will show changes in the operating room environment; for example, anesthetic monitor (beeping when oxygen saturation drops), therefore, viewers can learn about the interaction that happens subsequently between the surgeon and anesthesiologist. These visual and auditory cues should not be underestimated in education and learning in context.

My suggestion for Saudi universities and professional learning organizations, such as the Saudi Otorhinolaryngology society, is to develop a YouTube channel to organize surgical videos for trainees to view. In this way, they ensure content validity for trainees. For confidentiality and ethical purposes, instructors can upload videos, and list certain ones as “private,” designating who is only allowed access to the video; that is, only available to students.<sup>2</sup>

In summary, few articles discussed YouTube as an educational tool. Educators should explore YouTube to enhance their students’ learning, especially a self-directed method.<sup>1</sup> YouTube provides a medium of communication that is cost-effective, convenient, familiar to learners, and available 24/7.<sup>1,2</sup> Instead of moving away from new technology and social media,

educators should foster critical “viewing” in their students, to choose relevant and educational videos, discuss, and reflect on them within a group, and with their supervisor. After all, if “a picture is worth a thousand words”, I wonder what the worth of a video may be.

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