EDITORIAL

Use of video-based content in medical education

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"for the mind is not a vessel that needs filling, but wood that needs igniting"
- Plutarch 50-120 AD

In South Africa, the shortage of trained doctors and nurses contributes to 50% of all maternal deaths, according to the 2014–2016 Saving Mother's Report of the National Committee on Confidential Enquiries into Maternal Deaths.[1] The impact on families and society as a whole,[2] in addition to the fact that more than 85% of these deaths are considered preventable, demonstrates the unambiguous scale and urgency of this problem. Broader studies of patient outcomes after surgery in South Africa and the continent confirm the contribution of lack of trained medical staff to our high mortality rates.[3–5] We need transformative learning experiences that can be delivered at scale to optimise health professions education in South Africa.[1,6] As a leader in technology and innovation in Sub-Saharan Africa, South Africa is optimally poised to design and develop the next generation of scalable, education solutions for the country and the region.

Video-based education offers a vehicle that could address many of our most pressing educational challenges. With growing mobile phone ownership[7] and online education platforms to disseminate content,[8] new opportunities for using video-content for medical education are being unlocked in the Global South.[9]

Scalability of evidence-based content is perhaps one of the greatest potential benefits of video-based content. Once produced, a video can "go viral"; a modern-day phenomenon where a video's popularity spreads rapidly across the globe without significant advertising. For example, the Khan Academy Medicine YouTube channel (https://www.khanacademy.org/science/health-and-medicine) has almost one million unique subscribers, with some medical videos having garnered well over three million views (e.g. https://youtu.be/7XaftdE_h60). As with other videos created by the Khan Academy (https://www.khanacademy.org/), a non-profit organisation with global impact, the health and medical education videos offered allow for consistently reproducible quality: the best lecturer, delivering their best lecture, perfectly every time.

Anaesthesia-related videos have also 'gone viral'. Many will be familiar with the Elaine Bromiley case and the events which led to a paradigm shift in our thinking about crew resource management and human factors in surgical outcomes.[10] This video re-enactment of the Elaine Bromiley case has been viewed more than 75 000 times (https://vimeo.com/103516601). OpenAirway.org is a free open-access medical education website, created and maintained from South Africa, dedicated to airway management. It hosts about 150 educational videos. The video describing the use of a bronchial blocker (https://youtu.be/HM12Zcu-DQ8) has been viewed more than 10 000 times in 2 years.

In-person learning events require learners and teachers to be in the same room (or virtual-room) at the same time. Providing educational content that may be consumed at any time enables asynchronous learning, overcoming a major challenge that is characteristic of the geographically dispersed workforce often found in medicine.[11] The accessibility and appeal of video-content for millennial learners has led to experimentation with the 'flipped classroom' where the didactic instruction of a learning event happens at home, via video-content.[12] This allows teachers to use face-to-face time to facilitate the application of new knowledge to problem solving.[13,14]

But are videos effective? Video can influence knowledge skills, and attitude formation effectively[15] and can also change the healthcare experience for patients.[16] Anyone that has bought a product in response to a television advert should understand the power of video to lead to knowledge and behaviour change.

In this edition of SAJAA, Naicker et al. have identified that video-based content may address important needs in anaesthesia training.[17] They describe an important first step in creating video content by gathering feasibility and acceptability data from their users. The learner response was positive but access to free broadband internet services was an important barrier to engagement. Their learners were familiar with video content, and willingly committed personal time to learning.

So, is video-content a panacea for all of the challenges to medical education in the Global South? High quality and high production-value videos will require a larger up-front monetary and time spend than that described by Naicker et al.[17] This initial investment must be weighed against the efficiency savings achieved when a single video is used thousands of times. Robust studies are needed to determine the point at which

video tutorials become cost-effective. How we measure impact, including cost-effectiveness of video content is an important consideration in our resource-constrained environment.

Global scalability of video content is not yet achievable, largely because internet access is not yet universal. A survey of African clinician researcher collaborators report access to broadband internet as a barrier to communication and performance[18] and 52% of the world still lacks internet access.[19] But access to broadband internet is improving and universal access by 2020 is the United Nations Sustainable Development Goal 9C (https://www.un.org/sustainabledevelopment/infrastructure-industrialization/). We believe that if we wait for universal internet access to begin building a comprehensive, evidence-based library of video content for medical education, we could end up being ten years too late.

One of the major challenges of creating content for broad distribution is the need to easily adapt medical or health education to differing levels of learner and across varying learning platforms.[20] Adaptability across different language and cultural groups, and socioeconomic contexts, is both a challenge and an essential consideration when planning broad regional dissemination of video educational material. These challenges can be overcome by designing content upfront for easy adaptation, facilitating the impact, reach, and cost-effectiveness of video-based medical education.

Without end-user engagement in the design and production phase, video content can be as ineffective as poorly delivered in-person teaching. All learning events require an explicit focus on creating meaningful and emotionally engaging narratives, with which the learners grapple to create new understanding.[21]

Finally, it must be appreciated, that video is just a tool in the hands of the educators. And like all medical education tools, the quality of the tool and the context in which it is delivered are critical in determining impact.[22] If we only attempt to substitute written words offered to learners in the form of books and articles, with those same words read out in a video lecture, we miss two critical advantages of video-based content.

Video designed to be entertaining and emotionally engaging can provide an incentive to learn. What would the impact on patient outcomes be if the next video that went 'viral' on YouTube described a technique for safe spinal anaesthesia in obstetric patients?

Further, because it enables the creation of emotionally activating experiences, the video-based educational material not only provides knowledge-based learning, but it also provides an emotional incentive to change behaviour.[20]

With universal access to mobile telephone-based internet access imminent, and costs in the production and distribution of video-based content rapidly decreasing, plus the intrinsic incentive to engage with the content that can be achieved with entertaining videos, this medium should be an important part of any African medical educator's toolbox.

Video can truly ignite the learning fire.

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