



STUDENT

Learning under lockdown: navigating the best way to study online

Plenty of digital resources are out there to help medical students learn—but how do you choose which is right for you? Mark Khurana looks at the different platforms available and presents some of his favourite ways to learn

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The volume of information you need to learn in a short space of time for medical school can be daunting, and efficiency is key. Fortunately the digital age has presented medical students with new mediums through which to learn.^{1,2} In this article I look at their pros and cons and provide some high quality examples.

Tweetorials

Tweetorials are a series of tweets on Twitter, most commonly presented as a thread, which aim to educate an audience on a specific topic. They are often posted by leaders and experts in their specialties, and can allow students to interact with them in an informal way. Some critical thinking is required because anyone can post a thread on social media. Evaluating the legitimacy and any conflicts of interest of tweetorialists is advised before following them on Twitter.

Pros

- Openly available and free
- Allows students to interact with, and learn from, experts they would usually not be able to access
- Convenient

Cons

- Anyone can post tweetorials and they are not peer reviewed
- Often discuss niche topics that are beyond the scope of some medical curriculums

Mark's top three tweetorial sources

Andre Mansoor, @andremansoor

Provides useful videos from real cases with a focus on clinical observation and examination techniques

MedTweeterials, @medtweeterials

Collects relevant tweetorials from a variety of sources and provides a quick overview of topics covered by them; a great reference source

Tony Breu, @tony_breu

Covers a wide range of specialties, grouped by topic; a treasure trove of engaging tweetorials that are light and fun

Podcasts

Podcasts have become increasingly popular, particularly among young people.³⁻⁶ Although many podcasts are for entertainment rather than education purposes, *The BMJ* has highlighted their role in medical education.⁷ For those who prefer learning by listening, podcasts are a great way to complement traditional learning methods. They also enable learning on the go or while doing other things. Some podcasts adopt a case based approach with clinical examples, whereas others focus on one disease or topic.

Pros

- Offer structured approaches to topics that are particularly difficult
- Convenient, free, and can be listened to on the go
- Comprise a wide range of formats and cover different approaches to teaching

Cons

- Information often not peer reviewed or rigorously scrutinised
- Good for overviews on topics, but generally do not provide the same depth of information as books and lectures

Mark's top three medical podcasts

*Run the List*⁸

Structured and concise. Focuses on one disease at a time and discusses a relevant case that encompasses the most important facets of the disease.

*Second Opinion*⁹

Short episodes (usually around 3-5 minutes) packed with unique insights, often related to health policy. Might not help you ace your exams but will definitely encourage reflection on topics you might not have thought about.

*The Curbsiders*¹⁰

A light hearted podcast, with cases presented in a fun, engaging, and stimulating manner. Not as formal or academic as many other medical podcasts.

YouTube

YouTube has an enormous amount of video content, some of which is relevant for medical students.^{11,12} Subjects ranging from pharmacology to practical exam preparation can be found on the site. Although many medical students have access to video lectures, the sheer volume and range of teaching styles on the platform makes YouTube a great alternative or supplement to lectures and books.

Pros

- Content has a seemingly unlimited range of teaching styles covering every possible topic
- Often contains great illustrations to explain concepts
- Can be watched double speed if necessary
- Free platform

Cons

- Preclinical content is often much better than clinical content
- Often great for overviews of topics, but detail might be difficult to find
- Older videos might be incongruent with current guidelines

Mark's top three YouTube channels

*Armando Hasudungan*¹³

Beautifully hand drawn, and perhaps the best, illustrations out of the highlighted channels. Video is well paced and easy to follow.

*Najeeb lectures*¹⁴

Provides a highly detailed and comprehensive view of topics and has a great knack for explaining difficult ones.

*Khan Academy medicine*¹⁵

Not highly detailed, but provides a good source of overviews of physiology and disease—great as an introduction to a new topic. The narration is clear, and the audio is perhaps one of the best on the platform.

Alternative platforms

While video and audio learning platforms are relatively familiar to many medical students, other innovative platforms exist. Some revolve around creating visual representations to help memorise information. Other apps such as Essential Anatomy, Anatomy Learning—3D Atlas, and Teach Me Anatomy are interactive ways of engaging with anatomy. Although these platforms are different from traditional forms of learning, they can be useful for memorising and understanding large volumes of information through clever visual techniques.

Pros

- Creative ways of learning the curriculum, particularly for content otherwise requiring rote learning
- Active and engaging methods of learning, particularly compared with passive learning through videos or lectures
- Often created with students in mind, so the information is tailored to that audience. Digital flashcards can be similarly tailored to a student's needs

Cons

- Often subscription based and expensive
- Mnemonics can be specific to a country or region. This is particularly true for treatments, as they often differ based on regional guidelines
- Not regularly updated, therefore information might be outdated

Mark's top three alternative platforms

*SketchyMedical*¹⁶

Perhaps the best resource for visual learners. I benefited greatly from the visual mnemonics, particularly for microbiology and pharmacology.

*Picmonic*¹⁷

Similar to SketchyMedical, although the illustrations are not as crisp. Tailored to US students but useful as an alternative to memorising concepts, particularly for visual learners.

*Anki*¹⁸

Makes creating flashcards simple; also avoids the pitfalls of personal flashcards (eg, illegible, damaged, lost). The flashcards can be shared among friends and can include pictures.

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- 1 Wynter L, Burgess A, Kalman E, et al. Medical students: what educational resources are they using? *BMC Med Educ* 2019;19. 10.1186/s12909-019-1462-9.
- 2 Han H, Nelson E, Wetter N. Medical students' online learning technology needs. *Clin Teach* 2014;11:15-9. 10.1111/tct.12092.
- 3 MacKenzie L. Science podcasts: analysis of global production and output from 2004 to 2018. *R Soc Open Sci* 2019;6:180932. 10.1098/rsos.180932.
- 4 Mallin M, Schlein S, Doctor S, et al. A Survey of the Current Utilization of Asynchronous Education Among Emergency Medicine Residents in the United States. *Acad Med* 2014;89:598-601. 10.1097/acm.0000000000000170.
- 5 Cadogan M, Thoma B, Chan T, et al. Free open access medication (FOAM): the rise of emergency medicine and critical care blogs and podcasts (2002-13). *Emerg Med J* 2014;31:e76-7. 10.1136/emermed-2013-203502.
- 6 Hadjianastasis M, Nightingale K. Podcasting in the STEM disciplines: the implications of supplementary lecture recording and "lecture flipping.". *FEMS Microbiol Lett* 2016;363:fnw006. 10.1093/femsle/fnw006.
- 7 Koerling A. Five podcasts every medical student should listen to. *BMJ* 2019;5811:5811. 10.1136/bmj.5811.
- 8 Run the list. <https://podcasts.apple.com/us/podcast/run-the-list/id1473382916>

- 9 Second opinion. <https://podcasts.apple.com/podcast/id73331693?mt=2>
 - 10 The curbsiders internal medicine podcast. <https://podcasts.apple.com/us/podcast/the-curbsiders-internal-medicine-podcast/id1198732014>
 - 11 Farag M, Bolton D, Lawrentschuk N. *Use of YouTube as a resource for surgical education—clarity or confusion*. *Eur Urol Focus*. Published Online First, 2019, 10.1016/j.euf.2019.09.017.
 - 12 Tackett S, Slinn K, Marshall T, et al . Medical Education Videos for the World. *Acad Med* 2018;93:1150-6. 10.1097/acm.0000000000002118.
 - 13 Armando Hasudungan. www.youtube.com/user/armandohasudungan
 - 14 Dr. Najeeb Lectures. www.youtube.com/user/DoctorNajeeb
 - 15 Khan Academy Medicine. www.youtube.com/user/khanacademymedicine
 - 16 SketchyMedical. sketchymedical.com/
 - 17 Picmonic. www.picmonic.com/
 - 18 Anki. apps.ankiweb.net/
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