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# REMOTE LEARNING: educational principles for success

The current digital age has prompted a significant transformation within medical education. Remote learning, where student and educator are not present in a traditional classroom environment, was the exception to the norm. Recently though, its popularity has risen, with better resources empowering clinicians to balance continuing medical education requirements with multifocal demands on their time.

Remote learning options include applications ('UpToDate', 'Medscape', journals, podcasts), courses (modular, webinars, seminars), and social-networking sites (YouTube, Facebook, WhatsApp, Twitter). All are powerful pedagogical tools underpinned by educational principles.

## Applications

Adult learning theories, such as Knowles' principles of andragogy, inform the use of applications, with students identifying research topics. Unfortunately not everyone finds the didactic delivery styles of UpToDate, Medscape and journals appealing.

Alternatives like podcasts suit auditory Visual Auditory Kinesthetic model learners, offering journal article discussions and exam preparation support. Shorter podcasts, including case summaries and integrating social

media, may have greater longevity.<sup>1</sup> Unfortunately applications often lack interprofessional engagement and knowledge-acquisition assessment.

## Courses

Remote online courses (modular, webinars, seminars) can easily disseminate the latest specialty-specific advances. The convenience factor offered by flexible anytime, anywhere learning, coupled with the ability to study synchronously or asynchronously is great. Furthermore, incorporating online discussion allows in-depth concept exploration and encourages participation from nervous learners.<sup>2</sup>

Using online learning to complement face-to-face sessions, as in the flipped-classroom teaching model, is complementary to courses and recognised within undergraduate practical skills teaching. This model

could be applied to ultrasound-guided regional blockade and central venous catheterisation teaching, in addition to airway skills lab sessions or resuscitation courses.<sup>3</sup>

Successful massive open online courses (MOOCs) recommend using Mayer's principles of multimedia learning to enhance efficacy. Equally applicable to webinars and seminars, the embedding of humour within material is advocated.<sup>4</sup>

## Social-networking sites (SNSs)

SNSs dominate learners' social lives. Facebook has 2.6 billion monthly active users, YouTube and WhatsApp 2 billion each, and Twitter fewer at 326 million. While educators acknowledge that the use of social media enhances learning experiences, the majority do not use it within teaching. Those who do mostly post opinions or share videos via Facebook and Twitter.<sup>5</sup>

## Mayer's principles

- 1 Coherence: remove extraneous, distracting material.
- 2 Signalling: highlight key points.
- 3 Redundancy: use narration with graphics, limit text.
- 4 Spatial contiguity: keep linked text and visuals physically close.
- 5 Segmenting: present information in segments.
- 6 Multimedia: combine words and pictures.

YouTube educational videos largely encompass practical skills or pre-recorded talks, with visual information delivery by independent or embedded mechanisms. During design we should consider cognitive load theory, balancing the intrinsic, germane and extraneous load elements to favour long-term memory.<sup>6</sup>

WhatsApp exemplifies constructivist educational theory with collaborative learner contributions rather than student-facilitator interactions. Small group discussions between learners can be self-maintaining and adaptable over time. The non-hierarchical environment promotes engagement, with end-to-end encryption maintaining privacy. Nevertheless, teacher monitoring is essential to minimise topic deviation and address common misunderstandings.

## Video design recommendations

- 1 Keep it brief.
- 2 Complementary audio-visual elements.
- 3 Signal key concepts.
- 4 Enthusiastic, conversational style.
- 5 Promote active learning with questions or interactive elements.

Twitter incorporates humanist and behaviourist theories. Natural human eagerness to learn is facilitated through post comments enabling development over time. Behavioural changes result from feedback gained through comments and retweets, with clinicians reporting that relevant research shared via social media has changed the way they do or intend to practise.<sup>7</sup>

## Conclusions

Remote learning within medical education is increasingly popular and important. Applications, courses and social-networking sites are powerful remote learning tools, and considering relevant educational principles improves success.



Despite needing to address issues like cyberbullying, the digital divide and quality-assurance difficulties, the use of applications, courses and social-networking sites can progress remote teaching and learning experiences. It certainly is an exciting and novel time for medical education, with wonderful opportunities to share with and learn from others all around us.

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