

Visual Media in Medical Education

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The Challenge

How knowledge is communicated and exchanged in medical education has transitioned to include online, asynchronous formats. Enter the rapidly evolving scholarly field of visual media, defined as the use of digital images and interfaces to transmit concepts, ideas, or data. Yet challenges remain, which include extending educators' understanding of the content and use of visual media, as well as the skills needed for digital fluency. Additional challenges to be resolved include mechanisms for peer review, institutional support, indexing and organization of content, measuring learner outcomes, and determining roles of visual media in academic advancement. This Rip Out summarizes the visual media landscape with practical guidance on selection, creation, and use.

What Is Known

Educators have long understood that processing content both linguistically and visually optimizes learning. The use of online visual media has become popular among medical trainees, who expect high-quality educational materials.¹ Types of visual media include visual/graphic abstracts (a single, concise, pictorial summary of the main findings of an article or concept); infographics (a collection of imagery, charts, and minimal text providing an easy-to-understand overview of a topic); graphic medicine (comics, pictorial novels); and "tweetorials" (didactic threads on social media such as Twitter). While entertaining and accessible, these visual formats intrinsically employ learning principles such as spaced repetition, interleaving, active learning, deep processing, and knowledge distillation to strengthen learning.² Professional groups have formed around each type of media with conferences and online how-to resources.

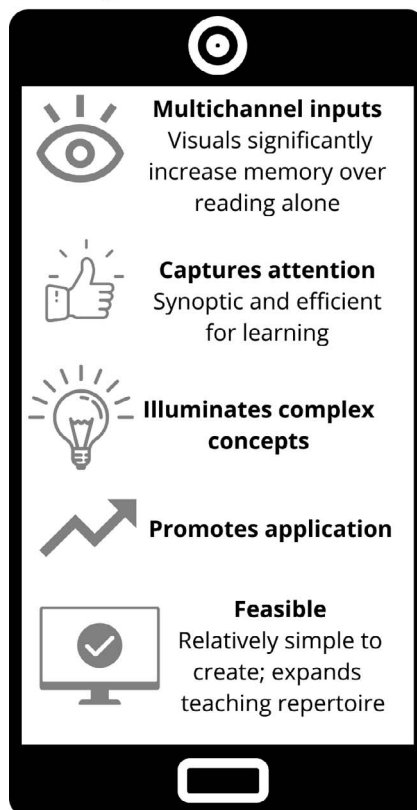
How You Can Start TODAY

1. **Pinpoint content to optimize via visual media:** What areas do your learners find most challenging? Would the content that you teach benefit from being reinforced or targeted from multiple perspectives (a known strength of visual media)? Start with a specific educational need that would benefit from a visual approach.

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Editor's Note: There is strong evidence that visuals, such as visual abstracts and graphic medicine, support learning. Visuals can complement a narrative or stand alone. This Rip Out: Visual Media in Medical Education Series focuses on the emerging field of visual media in medical education, to guide GME educators' selection and use of visual media.

Why visual media?



2. **Select a visual strategy:** As with any educational strategy, learning goals should drive the choice of media to use. For example, tweetorials are useful if you intend to deconstruct a single subject or question; infographics or visual abstracts can effectively summarize a journal article.
3. **Identify online platforms:** Ask your learners and colleagues which online platforms and formats they use to find those most relevant to your educational goals and interests. There may be ready-made materials to meet your needs! For example, Twitter has become a central hub for tweetorials and sharing of digital abstracts and infographics; Instagram remains a primary repository for graphic medicine; and educational videos are mostly housed on YouTube.
4. **Find a visual media virtual community and role models:** Virtual communities reside on various social media platforms. These enable you to find colleagues, creators, and content types that resonate with your educational and professional goals and promote

further reflection about why certain visual media are more or less effective. Deliberate and regular engagement with these communities expands your understanding of the visual educational landscape and your ability to adopt new formats and platforms.

5. **Become a curator:** Collect, collate, and share digital visual educational resources, virtually and with local learners. While you can save and share content through traditional venues such as email, “chalk talks,” and lectures, Twitter, Instagram, and YouTube allow users to save and share content within their respective platform.

What You Can Do LONG TERM

1. **Create your own material:** Once you have selected a visual strategy, produce content and share with your learners and chosen community. The barriers to entry are surprisingly low: technical design skills require the ability to use existing software on your desktop or smartphone applications (eg, PowerPoint). Many free or affordable services streamline the creative process, such as Canva (for graphic design) and The Noun Project (for ready-to-use images).
2. **Recognize that teaching with visual media is still teaching:** Effective teaching requires cultivation and integration of pedagogical skills (eg, knowledge synopsis and crystallization), which applies to digital media as well. An effective tweetorial succinctly distills narratives or complex concepts. Well-crafted visual abstracts or summary videos augment journal articles and allow for focused learning. Graphic medicine narratives still have a beginning, middle, and end.
3. **Use metrics to analyze user behavior:** Learning efficacy is difficult to measure, whether in-person or in a digital educational milieu. While social media platforms and learning management systems suffer from the same limitations, they provide real-time, data-rich analytics that track user engagement. Examples include time spent watching a video, interactions with an infographic, or the number of times a tweetorial was shared across the platform.
4. **Build an educational brand:** Users of your visual content will associate your digital presence with your profile as an educator, whether you intended this association or not, and an educational “brand” emerges. What does the virtual community expect from my visual output? How do those expectations reflect my own educational goals? Answering these questions as you create content solidifies your educator brand, expands online reach, and enhances your and others’ learning.



5. **Incorporate visual media into your academic advancement package:** Institutions increasingly recognize the contribution of social media productivity for career advancement.³ As you produce your own content, view this as an academic teaching activity like any other. Enunciate teaching objectives, deliberately track impact measures, seek out opportunities for partnering with professional societies or journals, and collate all into a professional document such as a CV or promotion packet.

References and Resources for Further Reading

1. Bernstein E, Bhardwaj N, Pfoh ER, Yudelevich E. A nationwide survey of educational resource utilization and perception among internal medicine residents [published online ahead of print January 27, 2021]. *J Gen Intern Med*. doi:10.1007/s11606-020-06441-6
2. Brue AC. Why is a cow? Curiosity, tweetorials, and the return to why. *N Engl J Med*. 2019;381(12):1097–1098. doi:10.1056/NEJMp1906790
3. Cabrera D, Vartabedian BS, Spinner RJ, Jordan BL, Aase LA, Timimi FK. More than likes and tweets: creating social media portfolios for academic promotion and tenure. *J Grad Med Educ*. 2017;9(4):421–425. doi:10.4300/JGME-D-17-00171.1



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