



# Gastroenterological Education: Do Digital Data Depositories Make a Difference?

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## Abstract

During the three or more years of GI Fellowship, trainees acquire a large percentage of the specialized medical knowledge that they will carry throughout their careers. It is thus important to foster a commitment to continuous learning and practices during fellowship intended to extend beyond training. Since relying solely on traditional textbooks is no longer adequate, numerous valuable resources exist as supplementary aids for learning and studying. Nevertheless, lacking a practical structure to navigate the sheer volume of these resources can be overwhelming. The sources of knowledge in gastroenterology during the digital age include published guidelines, eBooks, podcasts, board examination preparation, mobile applications, and engagement with social media. This article seeks to offer trainees and early career gastroenterologists' guidance for effectively utilizing diverse digital tools for ongoing and lifelong education.

**Keywords** Education · Gastroenterology · Social media

## Introduction

One of the most difficult aspects of traineeship is finding dedicated, focused learning time throughout the day in addition to busy hospital tasks, calls, and family or personal and self-care responsibilities. We as physicians live in a hyper-connected digital era with learning habits and attention spans that are fundamentally different from those of prior generations [1, 2]. Where do I find that 45 min of dedicated focused reading and/or other ways of learning time per day? Is it as simple as reading on the subway or listening to a podcast on the drive to work? These discrepancies in fellows' available time and capacity to learn differ among different fellowship programs. To this end, programs should acknowledge and help balance time for education and research against necessary clinical duties.

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## Digital Resources

We will now describe the many digital inputs that can increase further the education process through fellowship and beyond. We describe multiple learning modes since this seems to be the most successful learning practice. As an example, in a study of medical student's preferences for particular modes of information presentation using a visual, auditory, reading/writing, kinesthetic (VARK) questionnaire showed that the majority (63.8%) had multimodal learning rather than unimodal (36.1%) learning preferences [3]. Examples of digital learning resources follow:

## Society Guidelines

Recognizing this preference, GI trainees should first become familiar with all major society guidelines using multimodal learning. An effective approach involves downloading guidelines from prominent organizations such as the ACG, AGA, AASLD, and ASGE onto a PDF management system, enabling quick identification of publication years, covered topics, multi-society guidelines, and recent updates. Furthermore, the system enables the prompt addition of new guidelines released during training. Reading these guidelines is done over time; a PDF organizer can facilitate easy tracking of progress through

highlighting and annotations [4]. An essential cornerstone for effectively managing these resources is a reliable PDF organizer such as (1) GoodNotes, (2) Evernote, or (3) Notability. These organizers facilitate downloading PDFs, annotating documents seamlessly synchronized across multiple devices such as mobile phones, tablets, and laptops. Having these PDFs readily available on your devices enables quick document searching using shortcuts such as “Control+F” on the Windows OS or “Command+F” on Mac OS. Investing in a tablet stylus, such as the Apple Pencil, not only preserves tactile learning, but also promotes sustainable and efficient note-taking practices [4].

### Podcasts

Podcasts are another useful learning modality. Everyone has some form of commute to the hospital or office. There are several high-quality podcasts that vary in length to fit your learning style and attention span. Some of these include “Liver Talks,” Evidence-Based GI,” “The Emoroid Digest,” “GI Pearls,” “Listen In: GI Endoscopy,” and AGA’s “Small Talk, Big Topics.” Podcasts cater to auditory learners and offer a subtle respite from continuous screen engagement. Interestingly, Podcast users experience higher gain of knowledge and greater satisfaction than text-based learners, according to a randomized control trial [5].

### Social Media

No compilation of digital era resources would be comprehensive without emphasizing mobile applications and social media platforms. Although GI trainees are well acquainted with the indispensability of MDCalc and UpToDate in their daily practice, there are additional noteworthy options. Specifically, the app from the National Comprehensive Cancer Network (NCCN) provides easily accessible and updated guidelines. It is important to be familiar with all GI-relevant NCCN guidelines. Furthermore, ASGE’s “GI Leap” app is a useful education hub that features informative lectures and endoscopy videos including SUTAB “Tip of the Week” narrated by experts in the field.

X (formerly known as Twitter) is a powerful resource for any trainee. Get started by searching the tags #GITwitter, #LiverTwitter, or #MedTwitter to access the latest content within the field and quality discussions from leading authorities. In fact, many leading GI journals such as *Gastrointestinal Endoscopy* (GIE) and *Clinical Gastroenterology and Hepatology* (CGH) have a robust social media presence, often posting the latest research content with active discussions.

### Textbooks

Though textbooks alone may not be exhaustive for learning, their value remains irreplaceable. These include classic texts such as (1) Sleisenger and Fordtran, (2) Zakim and Boyer's Hepatology, (3) Cotton and William's Practical Gastrointestinal Endoscopy, (4) Gastroenterology Clinical Focus (featuring integrated QR codes linked to pertinent society guidelines), and (5) Yamada's Atlas of Gastroenterology. Having these books in electronic format enables convenient chapter reading and content searches on your phone, especially during a busy clinical practice. While much of this material indirectly prepares you for board exams, there are a few noteworthy resources explicitly focused on board studying. These include Brennan Spiegel's *Acing the GI Board Exam*, ACG's Online Self-Assessments, AGA's Digestive Diseases Self-Education Program (DDSEP) Plus, and William M. Steinberg's *Board Review in Gastroenterology* [4].

### Importance of Digital Breaks

It is extremely important to be able to take digital breaks and, more importantly, social media abstinence, since these pastimes serve as a necessary distraction at times, offsetting the mind from work and hard days, but eventually, social media can waste crucial time. To find time for learning, by default, all notifications on your devices should be minimized to zero, and there should be a stratified separate space for your learning versus for your personal and work communications in the digital world. Organize time, organize yourself, and take care of yourself physically and emotionally. Find space, and motivation, starting small, and changing the environment may be necessary to utilize dead time. Remind yourself of the time when you were most productive or could read for hours, recap those habits, and recreate that environment.

Break learning into small chunks—small, focused time learning is more fruitful than uninterrupted longer periods. Minimalism and decluttering may create huge emotional, mental, and real space for you to work, grow, and learn and only spend quality time and focus on what's giving you cement and bricks for building the wall. Allocate a block of time during the day and avoid any commitments for that designated period (Table 1).

**Table 1** Digital resources for the lifelong GI learner

PDF organizers	GoodNotes Evernote Notability
eBooks	Slisenger and Fordtran’s Gastrointestinal and Liver Disease Zakim and Boyer’s Hepatology: A Textbook of Liver Disease Gastroenterology Clinical Focus Cotton and William’s Practical Gastrointestinal Endoscopy: The Fundamentals Yamada’s Atlas of Gastroenterology
Podcasts	The Emoroid Digest GI Pearls Podcast Liver Talks: The Liver Network Podcast Listen In: GI Endoscopy Evidence-Based GI AGA Small Talk, Big Topics
Board study	Acing the GI Board Exam Series by Brennan Spiegel ACG Online Self-Assessments DDSEP Plus Steinberg Board Review
Apps	MDCalc UpToDate National Comprehensive Cancer Network (NCCN) GI Leap

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## Conclusions

In summary, GI fellowship is akin to a marathon rather than a sprint. The objective of learning throughout fellowship extends beyond preparing for the board exam upon graduation. Continuous learning is paramount, and achieving this involves integrating new and diverse resources into your educational journey.

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## Declarations

**Conflict of interest** All authors have no relevant conflict of interests.

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