

2019-09-19: Applying the Science of Learning to Health Professions Education

The following links were shared during the chat:

- College students think they learn less with an effective teaching method <https://arstechnica.com/science/2019/09/college-students-think-they-learn-less-with-an-effective-teaching-method/#p3>
- Active Learning Strategies <https://teaching.berkeley.edu/active-learning-strategies>
- Active learning increases student performance in science, engineering, and mathematics <https://www.pnas.org/content/111/23/8410>
- Make It Stick <https://www.amazon.com/Make-Stick-Science-Successful-Learning/dp/0674729013>
- Studying 101: Study Smarter Not Harder <https://learningcenter.unc.edu/tips-and-tools/studying-101-study-smarter-not-harder/>
- Active Study Techniques <https://fye.dixie.edu/active-study-techniques/>
- Peak: Secrets from the New Science of Expertise <https://www.amazon.com/Peak-Secrets-New-Science-Expertise-ebook/dp/B011H56MKS>



MedEd Chat @MedEdChat9 hours ago

Welcome to the #mededchat (US) I am your moderator for the next hour @alliance4clined #meded Big thanks to @BJBRoman for guest hosting tonight!



Gary Beck Dallaghan @GLBDallaghan9 hours ago

@MedEdChat @Alliance4ClinEd @BJBRoman Gary here in North Carolina! Excited for this topic tonight! #mededchat



Brenda Roman @BJBRoman9 hours ago

@MedEdChat @Alliance4ClinEd Checking in from Dayton! #Mededchat



MedEd Chat @MedEdChat9 hours ago

The #mededchat topic & questions will be announced in a moment...for now, please introduce yourselves #meded



MedEd Chat @MedEdChat9 hours ago

If you are tuning in to the #mededchat, remember to use the #mededchat hashtag and try to answer with the Topic numbers (T1, T2, T3)



Heather Paladine @paladineh9 hours ago

Hi, it's Heather from NYC, finally staying up late enough for #mededchat



MedEd Chat @MedEdChat9 hours ago

We will assume that all of your tweets during #mededchat are your own during this hour unless otherwise stated #meded



MedEd Chat @MedEdChat9 hours ago

T1 about to come up in a few moments #meded #mededchat



MedEd Chat @MedEdChat9 hours ago

Topic 1: What are best practices to prepare for active learning sessions? #mededchat #meded #medstudents



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@MedEdChat T1 I would start out by looking at the goals of the event then identify how best to deliver the content #mededchat



Brenda Roman @BJBRoman8 hours ago

T1. Sessions must be constructed using methods that utilize learning methods based on science--not what has been done for centuries. Use methods that support #retrievalbasedlearning #mededchat



Heather Paladine @paladineh8 hours ago

@MedEdChat I like to find resources that the learners can use in the future - review articles, guidelines, algorithms - and use them as tools during the session #mededchat



MedEd Chat @MedEdChat8 hours ago

RT @paladineh: @MedEdChat I like to find resources that the learners can use in the future - review articles, guidelines, algorithms - and...



Gary Beck Dallaghan @GLBDallaghan8 hours ago

T1 This is an interesting blog post about being unapologetic with students about active learning. <https://t.co/PlzjOYOco4> #mededchat #medstudents #meded



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan @MedEdChat T1 Yes, must use good instructional design. But the learning methods must be based on evidence that supports learning by students, not simply methods, like lectures, that can "transmit" knowledge from the "expert" to the learner, but no ability to see what sticks. #mededchat



MedEd Chat @MedEdChat8 hours ago

RT @GLBDallaghan: T1 This is an interesting blog post about being unapologetic with students about active learning. <https://t.co/PlzjOYOco4...>



Deb Simpson @debsimpson38 hours ago

T1 - Starting thinking about interactivity by understanding what/where are the gaps in learners ability to "apply" and "think with" whatever the topic is about #MedEdChat #interactivelearning



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@BJBRoman @MedEdChat T1 But on occasion do you think transmission of knowledge may be necessary to establish a foundation? #mededchat #meded



MedEd Chat @MedEdChat8 hours ago

RT @debsimpson3: T1 - Starting thinking about interactivity by understanding what/where are the gaps in learners ability to “apply” and “th...



Brenda Roman @BJBRoman8 hours ago

T1 Learning occurs when sessions challenge, not when they are easy. #growthmindset #mededchat We are lecture free @WSUBoonshoftSOM



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan @MedEdChat T1 Possibly--but why can't that be done with a textbook assignment in advance, and save the face-to-face time to have students apply their knowledge to problem solve? #mededchat



Gary Beck Dallaghan @GLBDallaghan8 hours ago

T1 Berkeley has some good active learning ideas in this blog post <https://t.co/0JoDS7QYBu> #mededchat #meded #medstudents



MedEd Chat @MedEdChat8 hours ago

RT @GLBDallaghan: T1 Berkeley has some good active learning ideas in this blog post <https://t.co/0JoDS7QYBu> #mededchat #meded #medstudents



MedEdBot @MedEdBot8 hours ago

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RT @GLBDallaghan: T1 Berkeley has some good active learning ideas in this blog post <https://t.co/0JoDS7QYBu> #mededchat #meded #medstudents



Brenda Roman @BJBRoman8 hours ago

@SSawning @WSUBoonshoftSOM T1 We had faculty champions--and started moving away from lectures years before we went lecture free. Most of our faculty now can't imagine ever giving a lecture again! #mededchat



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@BJBRoman @MedEdChat T1 It can. I just don't want to shut out an option, particularly if the lecturer is engaging and not a talking head #mededchat #meded



Heather Paladine @paladineh8 hours ago

@GLBDallaghan Thanks, this has a lot of great active learning ideas! #mededchat



V W @DrV_NeoMD8 hours ago

@GLBDallaghan @MedEdChat #ThankYou for #sharing Very applicable to #MedEd #MedEdChat



Jen Readlynn, MD @jenreadlynn8 hours ago

Some great active learning tips! Will need to go fix some things...#mededchat



V W @DrV_NeoMD8 hours ago

RT @GLBDallaghan: T1 This is an interesting blog post about being unapologetic with students about active learning. <https://t.co/PlzjOYOco4...>



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan @MedEdChat T1 I would argue that an engaging lecturer would likely make a fabulous facilitator for #Peerinstruction #mededchat



Loree @LandOfLoree8 hours ago

RT @debsimpson3: T1 - Starting thinking about interactivity by understanding what/where are the gaps in learners ability to “apply” and “th...



Endo Dr. Barbie @PedsEndoChick8 hours ago

@MedEdChat T1 Most importantly, you have to set up the culture that it’s okay to be wrong, and that the process of discussion is how you learn. I feel this is especially difficult to do in #MedEd bc of the high achieving people who aren’t used to being wrong. #mededchat



MedEd Chat @MedEdChat8 hours ago

T1 In considering non-active methods of delivery of content, what else besides lectures do you recommend to build the foundation? #mededchat #meded #medstudents



MedEd Chat @MedEdChat8 hours ago

RT @PedsEndoChick: @MedEdChat T1 Most importantly, you have to set up the culture that it’s okay to be wrong, and that the process of discu...



Brenda Roman @BJBRoman8 hours ago

T1 Here is a good article: Active learning increases student performance in science, engineering, and mathematics <https://t.co/FJ3qe7pc2R> #mededchat



MedEd Chat @MedEdChat8 hours ago

Topic 2: What are best practices to learn following an active learning session? #mededchat #meded #medstudents



MedEd Chat @MedEdChat8 hours ago

RT @BJBRoman: T1 Here is a good article: Active learning increases student performance in science, engineering, and mathematics <https://t...>



Brenda Roman @BJBRoman8 hours ago

@debsimpson3 @GLBDallaghan @MedEdChat T1 You are absolutely right! Being a good "guide on the side" is much more challenging than being a good "sage on the stage" but rewards are far greater as a faculty member! #mededchat



Gary Beck Dallaghan @GLBDallaghan8 hours ago

T2 After any learning session I always advised #medstudents to quiz themselves before studying to see what they recalled. Use objectives of the session as the quiz...quick and simple and insightful #mededchat #meded



Brenda Roman @BJBRoman8 hours ago

@PedsEndoChick @MedEdChat T1 Absolutely! Students must feel safe in the room and understand the value of having a #growthmindset #mededchat



Jennifer Spicer @JenniferSpicer48 hours ago

@MedEdChat T1 I think that short videos (Khan Academy style) or podcasts are a great way to build the base #mededchat #meded



MedEd Chat @MedEdChat8 hours ago

RT Deb Simpson @debsimpson3 Replying to @MedEdChat Read with trigger/thought questions that stimulate connections and curiosities (and responses of course). Thinking about Make it #MakeitStick #mededchat #meded



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan T2 Self-quizzing is great! Also take time to organize the material in a "different" way, such as concept maps or creating a chart. #mededchat



Jen Readlynn, MD @jenreadlynn8 hours ago

RT @BJBRoman: T1 Here is a good article: Active learning increases student performance in science, engineering, and mathematics <https://t...>



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@BJBRoman T2 Wouldn't you consider that to be a bit on the passive side as well? They help, but I've also suggested writing the concept map from memory a couple days later. #spacedretrieval #mededchat #meded



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan T2 We are finding that students often need some "organization" guiding right after a session--might be listing what they need to work on more! You are correct, spacing out retrieval is the best--but if they were fuzzy on the concepts in the first place, hard to do. #mededchat



Gary Beck Dallaghan @GLBDallaghan8 hours ago

T2 Even though these tips are fairly basic, they are bread and butter ideas to help #medstudents <https://t.co/LhB2E6ceG5> #mededchat #meded



Gary Beck Dallaghan @GLBDallaghan8 hours ago

T2 I also found this list of ideas for active study techniques <https://t.co/VFfcWQT42N> #mededchat #meded



MedEd Chat @MedEdChat8 hours ago

RT @GLBDallaghan: T2 Even though these tips are fairly basic, they are bread and butter ideas to help #medstudents <https://t.co/LhB2E6ceG5...>



MedEd Chat @MedEdChat8 hours ago

RT @GLBDallaghan: T2 I also found this list of ideas for active study techniques <https://t.co/VFfcWQT42N> #mededchat #meded



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan T2 Most students come into medical school with study habits that are not necessarily effective, as material was presented to them in bulleted ways on PowerPoints, and then asked to recall information for exams. #Cognitiveillusions are difficult to change though! #mededchat



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@BJBRoman T2 What's your take on using flashcards? #medstudents swear by Anki. Is it better to make your own (and run the risk of not using them) or use downloaded decks? #mededchat #meded



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan T2 They need to be reinforced by faculty. We have students read "Make it Stick" for orientation and use that book as the basis to teach the mechanics of #teambasedlearning and #peerinstruction #mededchat



Brenda Roman @BJBRoman8 hours ago

@GLBDallaghan T2 Our students love Anki also. They are great for spaced repetition. As long as students combine with good self-quizzing, I think they are great study tools. #mededchat



MedEd Chat @MedEdChat8 hours ago

Topic 3: What tips on studying in an active learning curriculum do you give #medstudents? #mededchat #meded



Endo Dr. Barbie @PedsEndoChick8 hours ago

@GLBDallaghan T2 I'm a huge fan of making study guides. In med school, I learned a lot from classmates that framed things in different ways in their own study guides. #mededchat



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@PedsEndoChick T2 Interesting. How did you share the study guides? What all did it include? #mededchat #meded



MedEd Chat @MedEdChat8 hours ago

RT @PedsEndoChick: @GLBDallaghan T2 I'm a huge fan of making study guides. In med school, I learned a lot from classmates that framed thing...



Gary Beck Dallaghan @GLBDallaghan8 hours ago

@MedEdChat T3 I always recommended using question banks, especially if they have rationales for right and wrong responses. Involves recall as well as interleaving #mededchat #meded



Brenda Roman @BJBRoman8 hours ago

@MedEdChat T3 Read Make It Stick by Peter C. Brown <https://t.co/WFsXQ50vZs> via @amazon #mededchat



Deb Simpson @debsimpson38 hours ago

T3 Study Strategy Tips are great as triggers. I start it off with a tip-like infographic and then ask "Why does this work"? What tip is better for long-term retention? For application to your patients' care? To increase your efficiency and effectiveness as a learn? #MedEdChat <https://t.co/ids7JOczyR>



MedEd Chat @MedEdChat8 hours ago

RT @BJBRoman: @MedEdChat T3 Read Make It Stick by Peter C. Brown <https://t.co/WFsXQ50vZs> via @amazon #mededchat



MedEd Chat @MedEdChat8 hours ago

RT @debsimpson3: T3 Study Strategy Tips are great as triggers. I start it off with a tip-like

infographic and then ask "Why does this work..."

Brenda Roman @BJBRoman8 hours ago



@GLBDallaghan @MedEdChat T3 Question banks are fantastic for encoding knowledge as using #retrievalbasedlearning but still have to understand foundations for using questions. We have found that students who rely only on question banks end up not truly understanding the content. #mededchat

Brenda Roman @BJBRoman8 hours ago



T3 LOVE THIS! Thanks Deb #mededchat

Paul Haidet @myheroistrane8 hours ago



T3: Deliberate practice is key. To study for mastery and understanding, do thought experiments with core concepts. Stretch yourself in order to build mental representations. #mededchat <https://t.co/wspE0nnveN>

Gary Beck Dallaghan @GLBDallaghan8 hours ago



@BJBRoman @MedEdChat T3 Absolutely. They are good sources of retrieval, but not the sole tool to use. #mededchat #meded

MedEd Chat @MedEdChat8 hours ago



RT @myheroistrane: T3: Deliberate practice is key. To study for mastery and understanding, do thought experiments with core concepts. Stre...

Claudia Gomez, MD. @cpaolag8 hours ago



RT @debsimpson3: T3 Study Strategy Tips are great as triggers. I start it off with a tip-like infographic and then ask "Why does this work..."

Gary Beck Dallaghan @GLBDallaghan8 hours ago



@BJBRoman @MedEdChat @amazon T3 Do you require this of #medstudents? #mededchat #meded

MedEd Chat @MedEdChat8 hours ago



We have about 5 more minutes left in our discussion. Please feel free to give some final thoughts #meded #mededchat

Brenda Roman @BJBRoman8 hours ago



@GLBDallaghan @MedEdChat @amazon T3 Yes, we have our students read this book prior to starting orientation--it becomes the advanced assignment that we use to then teach TBL and Peer Instruction. #mededchat

Brenda Roman @BJBRoman8 hours ago



#mededchat final thought: we can no longer deliver content using methods that are not evidenced based. We must practice what we preach!

Endo Dr. Barbie @PedsEndoChick8 hours ago



@GLBDallaghan T2 This was nearly 10 years ago now, but my understanding is that the current students continue to do something similar. #mededchat

Gary Beck Dallaghan @GLBDallaghan8 hours ago



Final Thought: Being a guide on the side to teach can be daunting, but being transparent and saying "I don't know" helps #medstudents see we all have a lot to learn #mededchat #meded

Deb Simpson @debsimpson38 hours ago



Final thoughts about interactivity for learning. Was just pondering how we support spacing, interwoven, mixed retrieval from events like #MedEdChat? Do we revisit topics at subsequent chats? Do we open and scan the chat feed from @MedEdChat the following day? Ideas? <https://t.co/F6gubQSakF>

MedEd Chat @MedEdChat8 hours ago



RT @debsimpson3: Final thoughts about interactivity for learning. Was just pondering how we support spacing, interwoven, mixed retrieval f...

Brenda Roman @BJBRoman8 hours ago



#mededchat I interviewed an applicant for medical school last week, and when discussing our lecture free curriculum, her comment was "I can't wait to read textbooks again. I was home schooled and had to figure out what was important." In college, learning was passive.

MedEd Chat @MedEdChat8 hours ago



Join us again next week at 9 pm Thursday. Don't forget to suggest topics by DM or email #meded #mededchat

MedEd Chat @MedEdChat8 hours ago



That's a wrap...I will post the #mededchat transcript tomorrow morning on <https://t.co/mJivoK9NyX> on the Resources page. Thanks everyone for participating! #meded

MedEd Chat @MedEdChat8 hours ago



@debsimpson3 Brilliant idea. May be time to go back over topics to see how we could build off of those (reminding people to turn back time to recall prior discussions)! #mededchat #meded

MedEd Chat @MedEdChat8 hours ago



RT @BJBRoman: #mededchat I interviewed an applicant for medical school last week, and when discussing our lecture free curriculum, her com...

Michaela Jansen @ProfMJansen7 hours ago



T1: Here is a pretty new publication ... students perceive active learning as less efficient. The results in the study prove them wrong. #mededchat <https://t.co/KHV6A61dZa>

Karthik Ponnappan @kpwanderer6 hours ago



RT @debsimpson3: T3 Study Strategy Tips are great as triggers. I start it off with a tip-like infographic and then ask "Why does this work..."

Stephanie Starr, MD @StephRStarr6 hours ago



RT @debsimpson3: T3 Study Strategy Tips are great as triggers. I start it off with a tip-like infographic and then ask "Why does this work..."

Ortho" Facts"* (group of orthopaedic MDs) @Orthofacts6 hours ago



RT @debsimpson3: T3 Study Strategy Tips are great as triggers. I start it off with a tip-like infographic and then ask "Why does this work..."

Brian may @Bmayzing6 hours ago



RT @GLBDallaghan: T1 This is an interesting blog post about being unapologetic with students about active learning. <https://t.co/PlzjOYOco4...>

Suneet Singh @txterp986 hours ago



RT @debsimpson3: T3 Study Strategy Tips are great as triggers. I start it off with a tip-like infographic and then ask "Why does this work..."



Ayesha Mian @ayesha_mian12 hours ago

@iasp2019 President @MuradMKhan representing Pakistan #iasp2019. He chalks out our suicide prevention agenda. @AKUGlobal @AdilHaiderMD @AkuPsychiatry @MedEdChat #medtwitter #MedEd chat



AKUPsychiatry @AkuPsychiatry2 hours ago

RT @ayesha_mian1: @iasp2019 President @MuradMKhan representing Pakistan #iasp2019. He chalks out our suicide prevention agenda. @AKUGlobal...



AKUPsychiatry @AkuPsychiatry2 hours ago

RT @ayesha_mian1: @iasp2019 President @MuradMKhan representing Pakistan #iasp2019. He chalks out our suicide prevention agenda. @AKUGlobal...



Charmain @champs_champs2 hours ago

RT @ayesha_mian1: @iasp2019 President @MuradMKhan representing Pakistan #iasp2019. He chalks out our suicide prevention agenda. @AKUGlobal...



Sanober @AishaSChachar2 hours ago

#SuicidePrevention in #Pakistan @ArifAlvi @ImranKhanPTI @pid_gov @AsmaHumayun @MuradMKhan @IASPinfo @ayesha_mian1 @Ali_Madeeh



@FlatWhiteNZan hour ago

Let's see how smart you Dr's are. This is my CT. What's going on? #Doctor #MedEd #MedEdchat #Medical <https://t.co/lpRmAFvR7Y>



Sana A Siddiqui @DrSanaASiddiqui39 minutes ago

RT @ayesha_mian1: @iasp2019 President @MuradMKhan representing Pakistan #iasp2019. He chalks out our suicide prevention agenda. @AKUGlobal...



ShireenScheherzadeNajam @Sheherzade_Khan19 minutes ago

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[@ayesha_mian1](#) 1.7K



[@myheroistrane](#) 1.4K