



Transforming Constraints into Opportunities

Re-envisioning Medical Education

**Webinar IV –
Students' Perspective**

A Global Community – We're in this together.

116 Medical School Deans and Directors

132 Faculty Members

48 Healthcare Directors/CEOs

21 Instructional Designers/Educational Specialists

25 Students from 13 countries spanning 4 continents

Introductions and disclosures...



Peter Horneffer, MD

- Executive Dean
All American Institute
for Medical Sciences, JM
- Director
Medical Education Programs
Lecturio.com
- Cardiac Surgeon,
Sinai Hospital
Baltimore, Maryland



Atsusi "2c" Hirumi, PhD

- Professor
Instructional Design & Technology
Learning Science | Medical Education
College of Education | College of Medicine
University of Central Florida
- Professor Extraordinary
Dept. of Financial Accounting
College of Accounting Sciences
University of South Africa (UNISA)



Ben Daines

- MD/MBA Candidate, Class of 2023
University of Central Florida
College of Medicine
- President
IMPEL Hub Corporation
Impelhub.com

A black and white photograph of a crowded hospital ward. Numerous patients are lying in metal-framed beds arranged in rows. The room is dimly lit, with light coming from windows or doors in the background. The overall atmosphere is one of a busy, crowded medical facility.

Epidemics & Pandemics Lead to Reform

- Cholera – Improved sanitation and spurred vaccine development
- 1918-1919 Influenza epidemic (Spanish Flu) highlighted economic disparities. Led to improved housing and healthcare.



COVID 19

What will be its Silver Lining?

Webinar I – Evidence-Based Education

Webinar II – Active Student-Centered Learning

Webinar III – MedED in 21st Century



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Webinar IV – Students' Perspective

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Thread	First and Last Name	Medical School	Year of Graduation
Thread 1 Evidenced-based education and student-centered learning			
1A	Spencer Lessans (Moderator)	University of Central Florida-College of Medicine, USA	Class of 2022
1A	María Valderrama López	Universidad Autónoma de Madrid, Spain	Class of 2025
1A	Kubwimana Pacifique	University of Rwanda, Rwanda	Class of 2021
1A	Eslam etayeb	University of Tripoli, Libya	Class of 2024
1A	Shenika Vilton	St. George's University-School of Medicine, Grenada	Class of 2022
1B	Katie Ballantyne (Moderator)	University of Central Florida-College of Medicine, USA	Class of 2022
1B	Shiran Dana	Florida International University, USA	Class of 2023
1B	Amin Yahya	China Medical University, China	Class of 2022
1B	Nakaye Jovia	University of Debrecen, Hungary	Class of 2025
Tread 2 Re-envisioning MedED			
2A	Patrick Kroenung (Moderator)	University of Central Florida-College of Medicine, USA	Class of 2022
2A	Ethan Hartman	University of Central Florida-College of Medicine, USA	Class of 2021
2A	Vivian V. Altieri De Jesús	University of Puerto Rico-School of Medicine, Puerto Rico	Class of 2021
2B	Julia Nedimyer (Moderator)	University of Central Florida-College of Medicine, USA	Class of 2022
2B	Sruthy Usha	Bukovinian State Medical University, Ukraine	Class of 2021
2B	Rachna Sannegowda	University of Central Florida-College of Medicine, USA	Class of 2023
2B	Denisha Thomas	Louisiana State University-Health Sciences Center-Shreveport, USA	Class of 2022
Tread 3 Teachnology and Learning Systems			
3A	Bradley Richey (Moderator)	University of Central Florida-College of Medicine, USA	Class of 2022
3A	Takondwa Rex Namalima	University of Malawi-College of Medicine, Malawi	Class of 2020
3A	Nathaniel Foster	Virginia College of Osteopathic Medicine: Virginia Campus, USA	Class of 2021
3A	Miguel Rangel	Universidad Autónoma de San Luis Potosí, Mexico	Class of 2020
3A	Audric Darian	University of Central Florida-College of Medicine, USA	Class of 2021
3B	Michael Rohr (Moderator)	University of Central Florida-College of Medicine, USA	Class of 2020
3B	Zaithwa Matemvu	University of Malawi-College of Medicine, Malawi	Class of 2020
3B	Subina Saini	Medical University of South Carolina, USA	Class of 2024
3B	Diksha Dudeja	All American Institute of Medical Sciences, Jamaica	Class of 2023

Webinar IV Panelists

- 25 Students
- 18 Schools
- 13 Countries
- 4 Continents

Agenda

Time (EST)	Event	Description
12:00-12:05	Large Group Session	Introduction, Session Overview
12:05-12:25	Small Group Panel 1	6 simultaneous panels (2 of each thread)
12:25-12:30	Break	Panelists move to rooms
12:30-12:50	Small Group Panel 2	2 nd session
12:50- 12:55	Break	Panelists move to rooms
12:55-1:15	Small Group Panel 3	3 rd session
1:15- 1:30	Large Group Debrief	Summary, Reflection and Next Steps

Small Group Panel Discussions

Webinar I – Transforming the Current Reality

Table 1. Comparison of EBME with EBM Correlates

EBM	EBME
1. Articulate Patient's Needs	Assess Educational Needs
2. Ask Questions	Ask Questions
3. Acquire & Appraise Evidence	Acquire & Appraise Evidence
4. Apply Evidence	Apply Evidence
5. Assess Evidence	Assess Evidence

Webinar II – The Future is Now

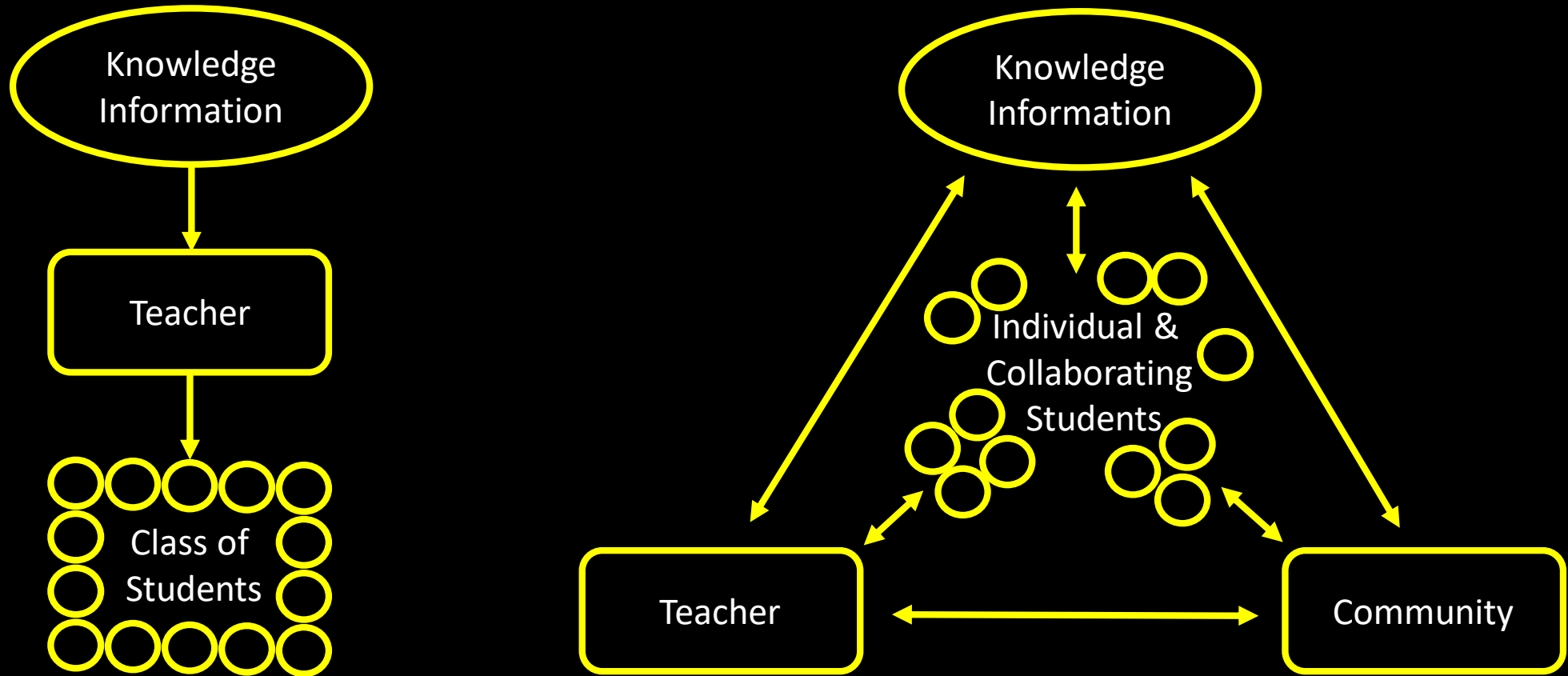


Figure 1. Comparison of Teacher-Directed Learning vs. Student-Centered Learning (Hirumi 2002)

Webinar III – Re-envisioning Medical Education

21st Century Education

Intelligent Data Analytics, Competency-Based,
Ecosystems utilizing Learning Platforms

Webinar IV - Students' Perspective

Thread 1: Evidence-Based Medical Education and Active Student-Centered Learning

- “I cannot conceive the study of medicine without an evidenced-based approach”
- Active Student- Centered Learning is “...essential to encounter the information multiple times & from different levels of understanding”

Thread 2: Vision of the Future of Medical Education

- “Action must be taken to optimize learning and support the ultimate goal: developing competent, well-rounded physicians”
- Competency based education “...ensures a balance between learning the science of medicine and the art of practicing medicine”

Thread 3: Learning System Features and Technology

- Learning systems allow for “more holistic educational experiences and ground-up learning”
- “Technology also helps to connect with other medical students and be able to share experience”

A serene landscape at dusk or dawn. A calm lake in the foreground reflects the sky and a line of trees on the opposite shore. The sky is a deep blue, and the trees are silhouetted against the horizon. In the upper right corner, the branches of a tree are visible, hanging down. The overall mood is peaceful and contemplative.

Reflections:

What will YOU do to change the way
medicine is taught?

If YOU don't, someone else will...

WHAT'S NEXT?

Let us know how we can help!

Please send us your suggestions

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Spencer Lessans

School: University of Central Florida College of Medicine

Year in School: M3 (Class of 2022)

Specialty of Choice: Ophthalmology

Curriculum Format: 2 year preclinical with lectures and small groups

Interests & Motivations for Panel: Interest for improving medical education for future generations



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning

Spencer Lessans, University of Central Florida College of Medicine, CO22

Topics	Thoughts & Experience
Evidenced Based Learning Principles	Seeing as how medical education is being condensed into shorter periods of time, maximizing efficiency is key.
Active Student-Centered Learning Practices	Active learning results in much better retention than traditional passive learning practices.
Traditional Teacher-Directed Methods	Traditional methods are useful in introducing a topic but do not allow for student engagement.
Flipped Classrooms	Flipped classrooms can be a very useful setting once students have been introduced to the topic.
PBL/Case-based/Experiential Learning	PBL is a very powerful tool in allowing students to apply what they've learned in a new way.

Eslam Etayeb

School: University Of Tripoli, college of Medicine

Year in School: 3rd year

Specialty of Choice: neurosurgery

Curriculum Format: 6 years (3 preclinical + 3 clinical years).

Interests & Motivations for Panel: interested in improving medical education and applying evidence-based medical education



Eslam Etayeb, university of Tripoli	
Topics	Thoughts & Experience
Evidenced Based Learning Principles	It's crucial for us to study from an evidence-based educational materials with fidelity throughout our journey in medicine.
Active Student-Centered Learning Practices	Establishment of such practice in the medical community, Encourage student's collaboration and group projects,also it allows the Students to gain an understanding of their own learning style
Traditional Teacher-Directed Methods	It's an ancient technique without enough efficacy
Flipped Classrooms	Blended / flipped technique is an excellent technique
PBL/Case-based/Experiential Learning	PBL in general is a great approach for applying student-centered technique by solving problems

Kubwimana Pacifique

School: University Of Rwanda, college of medicine and health sciences

Year in School: year 5

Specialty of Choice: neurosurgery

Curriculum Format: 6 years (2 preclinical + 3 clinical years).

Interests & Motivations for Panel: interested in improving medical education for future generations via EBME.



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning	
Kubwimana pacifique, school of medicine and pharmacy, year 5	
Topics	Thoughts & Experience
Evidenced Based Learning Principles	It is better to use 5 A's of EBME and apply medicine based on what has shown to be efficacy through research.
Active Student-Centered Learning Practices	There is enough students participation through interactions among themselves and teachers.they have also direct connection to knowledge and information.
Traditional Teacher-Directed Methods	Good but not sufficient
Flipped Classrooms	Very good as it focus on active student centred learning
PBL /Case based /Experiential Learning	It helps the learners to retain knowledge /information

María Valderrama

School: Universidad Autónoma de Madrid, Spain

Year in School: 1st year

Specialty of Choice: pediatric surgery

Curriculum Format: 6 years to graduate (2 preclinical + 1 transitional + 3 clinical)

- 1 extra year for MIR exam preparation

Interests & Motivations for Panel: interested in learning about the ins and outs of medical school in different countries.



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning

María Valderrama, Universidad Autónoma de Madrid, CO25

Topics	Thoughts & Experience
Evidenced Based Learning Principles	I cannot conceive the study of medicine without an evidenced-based approach.
Active Student-Centered Learning Practices	They are a tried and trusted learning style that has been developed during the past decades but has potential for better implementation. It could be improved by reducing class sizes.
Traditional Teacher-Directed Methods	I find them essential as knowledgeable professors need to provide a minimum curriculum before any EBME methods can be applied.
Flipped Classrooms	I do not have any experience with this method but I believe it could potentially be integrated in part of my curriculum.
PBL/Case-based/Experiential Learning	I consider practical lessons to be as efficient as traditional lecture hours, if not even more so. My university considers lab hours fundamental in medical education.

Shenika Vilton

School:

Year in School:

Specialty of Choice:

Curriculum Format:

Interests & Motivations for Panel:



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning

Name, School & Year

Topics

Thoughts & Experience

Evidenced Based Learning Principles

Active Student-Centered Learning Practices

Traditional Teacher-Directed Methods

Flipped Classrooms

PBL/Case-based/Experiential Learning

Students' Perceptions of Evidence and Active Student-Centered Learning

Thread 1B

Topics Covered

- Commentary on our Experience with the Following:
 - Evidence Based Learning Principles
 - Active, Student-Centered Learning Practices
 - Traditional Teacher-Directed Methods
 - Flipped Classrooms
 - PBL/Case-based/Experiential Learning

Katie Ballantyne

School: University of Central Florida College of Medicine

Year in School: M3 (Class of 2022)

Specialty of Choice: Pediatrics or OB GYN

Curriculum Format: 2 years of lecture-based and mixed small groups pre-clinical curriculum → 6 week dedicated STEP 1 preparation → STEP 1 Licensing Exam → 2 years of clinical rotations

Interests & Motivations for Panel: Interest in sharing my experience in hopes of improving medical education by integration of different resources and teaching styles for future generations



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning



BURGER

Katie Ballantyne, UCF College of Medicine, M3 (Class of 2022)

Topics

Thoughts & Experience (**Burger Metaphor**)

Evidenced Based Learning Principles

Beneficial and enriching teaching method makes EBME the **meat**: gives sustenance that the student can add to

Active Student-Centered Learning Practices

Believe student-centered learning should be the **buns**: pre and post exposure to material through EBME platforms

Traditional Teacher-Directed Methods

Believe teacher-directed methods should be sprinkled into medical education which makes it the **sesame seeds** on the bun

Flipped Classrooms

Flipped classrooms are useful after students have been introduced to the material, healthy for students' critical thinking skills: **lettuce**

PBL/Case-based/Experiential Learning

Case-based learning provides context for material which makes it the **cheese**: learning is complete with it, gives learning some taste

Nakaye Jovia Nabukenya

School: University of Debrecen, Hungary

Year in School: year 2 (class of 2025)

Specialty of Choice: plastic surgery

Curriculum Format: 2 years theory, 1 year pre clinical, then 2 years clinical and 1 more year for internship.

Interests & Motivations for Panel: encouraging the use of evidence based study and learning methods to improve the quality of learning and spark the interests of students to use the knowledge obtained for creative innovations.



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning

Nakaye Jovia Nabukenya, University of Debrecen, Y2 (class of 2025)

Topics	Thoughts & Experience
Evidenced Based Learning Principles	Use of spaced repetition, interleaved and active learning has helped improve my quality of learning
Active Student-Centered Learning Practices	This has helped students take ownership of the learning process and has facilitated involvement in research due to increased interest
Traditional Teacher-Directed Methods	Good and essential but for introduction to a topic
Flipped Classrooms	Helps to learn at the students own pace given that not all students understand from the lecture hall
PBL/Case-based/Experiential Learning	Very good format of learning as not only do the students recall

M. Amin Yahya Bakiro

School: China Medical University

Year in School: 5th year (Class of 2022)

Specialty of Choice: Internal Medicine or OB GYN

Curriculum Format: 3 years of basic medicine , followed by 1.5 years of clinical theory and 1.5 years of hospital rotations (PBL and group discussions throughout the program)

Interests & Motivations for Panel: interest in medical education and how its going to be taught to future students, and to help share my experience about the best ways of teaching and learning



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning

Amin Yahya, China Medical University, 5th year class of 2022

Topics	Thoughts & Experience
Evidenced Based Learning Principles	The best way of learning, specifically for medical education that is constantly being updated and requires high level of understanding
Active Student-Centered Learning Practices	Essential to encounter the information multiple times and from different levels of understanding
Traditional Teacher-Directed Methods	Not useful without a first time exposure to the topics (Pre-lecture reading), has to be in a short duration with some active interactions (i.e. begin the lecture with a case, then proceeding into the topic)
Flipped Classrooms	Not always useful
PBL/Case-based/Experiential Learning	Very good for linking all the information together and applying it into real cases

Shiran Dana

School: Florida International University

Year in School: 2, Class of 2023

Specialty of Choice: Unsure yet

Curriculum Format: 2 years preclinical curriculum → one year clinical rotations → STEP 1 and STEP 2 Licensing exam → final year of clinical rotations

Interests & Motivations for Panel: Interested in sharing my experiences as an undergraduate student, learning assistant, and teacher's assistant, in hope of helping improve medical education for future generations



Thread 1: Students' Perceptions of Evidence-Based Medical Education and Active Student-Centered Learning

Shiran Dana, Florida International University Class of 2023

Topics	Thoughts & Experience
Evidenced Based Learning Principles	Students should be exposed to this learning method, but not overly emphasized
Active Student-Centered Learning Practices	After lecture, student-centered learning practices is the best method for reinforcement of the material
Traditional Teacher-Directed Methods	At times, cannot be replaced, but can be slightly more “student centered” rendering it more effective
Flipped Classrooms	Believes its one of the most efficient and effective learning methods if done successfully
PBL/Case-based/Experiential Learning	Believes are an important component to learning in the medical field, teamwork is an important skill to learn

Questions?

Patrick Kroenung

School: University of Central Florida College of Medicine

Year in School: M3 (Class of 2022)

Specialty of Choice: Pediatric surgical subspecialties or Interventional Radiology

Curriculum Format: 2 years of pre-clinical class in the form of lectures, team-based learning, simulations, and self learning modules followed by two years of clerkships.

Interests & Motivations for Panel: Student centered learning, Learning environments, Instructional design, Student wellness



Thread 2: Students' Vision of the Future of Medical Education

Patrick Kroenung, University of Central Florida College of Medicine, M3

Topics	Thoughts & Experience
Intelligent [Big Data] Analytics	The incorporation of IA into medical education will lead to an emphasis on evidence based medicine. There will be such an excess of data that we need to place more emphasis in becoming experts in being able to critically analyze medical journals. Integrating journal clubs into the pre-clinical and clinical curriculum is one way we can bridge that gap.
Learning and Performance Ecosystems	I believe that a learning environment consists largely of the interactions we have with one another throughout the day. Interaction with faculty, staff, peers, is critical for professional identity formation. We need to find ways to provide a flexible curriculum that does not remove the latent social education that in-person activities deliver.
Individualized & Adaptive Education	Student choice models that allow students to decide the length of schooling (3,4,5 years) and provide choices of earning tracts will provide the best way for students to distinguish themselves.
Competency-Based Education	To me competency requires foundational medical knowledge but also application of that knowledge. Content delivery should be abbreviated to the bare essentials with emphasis on how to apply that knowledge in a clinical setting.

Ethan Hartman

School: University of Central Florida College of Medicine

Year in School: M4 (Class of 2021)

Specialty of Choice: Internal Medicine/Critical Care

Curriculum Format: 2 year preclinical with lectures and small groups, community of practice, and simulation followed by 2 years clinical experiences.

Interests & Motivations for Panel: Simulation, telemedicine, medical decision making, error prevention, patient education.



Thread 2: Students' Vision of the Future of Medical Education

Ethan Hartman, UCF, M4

Topics	Thoughts & Experience
Intelligent [Big Data] Analytics	Intelligent data has potential to analyze and prevent error, performing root cause analysis, health monitoring. The potential downside of big data is the separating healthcare workers from patients.
Learning and Performance Ecosystems	Conferences via internet should create an environment that is engaging and psychologically safe for students to ask questions and learn. Student centered learning can be greatly enhanced by simulation and telemedicine, which have potential to improve education and access to care.
Individualized & Adaptive Education	Improves efficiency, focuses on weaknesses in education, unique to the learner and thus more meaningful.
Competency-Based Education	Less prescriptive than completion of lectures. Must be able to know, understand, and demonstrate knowledge before moving on to the next phase of learning. Providing multiple certifications in case students cannot

Vivian V. Altiery De Jesus, MBE

School: University of Puerto Rico School of Medicine

Year in School: M4 (Class of 2021)

Specialty of Choice: Internal Medicine

Curriculum Format: 2 year preclinical with lectures and small groups + 2 years of clinical rotations

Interests & Motivations for Panel: Bioethics, Medical education preparedness during crises, Early trainees' active role and involvement in their education, Physician's identity formation.



Thread 2: Students' Vision of the Future of Medical Education

Vivian V. Altiery De Jesús, MBE (UPR-SOM, M4)

Topics	Thoughts & Experience
Intelligent [Big Data] Analytics	The combination of AI and Big Data will optimize the future of medical education by providing useful information about performances and outcomes. Ethics should be actively involved before, during, and after implementation (e.g. data gathering, data actionability).
Learning and Performance Ecosystems	1.Increasing students' involvement---> Enhances generational trait advantages (e.g. millennials and technology understanding). 2.Focus in preparedness for crises (e.g. natural disasters, pandemics, etc.).
Individualized & Adaptive Education	Encouraging trainee's active role and providing opportunity for spontaneity; and other professional identity characteristics desired in the profession. I had the opportunity to implement Structured Ward Rounds—ethics bedside opportunities for M1s and M2s. Should be complementary; downside loss of standardization.
Competency-Based Education	Provides the flexibility, empowerment, and pacing; focus on mastery rather than time spent learning. However, time thresholds should be considered (e.g. clinical encounters depends on timely assessment, diagnosis, and treatment).

Courtney Harris- not able to attend

School: Chicago Medical School at Rosalind Franklin University of Medicine and Science

Year in School: M3 (Class of 2022)

Specialty of Choice: Pediatric surgical subspecialties or critical care

Curriculum Format: 2 year preclinical with a combination of lectures and case-based small group learning, followed by 2 years of clerkships

Interests & Motivations for Panel: academic medicine, teaching, peer-to-peer learning models, integrative self-driven curricula



Thread 2: Students' Vision of the Future of Medical Education

Courtney Harris, Chicago Medical School at Rosalind Franklin University, M3

Topics	Thoughts & Experience
Intelligent [Big Data] Analytics	The incorporation of AI and IA into medical education will further efforts to center education on evidence-based medicine, but I believe medical schools must be in forefront in making sure this data is inclusive and representative of regional populations their students will serve
Learning and Performance Ecosystems	Continued need to adapt evaluations to be holistic and patient-centered, while still preserving assessment of knowledge. With the learning environment being remote for the time being, educators need to prioritize creating inviting digital spaces for students to converse openly
Individualized & Adaptive Education	Flexibility allows the greatest success for students with varying learning styles, but structure must be in place to assess minimum competency before taking licensing exams or being involved in patient care. Offer multiple options that accomplish the same educational goals via different modalities
Competency-Based Education	More individualized and learner-centered approach, supports non-traditional students that add diversity to the field, needs to be balanced with timeframes that protect patient safety and students from compounding overwhelming debt

Julia Nedimyer

School: University of Central Florida College of Medicine

Year in School: M3 (Class of 2022)

Specialty of Choice: General Surgery

Curriculum Format: Four-year M.D. program: two pre-clinical years (lectures, small groups, and simulations) + two years of clinical clerkships.

Interests & Motivations for Panel: Interested in optimizing medical education in order to prepare future generations of physicians. Specifically, my interests are centered around individualized education and enhancing students' readiness for the clinical practice of medicine.



Thread 2: Students' Vision of the Future of Medical Education

Julia Nedimyer, UCF-COM & M3

Topics

Thoughts & Experience

Intelligent [Big Data] Analytics

Big Data and AI use in education could enhance curriculums by analyzing use of resources, assess student performance and address weaknesses, and gather information to support evidence-based education.

Learning and Performance Ecosystems

This is one of the most critical aspects when considering the future of medical education. With the explosion of information and increasing burnout rates, action must be taken to optimize learning and support the ultimate goal: developing competent, well-rounded physicians.

Individualized & Adaptive Education

In order to accommodate for the increasing amount of medical knowledge, I believe medical education needs to move towards an individualized approach. The creation of “tracks” may improve competence and residency readiness.

Competency-Based Education

This could apply to residency programs and clinical years (M3-M4), but may affect team-building dynamics in pre-clinical years.

Sruthy Usha

School: Bukovinian State Medical University, Ukraine

Year in School: 5th year (Class of 2021)

Specialty of Choice: Orthopedics

Curriculum Format: Six-year M.D. program: two year preclinical with lectures + one year Krok-1 exam preparation + two years of clinical + one year Krok-2 exam preparation.

Interests & Motivations for Panel: Interest for improving medical education for future generations



Thread 2: Students' Vision of the Future of Medical Education

Sruthy Usha, BSMU, Ukraine, 5th year

Topics	Thoughts & Experience
Intelligent [Big Data] Analytics	It is good in terms of improving patient-based services and early detection of diseases and it's spread, and it allows healthcare professionals to make more accurate diagnoses in an efficient and timely manner.
Learning and Performance Ecosystems	We should give more importance to practical skills rather than stressing on theoretical part. Online learning allows the students to personalize medical education and allows collaborative work.
Individualized & Adaptive Education	Students can experience safe and realistic way of learning. And it provides instant feedback and can pick their own scheme of learning.
Competency-Based Education	It can improve the learning skills and Students can acquire and demonstrate their knowledge and skills by engaging in learning exercises, activities and experiences that align with clearly defined programmatic outcomes.

Denisha M. Thomas

School: Louisiana State University Health Sciences Center in Shreveport

Year in School: MS3 (Class of 2022)

Specialty of Choice: Emergency Medicine

Curriculum Format: 2 preclinical years with lectures and small groups followed by 2 years of clinical rotations

Interests & Motivations for Panel: Interested in the development of a flexible medical education curriculum that adjusts appropriately with changes in social climates and helps develop future physicians who are both clinically excellent and culturally competent



Thread 2: Students' Vision of the Future of Medical Education

Denisha Thomas, LSUHSC-Shreveport, MS3

Topics	Thoughts & Experience
Intelligent [Big Data] Analytics	Intelligent analytics gives students more autonomy over their studies by assessing their strengths and weaknesses and allowing them to create a targeted study schedule. For many of us, the ideal curriculum is one that is more effective and efficient for students.
Learning and Performance Ecosystems	Student support is one of the most important concepts in successful completion of medical school. Rather than expecting students to find their way through our curriculum, we should have systems in place to identify students in need of more support, whether it be access to a mental health counselor, a tutor, a learning specialist, or a student mentor.
Individualized & Adaptive Education	With the continued integration of intelligent analytics, education will become more individualized. But it's up to our leaders to ensure that education adapts to the everchanging social climate so that students are best-equipped to help their future patients.
Competency-Based Education	Framing medical school curriculum in a way that focuses more on skills and competencies ensures a balance between learning the science of medicine and the art of practicing medicine. It also allows for a more adaptable curriculum.

Rachna Sannegowda

School: University of Central Florida College of Medicine

Year in School: M2 (Class of 2023)

Specialty of Choice: Undecided

Curriculum Format: Two preclinical years with lectures and small groups + two years of clinical clerkships

Interests & Motivations for Panel: Interest for improving medical education for future generations



Thread 2: Students' Vision of the Future of Medical Education

Name, School & Year

Topics

Thoughts & Experience

Intelligent [Big Data] Analytics

Big data analytics could provide feedback prior to exams, and help adjust question banks to target weaknesses

Learning and Performance Ecosystems

Mental health is key for long term retention and providing the best care to others

Individualized & Adaptive Education

Simulations, case-based discussions during pre-clinical years

Competency-Based Education

Not a one-size-fits-all approach to education
Some students may require additional time or extended study in certain classes of interest (example: anatomy)

Q&A Session

Miguel Esteban Rangel Rodriguez

School: Universidad Autónoma de San Luis Potosí

Year in School: 7th year (Class of 2020)

Specialty of Choice: Ophthalmology

Curriculum Format: 2 years of Basic Medical Sciences (lecture based), 3 years of Clinical Rotations, 1 Year of internship rotating through the 4 basic medical specialties (Internal Medicine, Pediatrics, Gynecology and Obstetrics, Surgery), 1 year of Social Service

Interests & Motivations for Panel: Changing traditional ways of learning medicine to a more dynamic and tailored experience depending on the student's needs and aptitudes.



Thread 3: Students' Perceptions of Learning System Features and Technology

Miguel Esteban Rangel Rodriguez, Universidad Autónoma de San Luis Potosí, 7th year (final year)

Topics	Thoughts & Experience
Learning System Features	<ul style="list-style-type: none">- On-demand video lectures: Useful for going over previously reviewed topics, and taking away relevant information for clinical rotations and hospital wards.- Spaced repetition: Helps memorizing important concepts that would otherwise be difficult to recall.
Content format(s)	<ul style="list-style-type: none">- Organization of information facilitates learning by depurating the total content of a topic and giving out the relevant concepts.- Visual representation helps make the necessary mental associations for proper integration of new information.
Technology in Medicine	<ul style="list-style-type: none">- In this day and age, technology is everywhere. It is in our best interest to use it accordingly and make the best out of it for being competitive professionals in the future.

Bradley Richey

School: University of Central Florida College of Medicine

Year in School: 3rd year (Class of 2022)

Specialty of Choice: Orthopedic Surgery

Curriculum Format: 2 years of pre-clinical didactic lecture-based learning, 2 years of clinical clerkships

Interests & Motivations for Panel: Communicating the medical student experience and advancing medical education to benefit future generations of student doctors.



Thread 3: Students' Perceptions of Learning System Features and Technology

Bradley Richey, University of Central Florida College of Medicine, 3rd year

Topics	Thoughts & Experience
Learning System Features	<ul style="list-style-type: none">- Principle-based lecture series: establishes frameworks with which to build from, allowing more holistic educational experiences and ground-up learning.- Image-based mnemonics: applies a “face” to hard-to-remember words and topics, allowing multiple mental coding of medical knowledge.
Content format(s)	<ul style="list-style-type: none">- As above, delivery of the same information in wide-ranging multiple formats (lectures, images, case-based learning, picture mnemonics, question banks) allows for multiple mental encoding of the same information.- This widens scope of application, reinforces key information, and allows for multiple mental recall heuristics.
Technology in Medicine	<ul style="list-style-type: none">- Application of technology is powerful, but it needs to be done in a unified way to promote ease-of-access and student use.- Common issues include resource and platform overload, faculty unfamiliarity with systems, and limited face-validity (simulator training).

Nathaniel Foster

School: Virginia College of Osteopathic Medicine (VCOM)

Year in School: 4th year (Class of 2021)

Specialty of Choice: General Surgery

Curriculum Format: 2 years of pre-clinical lecture-based learning and osteopathic manipulative medicine (OMM) lab, 2 years of clinical clerkships

Interests & Motivations for Panel: To share personal experiences with multiple learning platforms and modalities as well as engage in dialogue regarding the future of medical education



Thread 3: Students' Perceptions of Learning System Features and Technology

Nathaniel Foster, VCOM, 4th Year (Class of 2021)

Topics	Thoughts & Experience
Learning System Features	Preclinical years: Material condensed into study guide/main take-away points for framework to accompany/reinforce lecture based materials Clinical years: Case based presentation as well as overall clinical topics in an on-demand format video/audio format and accompanying notes
Content format(s)	Preclinical years: pictorial and text mnemonics for rote memorization Clinical years: advanced organizers and decision pathways to guide clinical decision making process Both: Spaced repetition (flashcards) and self assessment quizzes
Technology in Medicine	There are many different approaches to learning and retention so we should utilize the platforms that work best for our individualized style. While these are immensely helpful in building a framework for understanding concepts, technical skill and humanism is a fundamental component of medical education.

Takwonda Rex Namalima

School: University of Malawi College of Medicine

Year in School: 5th year (Class of 2020)

Specialty of Choice: Bachelors of Medicine Bachelors of Surgery (MBBS)

Curriculum Format: 1 year of premedical sciences (lecture based) 2 years of basic medical sciences (lecture based), 3 years of Clinical Rotations

Interests & Motivations for Panel: Interest for improving medical education for future generations



Thread 3: Students' Perceptions of Learning System Features and Technology

Takondwa Rex Namalima, University Of Malawi College of Medicine, 5th Year (final year)

Topics	Thoughts & Experience
Learning System Features	<ul style="list-style-type: none">- Case based learning (quiz,MCQs) have been helpful in my clinical years. I have been able to learn approach to different clinical presentation and come up diagnosis and management easily through this approach.The use of mnemonics and pictorial format have supplemented my learning and helped me to be able to learn , return and apply knowledge.
Content format(s)	<ul style="list-style-type: none">-During preclinical years, apart from textbook, tutorials have been helpful to in learning new terminologies for they provide a visual aid.
Technology in Medicine	<ul style="list-style-type: none">-The use of technology in medicine have ease access to information during leaning. Use of flashcards and tutorials helps in remembering the contents.-Technology also helps to connect with other medical students and be able to share experience.

Audric Darian

School: University of Central Florida College of Medicine (UCFCOM)

Year in School: 4th year (Class of 2021)

Specialty of Choice: General Surgery

Curriculum Format: 2 years of pre-clinical lecture-based learning , 2 years of clinical clerkships

Interests & Motivations for Panel: Bring my curriculum experiences to engage thought provoking ideas and questions amongst my colleagues to enrich the future of medical education

Thread 3: Students' Perceptions of Learning System Features and Technology

Audric Darian, UCFCOM, 4th Year (Class of 2021)

Topics	Thoughts & Experience
Learning System Features	<p>Preclinical: Concept based learning material sequentially presented to provide the foundational pre clinical knowledge that is easy to revert back to when analyzing weak points from examinations and self assessment.</p> <p>Clinical: Generalized video lecture based content that both supplement and complement topics learned on the wards.</p>
Content format(s)	<p>Preclinical: Video based lectures, Spaced repetition card based learning system, Exam style practice questions</p> <p>Clinical: Video lecture series to provide concepts in clinical decision making process while reinforcing preclinical material, Exam style practice questions</p>
Technology in Medicine	<p>Technology in Medicine can be used to streamline components of medical education. Prerecorded video based lecture with self assessment can improve the speed to which a student moves from learning material to application and mastery.</p>

Thread 3: Students' Perceptions of Learning System Features and Technology

Introduction

- Success in medical school determined by the student
- Vast array of study types, technology implementation - what is best?
 - No cut and dry answer - it depends
- Input from students will provide insight into this
 - Valuable for student and teachers alike
 - Goal here is to provide thoughts and experience with different learning systems and technology

Panelists to discuss their experiences with Learning systems and Technology:

1. **Diksha Dujeda** - M2, All American Institute of Medical Sciences
2. **Subina Saini** - M2, Medical University of South Carolina
3. **Michael Rohr** - M3/G2, University of Central Florida College of Medicine
4. **Zaithwa Matemvu** - M5, University of Malawi College of Medicine

Diksha Dudeja

School: All American Institute of Medical Sciences

Year in School: M2 (Class of 2023)

Specialty of Choice: Radiologist

Curriculum Format: 2 year preclinical with lectures and small groups

- Dedicated USMLE STEP 1 preparation time
- Followed by 2 years of clinical rotations

Interests & Motivations for Panel: Looking for feasible solutions to improve medical education



Thread 3: Students' Perceptions of Learning System Features and Technology

Diksha Dudeja , All American institute of medical sciences, Class of 2023

Topics	Thoughts & Experience
Learning System Features Active learning	<ul style="list-style-type: none">• Promotes recall and deeper understanding of material as students engage with content rather than simply listening to it, maintain student concentration, motivation and learning towards higher skills like critical thinking.
Titbit form , not in paragraph	<ul style="list-style-type: none">• Learn any information simply to repeat it by rote , memorisation, least monotonous.
Graphic or visual learning	<ul style="list-style-type: none">• Uses visual technique to help erode and retain it in memory For example- maps, diagrams and specimens in 3D.
Mnemonics and spaced repetition	<ul style="list-style-type: none">• Retention of more, long lasting and fast information; spaced repetition used for revision, choose randomly flashcards for self assessments
Content format (s)	Flashcards,mnemonics,precise conceptual videos,audios, q-bank, usmle style question, graphic imaging, map diagrams, softwares.
Technology in medicine	Focus more on <u>questions practise</u> and <u>spaced repetition</u> , Create <u>flashcards</u> , Do <u>detail analysis</u> on options provided with questions, <u>Watch conceptual videos</u> and work on weak areas.

Subina Saini

School: Medical University of South Carolina

Year in School: M2 (Class of 2024)

Specialty of Choice: Psychiatry

Curriculum Format:

- 2 years of lecture-based, preclerkship curriculum
 - small groups and early clinical experiences
 - dedicated Step 1 Preparation (~ 5 weeks)
 - FLEX Phase (~ 13 weeks)
 - choose selective scholarly concentration
 - e.g., Physician as Teacher track
- 2 years of clinical clerkships and advanced clinical rotations

Interests & Motivations for Panel: interest in improving academic medicine and informing audiences about educational resources



Thread 3: Students' Perceptions of Learning System Features and Technology

Subina Saini, Medical University of South Carolina, Class of 2024

Topics	Thoughts & Experience
Learning System Features	
Automated Spaced Repetition Scheduling	efficiently review flashcards on a regular basis to optimize retention ★ review newer/more difficult material more often to prioritize studying
USMLE-Style or Multiple Choice Question	<u>multiple choice retention question</u> : check retention of main facts; identify knowledge gaps <u>USMLE-Style question</u> : apply problem-solving strategies; practice scanning question stems
Visual/Phonetic Mnemonic Device	build memory palaces w/ memorable mnemonic images; supplement fact-heavy subjects
Content format(s)	video, audio, text, flashcards, mind maps/diagrams, questions
Technology in Medicine	<ul style="list-style-type: none">review flashcards w/ spaced repetition regularly; enhance learning w/ mnemonics & imagesfocus more on active recall strategies (e.g., quizzing) => spend less time re-reading lecturesincrease question-based review => use data analytics to improve speed and performancewatch concise video lessons for difficult concepts; search keywords and main ideascreate digital mind maps to connect related concepts and foster abstract thinking

Michael Rohr

School: University of Central Florida College of Medicine

Year in School: M3 (MD/PhD, graduate year 2)

Specialty of Choice: Gastroenterology, Academic Medicine

Curriculum Format:

- 2 years of lecture-based, preclerkship curriculum
 - Small group learning and early clinical experiences
 - Dedicated STEP1 preparation
- 2-3 years of graduate work and dissertation defense (PhD)
- 2 years of clinical clerkships and advanced clinical rotations

Interests & Motivations for Panel: Sharing 8+ year teaching experience, clarifying available resources to medical students, providing alternative viewpoints; Academic medicine



Thread 3: Students' Perceptions of Learning System Features and Technology

Michael Rohr, University of Central Florida College of Medicine, Class of 2020 (M3,G2)

Topics	Thoughts & Experience
Learning System Features	<p>Combination approach. These should be explored early on during pre-clinical years then solidified through consistent use and practice.</p> <ul style="list-style-type: none">● Old School. Lectures and textbooks - would read then paraphrase to make sense to me. Would also try to work in collaborative environments = discussion/teaching one of the best ways to learn.● New School. Online resources are endless and be used to complement old school techniques.● Visual Mnemonics. Strive to draw my own interpretations of pathways. Would consolidate as much info as possible into one illustration = increased muscle memory and free recall.● Q-banks and self-assessment tests. Do as many of these as possible as studies show that the number of questions done correlates with higher scores. Also for building confidence and testing endurance.
Content Format(s)	<p>Any format is acceptable as long as it benefits the student. The goal is to facilitate, not force the learning process. Experimentation is encouraged but should be established early so that the technique can be reinforced through repetition. You know if it is working from your performance in school and familiarity with the material.</p>
Technology in medicine	<ul style="list-style-type: none">● We are in the technology age - answers to any questions can be found in a matter of seconds.● Endless number of free and purchasable software to facilitate the learning process.● Sharing resources between students. Example would be an excel list of drugs/genetic diseases.

Zaithwa Matemvu

School: University of Malawi College of Medicine

Year in School: 5 (Class of 2020)

Specialty of Choice: Maybe Critical Care

Curriculum Format:

- 2 years of preclinical training,
- followed by 3 years of clinical rotations
- Then 18m of internship rotating through Internal Med, OBGYN, Paeds, and Surgery

Interests & Motivations for Panel: Would love to see schools (including students) reflect on how to improve the delivery of medical education.



Thread 3: Students' Perceptions of Learning System Features and Technology

Zaithwa Matemvu, University of Malawi College of Medicine, Class of 2020

Topics

Thoughts & Experience

Learning System Features

- Spaced repetition and question banks are my favorite features. Qbanks help identify blind spots as I study. I use this both before and after studying.
- Spaced repetition helps me learn new concepts, and make sure they actually stick!

Content format(s)

- Videos and illustrations are especially helpful in preclinical years because the concepts are less familiar, and you need all the help you can get to create connections between abstract concepts.

Technology in Medicine

- Data analytics means I can be smarter about how I study, focusing on my weak areas. Comparison with other learners also assists in self-evaluation, especially when prepping for major tests/exams.

Questions?