AMERICAN
ORTHOPAEDIC
ASSOCIATION

2022 PROGRAM EDUCATION, ACCREDITATION, AND LEADERSHIP (PEAL) FORUM

Council of
Orthopaedic
Residency Directors

June 17, 2022

2022 Theme: **Knowledge**

www.aoassn.org

2022 PEAL FORUM
PROGRAM CHAIR

Ginger E. Holt, MD, FAOA

Vanderbilt University

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HOUSEKEEPING

AMERICAN ORTHOPAEDIC ASSOCIATION

0 1	Network: AOA2022 Passcode: aoa2022am
02	Q&A following the presentations
03	1.5 AMA PRA Category 1 CME Credits. Paper copies available or pdf copy sent with evaluation email

AGENDA

AMERICAN ORTHOPAEDIC ASSOCIATION

Friday, June 17, 2022, 1:45pm – 3:15pm

0 1	0 2	0 3	0 4
How to Approach Faculty Development Robert J. Esther, MD, FAOA	**Updating Teaching Materials and Tools** Raffi Avedian, MD, FAOA	**Orthopaedic Resident Knowledge Assessment** Derek Moore, MD	**CORD Conference** 3:30pm – 6:30pm **Networking Reception** 6:30pm in Foyer

How to Approach Faculty Development:

Teaching Old Dogs New Tricks

Robert J. Esther, M.D., M.Sc.
Professor and Vice Chair
University of North Carolina

UNC | SCHOOL OF MEDICINE

Overview

UNC SCHOOL OF MEDICINE

- Current challenges
- Principles of adult learning
- Resources
    - Institutional
    - National
    - Other materials
- Are there best practices for faculty development?
    - “Traditional” model
    - Just in time faculty development
- Anecdotal experience

Current challenges to faculty development

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Time

Time

Time

wRVU

Compensation

Poor methods of assessing faculty performance

Discordance between written evaluations and informal feedback

Faculty's sense that they are already good teachers

Adult learning

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Theoretic foundation

Longitudinal framework (overall curriculum/program planning)

Avoiding cognitive overload

Spaced repetition

Pre- and post- testing

Active learner engagement

Recognition that curriculum should be learner-centric

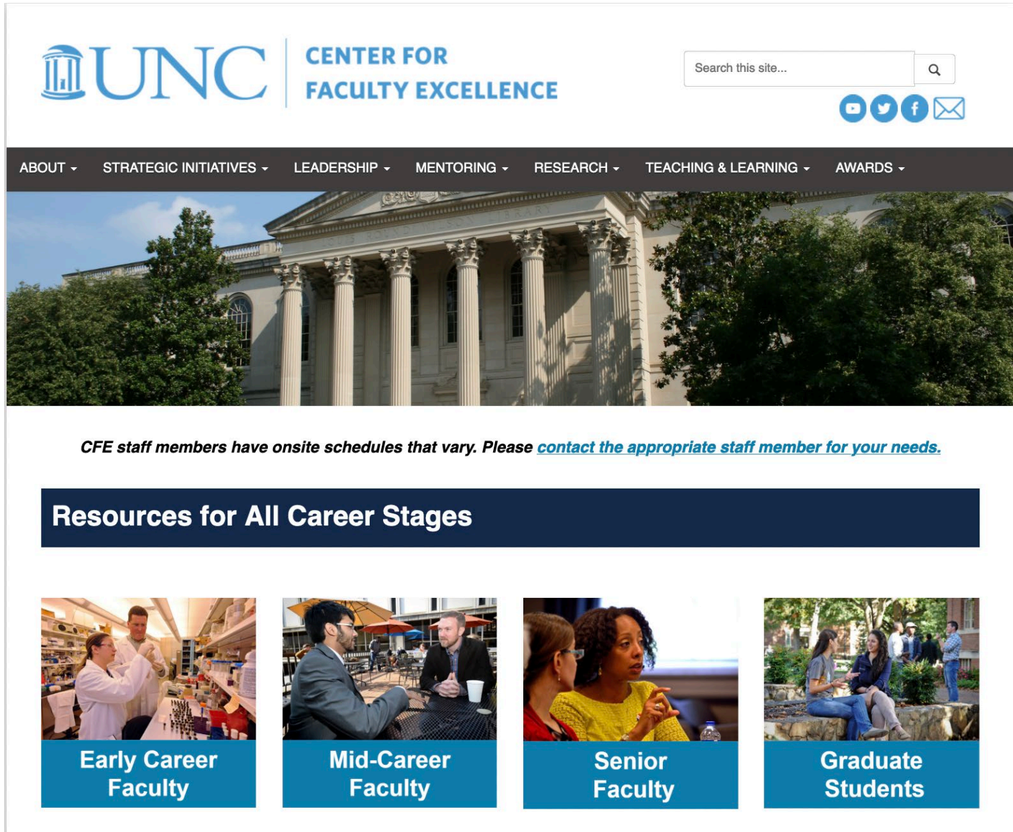
How do we get faculty to have their teaching incorporate these concepts?

Resources (Local/internal)

Internal resources

- Common at all institutions
- University
- School of Medicine

These resources typically include longitudinal cohort programs and ”a la carte” offerings



Resources (National)

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AOA

- Annual leadership meeting
- CORD

AAOS

- Educators Course

Resources (Individual)

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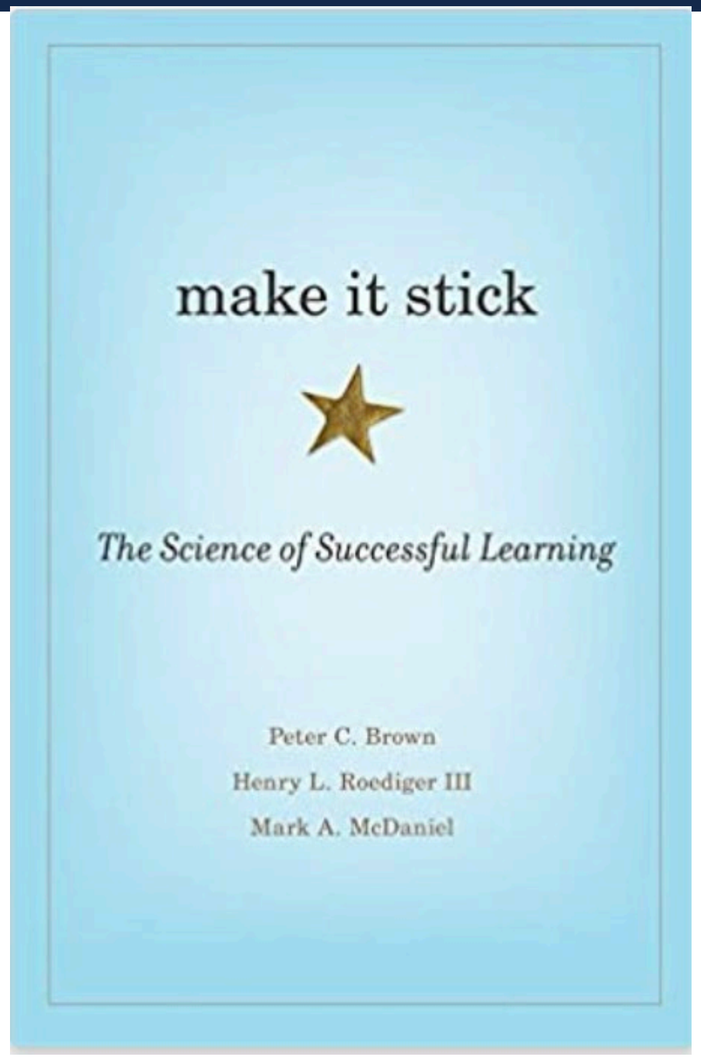
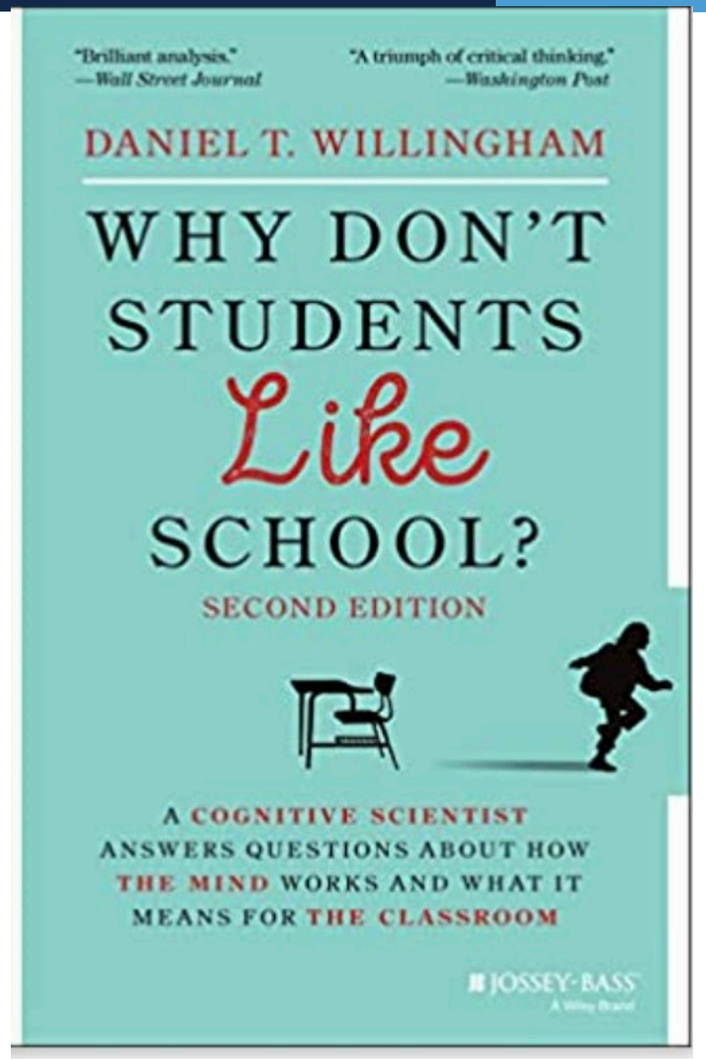
- Many educational books are available
- Use as part of internal faculty development program
- Give to all faculty? New faculty? Book club?





Internal faculty development

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In absence of a formal program, educational faculty development can be a recurring topic at faculty/department meetings

Do these sessions lead to meaningful change?

Way to introduce topics/concepts but very hard to know if faculty are engaged

How do we measure results?

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OITE

ABOS (exam results or KSB evaluations)

- Hard to assess direct impact of faculty development programs

Faculty satisfaction (self-perceived results)

Resident evaluations

- Even though anonymous, difficult to get insights
- Poor instruments/forms (MedHub fatigue)
- Easy to get a version of the “keep reading” kind of evaluation that faculty give residents

Is there evidence?

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There are many barriers to faculty development (and engagement)

We do not have good ways of assessing the outcomes of these programs

Are there any ”evidence-based” recommendations?

Best practices

MEDICAL TEACHER, 2016
VOL. 38, NO. 8, 769–786
http://dx.doi.org/10.1080/0142159X.2016.1181851

MEDICAL TEACHER

Taylor & Francis
Taylor & Francis Group

BEME GUIDE

A systematic review of faculty development initiatives designed to enhance teaching effectiveness: A 10-year update: BEME Guide No. 40

Yvonne Steinert[a], Karen Mann[b], Brownell Anderson[c], Bonnie Maureen Barnett[d], Angel Centeno[e], Laura Naismith[f], David Prideaux[g], John Spencer[h], Ellen Tullo[i], Thomas Viggiano[j], Helena Ward[k] and Diana Dolmans[l]

Review of faculty development initiatives designed to improve teaching effectiveness

2002 – 2012

111 studies included

Best practices

MEDICAL TEACHER, 2016
VOL. 38, NO. 8, 769–786
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Key attributes:

Longitudinal programs appear to be more effective (especially in educational scholarship, publications)

Experiential learning (opportunities for practice, feedback)

Educational projects

Community building (cohorts)

Institutional support

Best practices

MEDICAL TEACHER, 2016
VOL. 38, NO. 8, 769–786
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What we know:

Faculty development programs can be designed to achieve high level of participant satisfaction

Improvements: faculty knowledge, skills, educational practices

Way of building community/educational relationships within an institution

Very few studies have examined overall effects on institutions, learners

Successful faculty development programs mirror the principles of adult learning

Best practices

MEDICAL TEACHER, 2016
VOL. 38, NO. 8, 769–786
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But...are these recommendations helpful?

Only 5% of studies examined effects on learners

Newer concept: Just in time faculty development

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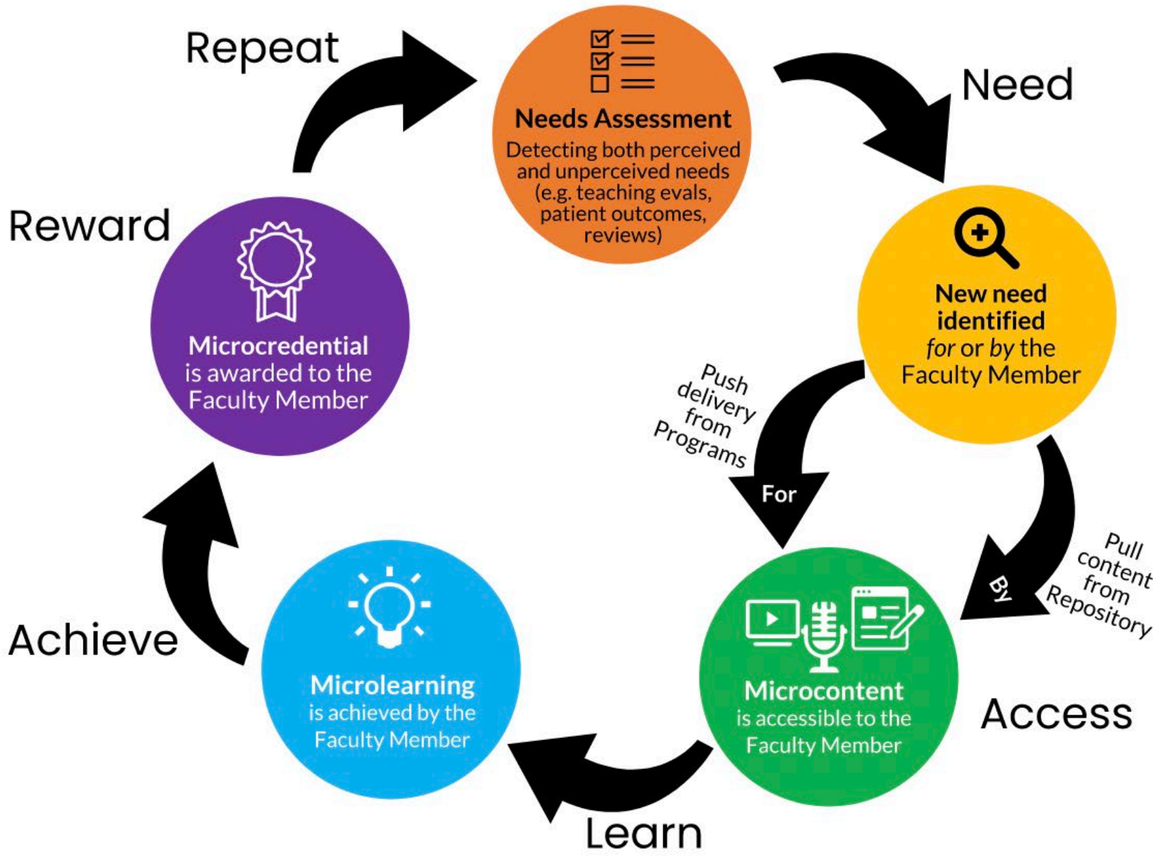
Somewhat elusive concept (hard to define)

Reflects a shift away from longitudinal programs (or episodic educational topics at faculty meetings)

Recognition that faculty's clinical, research, and administrative workloads leave little time for other professional development

Largely in emergency medicine, some interest at using various platforms to support faculty's teaching efforts in real time



ime

RESEARCH ARTICLE Open Access

Just-in-time faculty development: a mobile application helps clinical teachers verify and describe clinical reasoning difficulties

Received: 14 November 2021 | Revised: 28 December 2021 | Accepted: 4 January 2022

DOI: 10.1002/aet2.10722

ORIGINAL CONTRIBUTION

The Learning Loop: Conceptualizing Just-in-Time Faculty Development

Yusuf Yilmaz PhD[1,2,3,4] | Dimitrios Papanagnou MD, MPH[5] | Alice Fornari EdD, RDN[6] | Teresa M. Chan MD, FRCPC, MHPE, DRCPSC[1,2,4,7,8]

Learning platforms

- LMS (Sakai, Blackboard, etc.)
- Mobile apps
- Digital badges

Just in time faculty development

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Emerging concept

Very little evidence supporting implementation

Acknowledgement that faculty may respond to smaller, more incremental content delivery

Faculty development: anecdotal evidence

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Ultimate question: do these programs work?

Personal experience:

Developed 5-lecture internal series with PhD in education

Sessions included faculty and residents

No measurable change in evaluations (yet)

360 evaluation: “The problem with Bob is that he is too resident-centric. It is not always about them. Sometimes it can be about the attendings.”

Faculty development: next steps

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Key: There has to be agreement/consistency across chair, VC, PD

Evaluations/development as part of annual review

Component of compensation plan

Faculty need to know that the department values and supports quality teaching

Even with these things, will meaningful change ensue?

Summary

Utilize internal and external experts

Ongoing challenges: faculty engagement

Time, wRVU pressures

Faculty development programs can be successful in terms of participant satisfaction, behavioral change, and scholarship

There is some literature on attributes of successful faculty development programs

Unknown effects of these initiatives on learners (or what is actually learned)

Thank you

Updating Teaching Materials and Tools: Making the Old New Again

Raffi S. Avedian M.D.
Department of Orthopaedic Surgery
Residency Program Director
Stanford University Medical Center

Disclosures

- None

Goals

- Goals of this talk
  1. Learn teaching materials and strategies for didactics and core knowledge
  2. Learn about teaching materials for perioperative skills acquisition

Outline

- Practical Limitations for developing and implementing a curriculum
- Materials for teaching core material/didactics
- Execution
- Perioperative learning

Definitions for This Talk

- "Core Didactics" aka "Core Lectures
  - Entire group of residents together
  - Refers to the weekly lectures required by ACGME

IV.A.4.a) **Residents must be provided with protected time to participate in core didactic activities.** (Core)

Background and Intent: It is intended that residents will participate in structured didactic activities. It is recognized that there may be circumstances in which this is not possible. Programs should define core didactic activities for which time is protected and the circumstances in which residents may be excused from these didactic activities. Didactic activities may include, but are not limited to, lectures, conferences, courses, labs, asynchronous learning, simulations, drills, case discussions, grand rounds, didactic teaching, and education in critical appraisal of medical evidence.

IV.C.6. Didactic Experiences

IV.C.6.a) Basic science education and the principal clinical conferences should be provided at the primary clinical site. (Detail)

IV.C.6.b) Conferences and didactic sessions must be scheduled to permit resident attendance on a regular basis. (Core)

IV.C.6.c) Faculty members and residents must attend and participate in regularly scheduled and held teaching rounds, lectures, and conferences. (Core)

IV.C.6.c).(1) On average, there must be at least four hours of formal teaching activities each week. (Core)

Definitions for This Talk

- "Perioperative Skills"

  Refers to knowledge related to planning and executing surgery.

Practicalities of Modern Practice

- Fact 1: Fixed amount of time
- Fact 2: Retention of material takes effort
- Fact 3: Learners have different needs
- Fact 4: Variable faculty engagement
- Fact 5: It will all be ok

Fact 1: Fixed Amount of Time

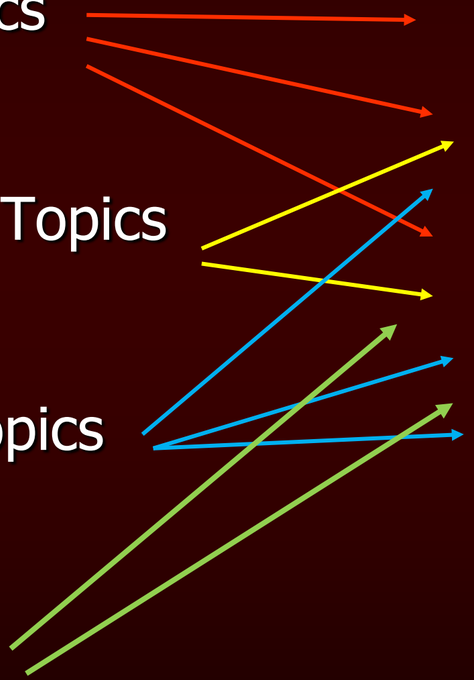
- Traditional academic year
  - 40 weeks/80 lectures
  - Summer lectures
  - Weekly subspecialty conferences
  - Journal clubs
- 5 year longitudinal time frame

Fact 1: Fixed Amount of Time

Have a plan to make it all fit

Column: A Content

- High Yield General Topics
  - Knee arthritis
  - ACL teas
- Important Subspecialty Topics
  - Revision joints
  - Hip arthroscopy
- Detailed Subspecialty topics
  - Radiation for sarcoma
  - Congenital scoliosis
- Rare but tested topics
  - Pediatric Syndromes



Column B: Time slots for didactic

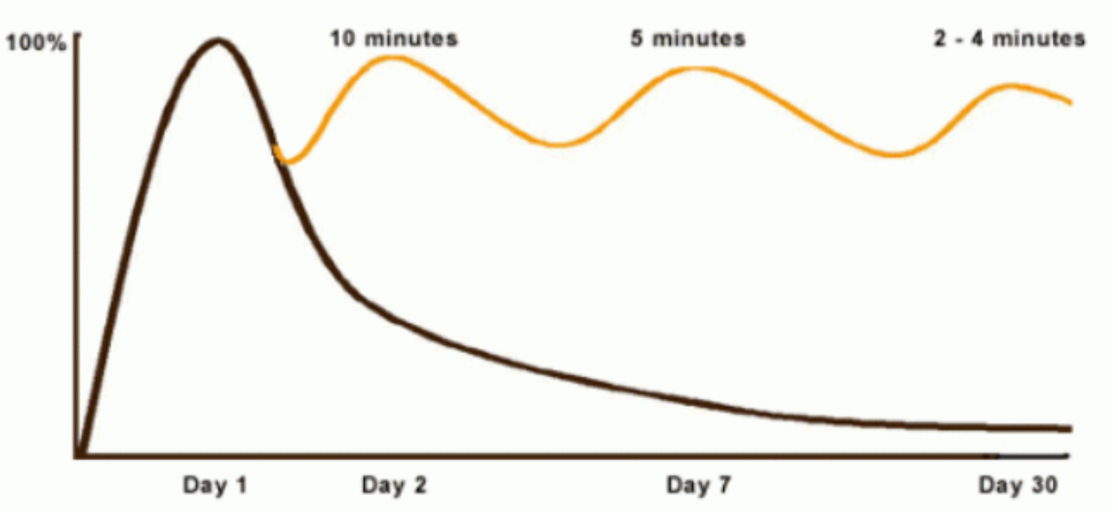
- Core didactics whole department
- Subpecialty conferences
- Journal clubs
- Courses
- Self-directed learning

Fact 2: Retention Takes Effort

- Reinforcement is key to learning

Curve of Forgetting

The Curve of Forgetting describes how we retain or get rid of information that we take in. It's based on a one-hour lecture.



On day 1, at the beginning of the lecture, you go in knowing nothing, or 0%, (where the curve starts at the baseline). At the end of the lecture you know 100% of what you know, however well you know it (where the curve rises to its highest point).

https://uwaterloo.ca/campus-wellness/curve-forgetting

Strategies for Retention

1. Engage the learner
    1. Case based discussion
    2. Engaged Classroom lecture (Prezi)
2. Reinforce the material
    1. Pre-reading and case review at home
    2. Lecture day is meant for reinforcement and discussion of core concepts
    3. Multi-Year Curriculum
    4. Weekly questions

Raleigh et al. Same Content, Different Methods:
Comparing Lecture, Engaged Classroom, and Simulation, Fam Med 2018

Fact 3: Learners have different needs

- Learning styles
  - Self paced
  - Questions
  - Lectures
  - Problem based learning
- How to accommodate styles
  - Ask the residents
  - Flexibility in curriculum
  - Avail resources
    - Online questions
    - Online curriculum orthobullets etc.

Fact 4: Variable Faculty Engagement

- Make it easy for faculty
  - Case base discussion
  - Empower chief residents
  - Leverage technology and online resources
- Focus on Providing Value

  "What am I doing in this lecture that residents can't get out of a book or online resource?"

Fact 5: The Big Picture

Everything is OK

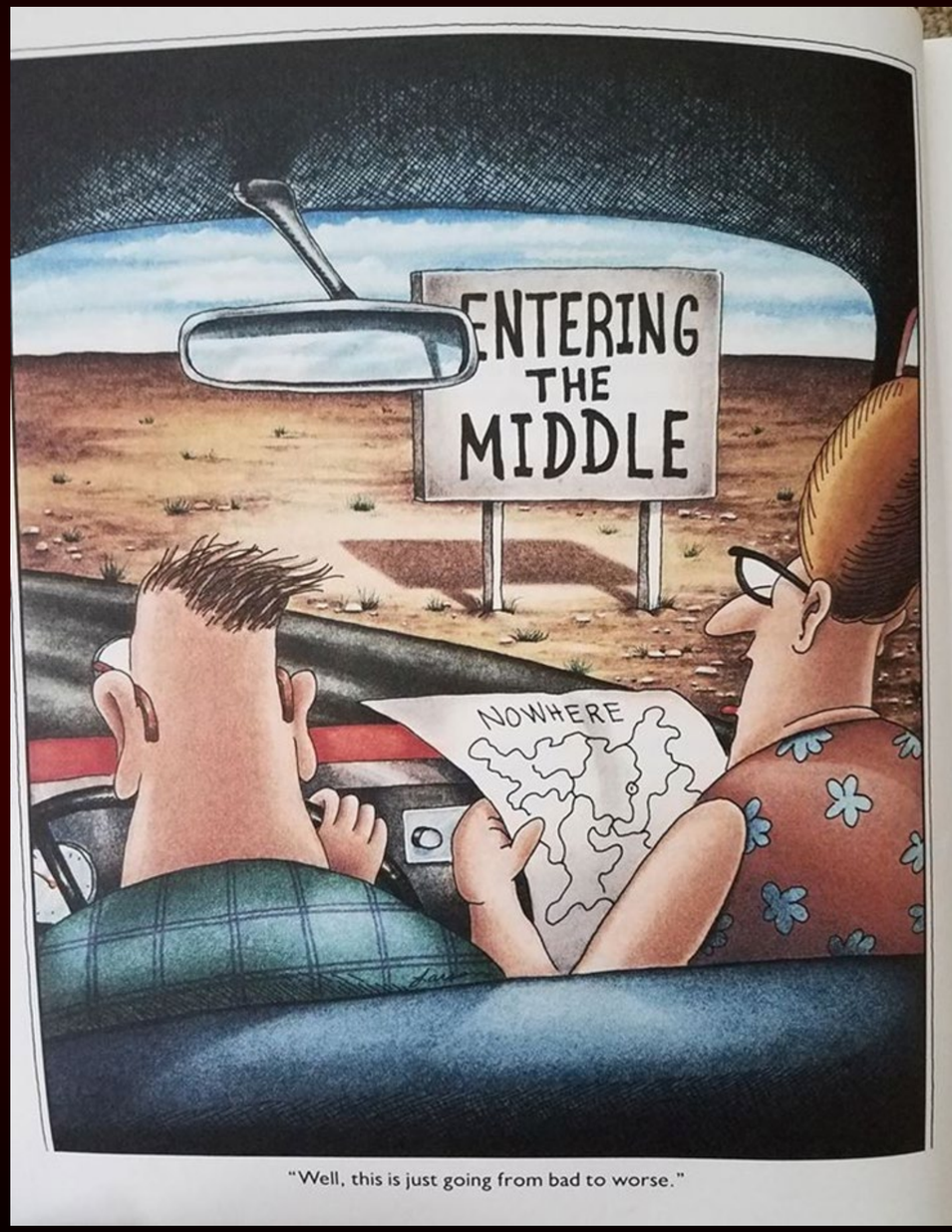
- Residents have been passing boards for decades
- Pay attention to what learners need
- Put them in a position to succeed
- Guide them in right direction
  - Role modeling
  - Good judgement
  - Feedback
  - High level of expectations

Practical Tips for Curriculum and Teaching Materials

1. Set Goals
2. Resource Assessment
3. Execution

Set Goals

- What do you want to accomplish?
  1. Teach core knowledge
  2. Have residents retain
  3. Provide resources for self paced learing



Consider Resources

- One size does not fit all
  1. Size of faculty
  2. Specific Resident Needs: Give them a seat at the table
  3. Residents interested in education
  4. Program Coordinators
  5. Institution GME
  6. Online Tools
  7. Books
  8. Courses

Execution of Curriculum

Core Didactics

- Traditional
  - Lectures
  - 2 year curriculum
  - Wed mornings
- Engaged or Improved
  - Case based
  - Pre-reading
  - Self Paced Questions
  - Utilize online resources
    - Orthobullets
    - ROCK
    - RedStudy

Common Problem: How to Engage Faculty

Core Didactics

- Coach Them
- Incentivize Them
- Make it Easy for Them

How to Engage Faculty

Core Didactics

- Coach Them
  - Faculty development course
  - AAOS educator's course
  - Have a conversation
- Incentivize Them
  - RVU
  - Emphasize Resident needs and comments

How to Engage Faculty

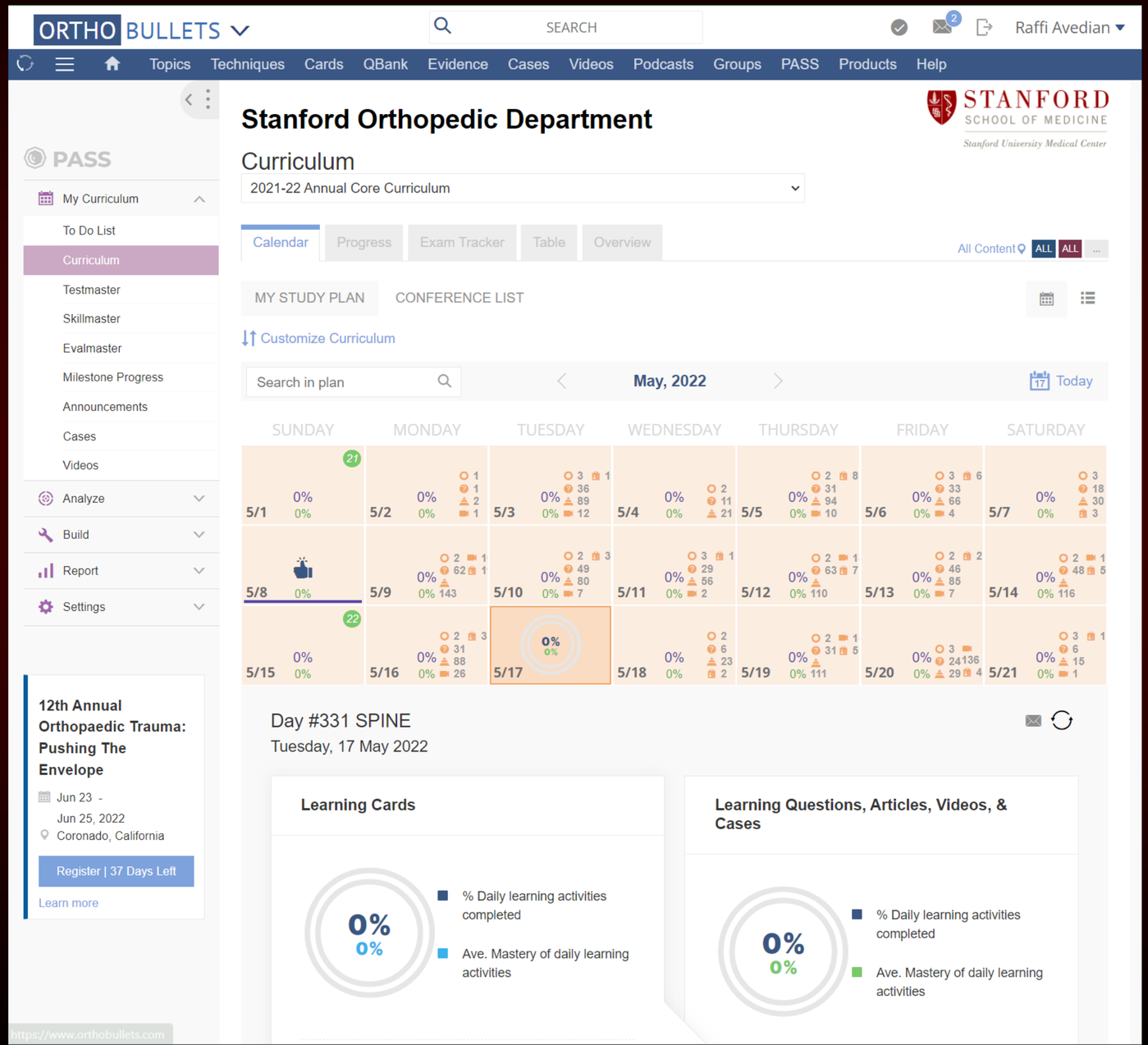
Core Didactics

- Make it Easy for Them
  - Adopted Case based learning system
  - Resident Facilitator
    - Sends out case and reading material to residents
    - Moderates day of case discussion
    - Helps faculty member share their expertise

Teaching Tools: Online Resources

- Orthobullets
- AAOS ResStudy
- JBJS Clinica Classroom
- ROCK
- Hip and Knee book
- E-anatomy

Orthobullets



Online Flashcards

ORTHO BULLETS

SEARCH

Raffi Avedian

Topics | Techniques | Cards | QBank | Evidence | Cases | Videos | Podcasts | Groups | PASS | Products | Help

New Deck

FC-WMWBC3C

FLASHCARDS (25)

Unicompartmental Knee Replacement • Outcomes

0 | 0% | 0 | L5 | A | 0% | OBC

What are 4 causes of late failure?

- Long-term results
  - causes of late failure (>5 years)
    - progress of osteoarthritis (idiopathic, over-correction, more common with mobile-bearing)
    - component failure (overload due to under-correction)
    - component loosening (common in fixed-bearing)
    - patella impingement on femoral component (patella pain)

No Clue	Hard	Fair	Easy	Mastered	Toss
20%	40%	60%	80%	100%	
Today	Today	1 day	4 days	Never	

by Ben Sharareh

Please Rate ★★★★★

CARDS 4 of 25

Previous | Next | Complete

AAOS ResStudy

AAOS

Build a Quiz

Create your own quizzes by selecting from testing modes and topics. Filter questions based on your records on previous quizzes, review questions, and receive feedback and recommendations based on your answer choices.

View my Quiz/Exam History

Track your scores on custom quizzes or simulated Board exams to see your progress.

Dashboard

Browse content by topic and/or complete related questions.

Adult Reconstruction (Hip & Knee)

(3/641 Questions Answered) | **0% Correct**

ASSESSMENT

Foot & Ankle

(0/492 Questions Answered)

ASSESSMENT

Trauma

(0/618 Questions Answered)

ASSESSMENT

Shoulder & Elbow

(0/451 Questions Answered)

ASSESSMENT

AAOS ResStudy

AAOS

Back to Dashboard

Build a Quiz

How would you like to take the quiz?

Study Mode

Take questions at your own pace and receive feedback as you go.

Simulated Exam

No feedback until all questions have been answered and submitted.

NEXT

AAOS ResStudy

Build a Quiz

SUMMARY PAGE

Mode: Study Mode

Question 1 of 50

#527824

Clinical Situation
Figure 1 is the anteroposterior radiograph of an 85-year-old man who fell from a standing position and landed directly on his left hip. In the emergency department, he complains of immediate pain and an inability to bear weight.
After the emergency department physician sees this patient, he consults cardiology. The cardiologist orders an echocardiogram to be performed immediately. What is the likely result of ordering this test?

Peer Comparison

✖	Decreasing the patient's length of stay	5%
✔	Increasing the patient's time to surgery	77%
✖	Determining the type of anesthesia for surgery	17%
✖	Determining what service the patient will get admitted to	2%

SUBMIT ANSWER

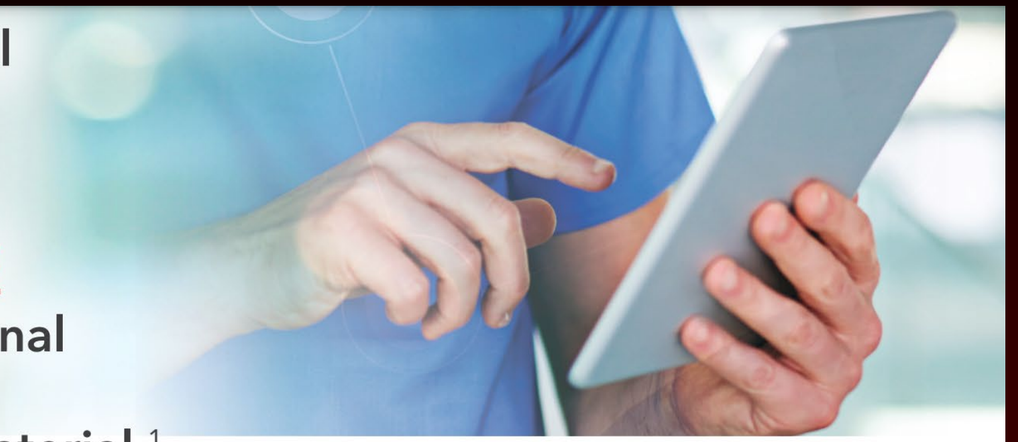
That is correct!

77% of peers answered this correctly

Discussion | Recommended Readings

NEXT QUESTION →

JBJS Clinical Classroom



Users of JBJS Clinical Classroom may

SPEND UP TO 50% LESS TIME

than users of traditional e-learning methods learning the same material.[1]

Improve learning and save time with JBJS Clinical Classroom!

NEJM Group interviewed several ACGME-accredited program directors to identify some best practices:

- Introduce JBJS Clinical Classroom at the beginning of an educational year. It's harder for residents to incorporate a new learning activity at mid-year when habits are set.
- Recognize that this is a culture change. For residents that are further along in their training (e.g. 3rd year and beyond) offer JBJS Clinical Classroom as an additional learning strategy so they are not asked to give up tools they are comfortable using.
- Promote the idea that usage drives success. Setting reasonable usage goals for residents using Clinical

Advantages for resident directors and educators

Current, relevant content

The questions in JBJS Clinical Classroom are written to address learning objectives developed by experts in 11 subspecialty areas: Adult Hip Reconstruction; Adult Knee Reconstruction; Basic Science & Pathology; Foot & Ankle; Hand & Wrist; Pediatrics; Ethics; Shoulder & Elbow; Spine; Sports Medicine; Trauma. The content is vetted and reviewed extensively by the subspecialty section head and other experts.

Tracking learner performance

JBJS Clinical Classroom has a robust reporting system that provides program directors and faculty with the ability to track progress through the platform. The system generates reports regarding a learner's performance and progress, metacognition (e.g. awareness of their knowledge), and overall problem areas.

Assessment and remediation

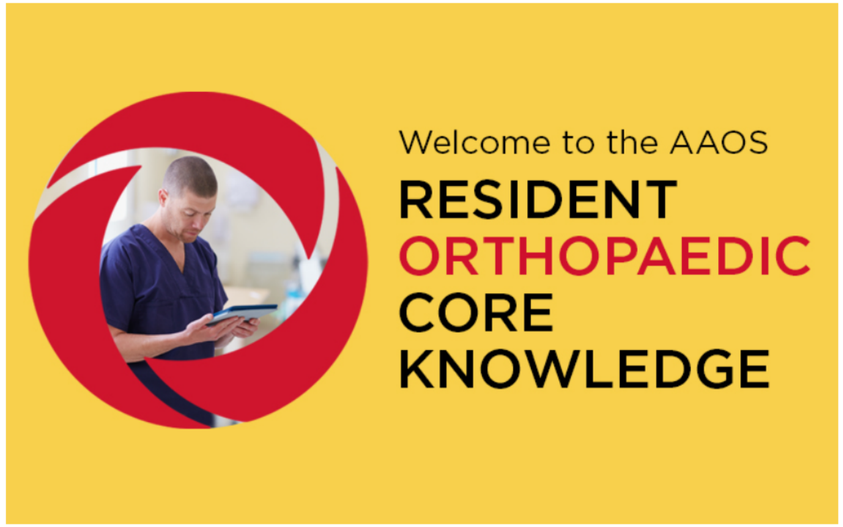
JBJS Clinical Classroom provides residency directors and faculty with the ability to assign random or customized quizzes to any or all residents for assessment and remediation. For example, if a resident doesn't score as well as desired on the in-training examinations, quizzes can be assigned at different time intervals to

AAOS ROCK

Resident Orthopaedic Core Knowledge

HOME | CURRICULUM FAQS | MEET THE CO-DIRECTORS

Because Results Matter, Your Success is Our Mission

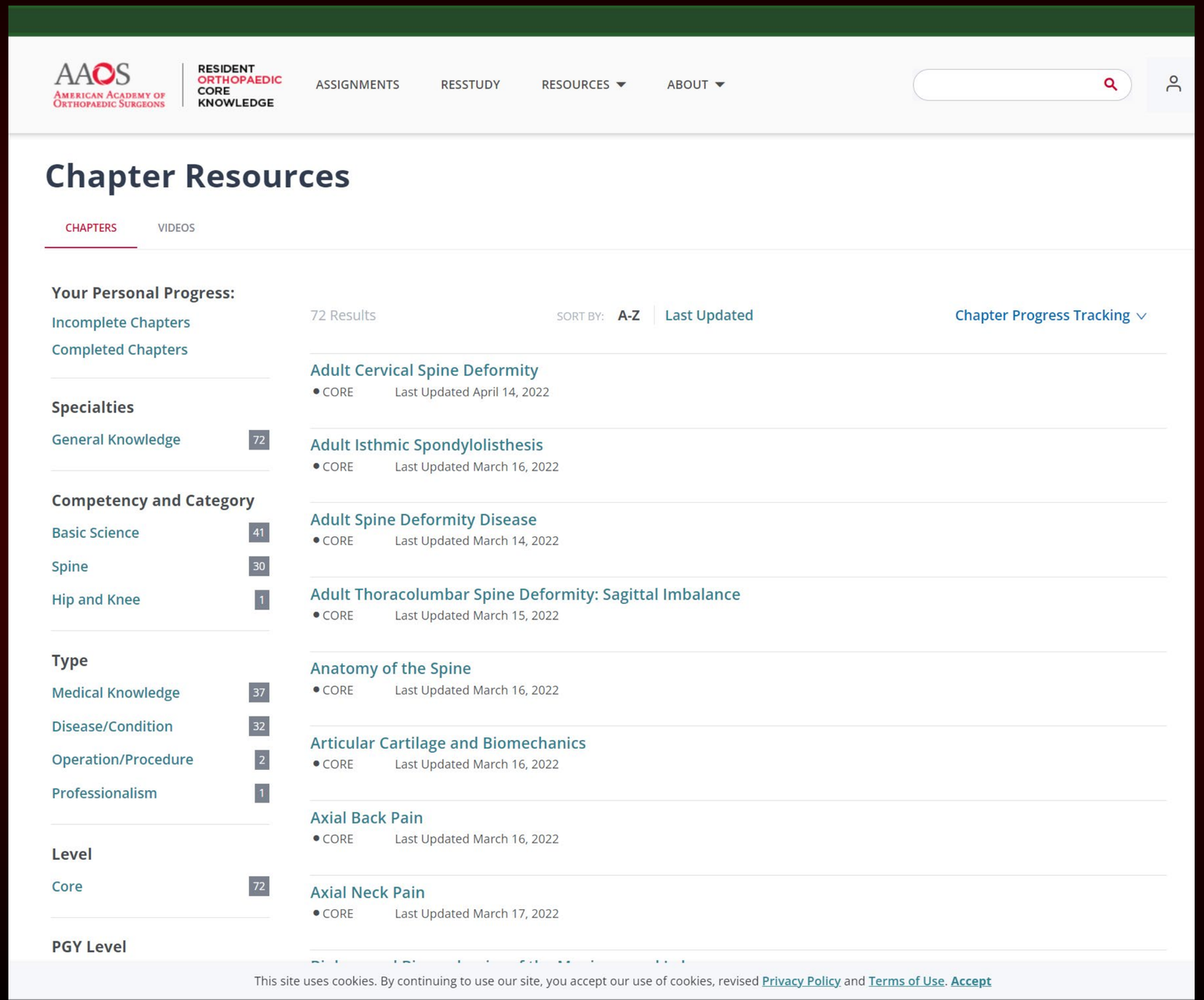


Now Available! AAOS Resident Orthopaedic Core Knowledge Program

The all-new AAOS Resident Orthopaedic Core Knowledge Program (ROCK) is a dynamic online learning environment designed to empower residents with core foundational knowledge needed to pass their Boards, feel confident in their Orthopaedic In-Training Examination (OITE) scores, and be a well-rounded orthopaedic surgeon.

Resident program directors will have the flexibility to incorporate content at the depth, breadth, and timing necessary to achieve their program's specific goals. They will have access to tools to gain a data-based understanding into how residents are spending their time on independent learning, providing providing insights to coach their residents more effectively.

AAOS ROCK


AAOS
American Academy of Orthopaedic Surgeons
RESIDENT
ORTHOPAEDIC
CORE
KNOWLEDGE
ASSIGNMENTS
RESSTUDY
RESOURCES
ABOUT
Chapter Resources
CHAPTERS
VIDEOS
Your Personal Progress:
Incomplete Chapters
Completed Chapters
Specialties
General Knowledge 72
Competency and Category
Basic Science 41
Spine 30
Hip and Knee 1
Type
Medical Knowledge 37
Disease/Condition 32
Operation/Procedure 2
Professionalism 1
Level
Core 72
PGY Level
72 Results
SORT BY: A-Z | Last Updated
Chapter Progress Tracking
Adult Cervical Spine Deformity
CORE Last Updated April 14, 2022
Adult Isthmic Spondylolisthesis
CORE Last Updated March 16, 2022
Adult Spine Deformity Disease
CORE Last Updated March 14, 2022
Adult Thoracolumbar Spine Deformity: Sagittal Imbalance
CORE Last Updated March 15, 2022
Anatomy of the Spine
CORE Last Updated March 16, 2022
Articular Cartilage and Biomechanics
CORE Last Updated March 16, 2022
Axial Back Pain
CORE Last Updated March 16, 2022
Axial Neck Pain
CORE Last Updated March 17, 2022
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Teaching Tools: Perioperative Skills

- Pre-op Planning Templates
- Evernote files
  - Attending specific surgical library
- Video Feedback
- Graduated Autonomy
  - Let Resident Struggle, supervised
  - Provide tips for them to succeed.

Preoperative Planning Templates

Patient ID: 74M hx of HTN, synovial chondromatosis, presenting for scheduled L THA in the s/o end stage OA and continued hip and groin pain, after failing non-operative measures including PT, NSAIDs, and activity modification.

I. **Indication for surgery:** OA in the s/o previous open left synovectomy for synovial chondromatosis ~30 years ago

II. **Positioning**
- a. Position: Lateral
- b. Table: Radiolucent table
- c. C arm: No

III. **Draping & other considerations**
- a. Left leg: prep entire leg out, ASIS down
- b. Stockinette over toes with coband on top
- c. Implants/rep in the room (cementless)

IV. **Steps of procedure**
- a. Incision: posterior-lateral: 1 cm posterior to greater troch, 1/3 above troch, 2/3 below, knife to skin, bovie down through subQ to fascia. Distally, incise TFL, proximally glute max
- b. Split glute max in line with fibers to expose bursa (remove/incise and move posteriorly out of the way), then expose SERs (internal rotation to put them on tension)
- c. Army-navy to protect glute min proximally, take down SERs and tag them, try to take down minimal amount of quadratus femoris
- d. Now capsule is exposed, take down portion of glute min insertion at top of capsule, incision through capsule
- e. Femoral neck cut, grab femoral head with a towel clip or similar and remove, size for implant
- f. Remove labrum, other schmutz (may be more than usual given hx of synovial chondromatosis and calcifications seen on XR)
- g. Ream acetabulum and size – 20 degrees of anteversion, 40 degrees abduction (approximately)
- h. Place cup, screws in (irrigate first, implants don't touch skin on the way in)
- i. Femoral neck: box osteotome to the lateral portion in the piriformis fossa for start point
- j. Broach the femoral canal, can use the lateralizer as needed to prevent varus (be careful of the anteversion because this gets set with the broach during a cementless implant)
- k. Broach handle off, neck + head on, reduce, check for stability in flexion, position of sleep, and impingement, +/- XR to check leg length and offset versus checking manually on table
- l. When happy with sizing, broach comes out, irrigate femoral canal, implant in, ceramic head on, reduce.

Raffi
How will you position him lateral? Bean bag, peg board, other positioners?
Reply

Raffi
Consider cobra retractor under abductors to expose piriformis, tag piriformis and cut at its femoral insertion.
Reply

Raffi
Why protect glut min if going to cut a bit of it later?
Reply

Raffi
Use rongeur or kocher clamp to grab tissues, hold on tension and deep bovie them out.
Reply

Raffi
How will you expose acetabulum? What retractors and where will you put them? What position will leg be in to keep femur out of the way?
March 09, 2022, 9:27 PM
Reply

Raffi
A good tip is that final cup size should be about 4-6mm bigger than femoral head
Reply

Multi-Media Learning

- Maximize Preparation for Surgery
- Evernote library of cases
  - Descriptions by attending
  - Videos

Stanford MEDICINE

Attending-Specific Surgical Video Library

A resource to improve Resident pre-operative planning, surgical knowledge, and operative participation and performance

Resident: Cameron Foreman

PI: Steven Frick

Benefits of Intraoperative Video for Surgical Education

Orthopaedic Resident Preparedness for Closed Reduction and Pinning of Pediatric Supracondylar Fractures Is Improved by e-Learning

A Multisite Randomized Controlled Study

Thomas Hearty, MD, DPT, Max Maizels, MD, Maya Pring, MD, John Mazur, MD, Raymond Liu, MD, John Sarwark, MD, and Joseph Janicki, MD

Surgical knowledge:

- Multimedia module vs traditional textbook preparation
- Mean test score: 91% vs 73.5%
- 22/27 reduced anxiety and improved attention to surgical detail

Multimedia-Driven Teaching Significantly Improves Students' Performance When Compared With a Print Medium

Reinhard Friedl, MD, Helmut Höppler, MD, Karl Ecard, Wilfried Scholz, MD, Andreas Hannekum, MD, PhD, Wolfgang Öchsner, MD, and Sylvia Stracke, MD

Departments of Heart Surgery and Cardiac Anesthesiology, and Division of Nephrology, University Hospital of Ulm, Ulm, Germany

Intraoperative knowledge and surgical preparation efficiency:

- Multimedia module vs traditional textbook preparation
- Intraoperative mean correct answers: 83% vs 65%
- 14% reduction in study time

Stanford MEDICINE

Multimedia Attending-Specific Video Library

Stanford MEDICINE

Equipment

- GoPro Hero10 Black *$350*
- Optical zoom lens *$140*
- MicroSD card 256GB (14.5 hrs of video in 1080p) *$35*
- Lens filter (ND32 for surgical lights) *$30*
- Battery (14.5 hrs - PowerCore 10000) *$22*
- Head strap *$20*
- Battery connector (PowerCore to camera) *$13*

- **Total $610**

Stanford MEDICINE

Process

- Surgeon videos Surgery
- Surgeon or Resident Edits
- Voice-Over Commentary
- Post Video with link in Evernote

Stanford MEDICINE

Ankle - Rotational

5 notes

TITLE	UPDATED
Isolated Syndesmotic Fixat...	11 minut
Medial Mal - Gardner	10 minu
Weber B - Bishop	a few m
Weber B - Gardner	9 minut
Weber B Fibula - Lucas	9 minut

Weber B - Bishop

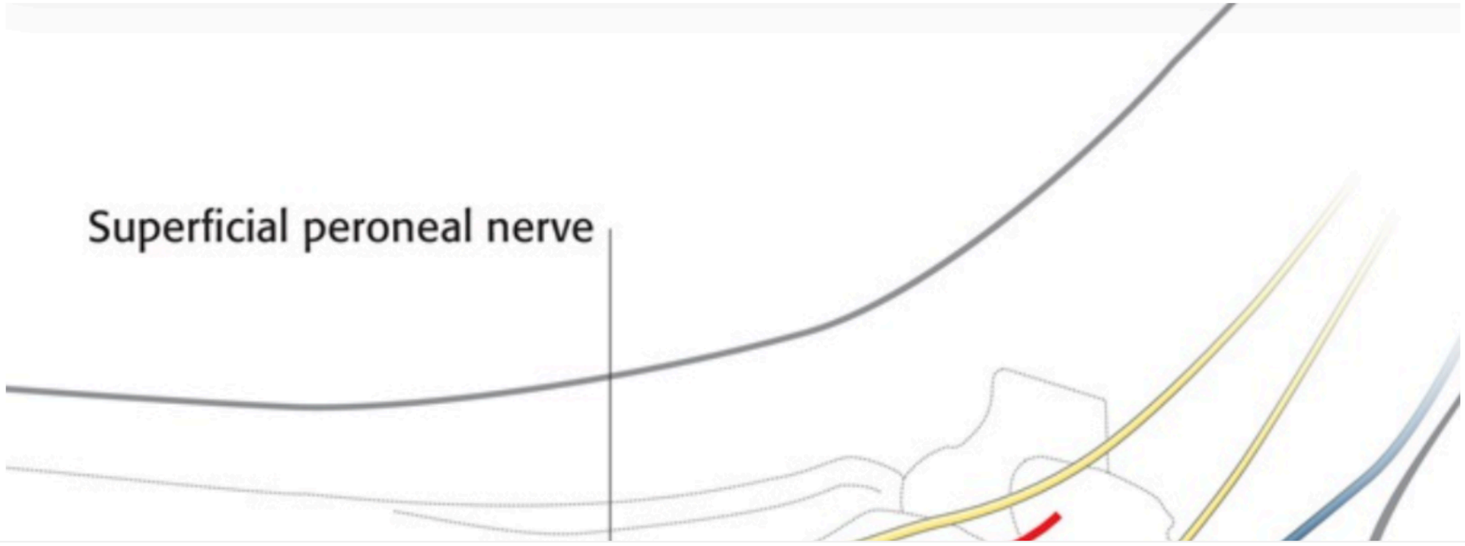
VIDEO (antiglide fixation):
https://www.youtube.com/watch?v=K0_VubZWO1c

DICTATION:

Weber B Dictation - Bishop.docx 14 kB

ATTENDING PEARLS:
[High yield points from Attending]

LINKS:
AO Surgery Reference
Orthobullets - Ankle Fractures



Last edited on Mar 5, 2022

INDICATIONS: Tibiotalar instability

Determining instability

- If medial clear space is widened on mortise XR, unstable
- If no widening of medial clear space on mortise, stress test in ED (take mortise XR, then manually stress with dorsiflexion and external rotation)
- If medial clear space does not widen, ankle is stable - ok for CAM walker boot and WBAT
- If medial clear space widens - short leg splint and generally indicated for fixation

RISKS OF PROCEDURE:

- Damage to SPN

PROCEDURE:

Set Up: 3003, supine, bump, tourniquet, bone foam, c-arm, synthes small frag set (distal fibular locking plate)

Fx type: Weber B, oblique

Mode: Antiglide

Principle: 1/3 tubular plate placed posterolaterally on fibula in antiglide position, indirectly reduces and acts as buttress to resist posterior and proximal displacement of distal fragment

Approach: Lateral

- Mark out fibula border; incision just distal to tip of fibula, then on posterior border of fibula
- Incision along posterior margin of fibula (centered over fracture)
- Superficial:
  - skin flaps - avoid sural nerve and small saphenous vein (don't generally see)
  - SPN courses lateral to anterior 10cm proximal to tip of fibula
  - Identify fascia, incise, then retract peroneals posteriorly with Homann
  - Incise periosteum and strip enough to see fracture (1-2 mm)
  - Clear hematoma, callous (can use pointed reduction forceps to lift up fragments to expose)

Reduction:

- Longitudinal traction and internal rotation
- Small pointed reduction clamp x2 to hold reduction

PAPERS:

Biomechanical study comparing Antiglide versus Lateral Plating

The_antiglide_plate_for_distal_fibular_... 1 MB

Proposed advantages of antiglide:

- Smaller dissection
- Less operative time
- Minimal bending of plate
- No potential for penetration of a screw into the joint

Main Finding:

- For lateral plate - fixation failed when the torque reached an average of 64.3% of the torque that produced the fracture
- For antiglide plate - 77.2%

Clinical Outcomes for Antiglide versus Lateral plating

Antiglide vs Lateral.pdf 868 kB

Findings:

- No difference in functional outcomes, complications, revision rate
- No findings of peroneal irritation with antiglide plate (possible concern with antiglide plating)

CPT: 27792

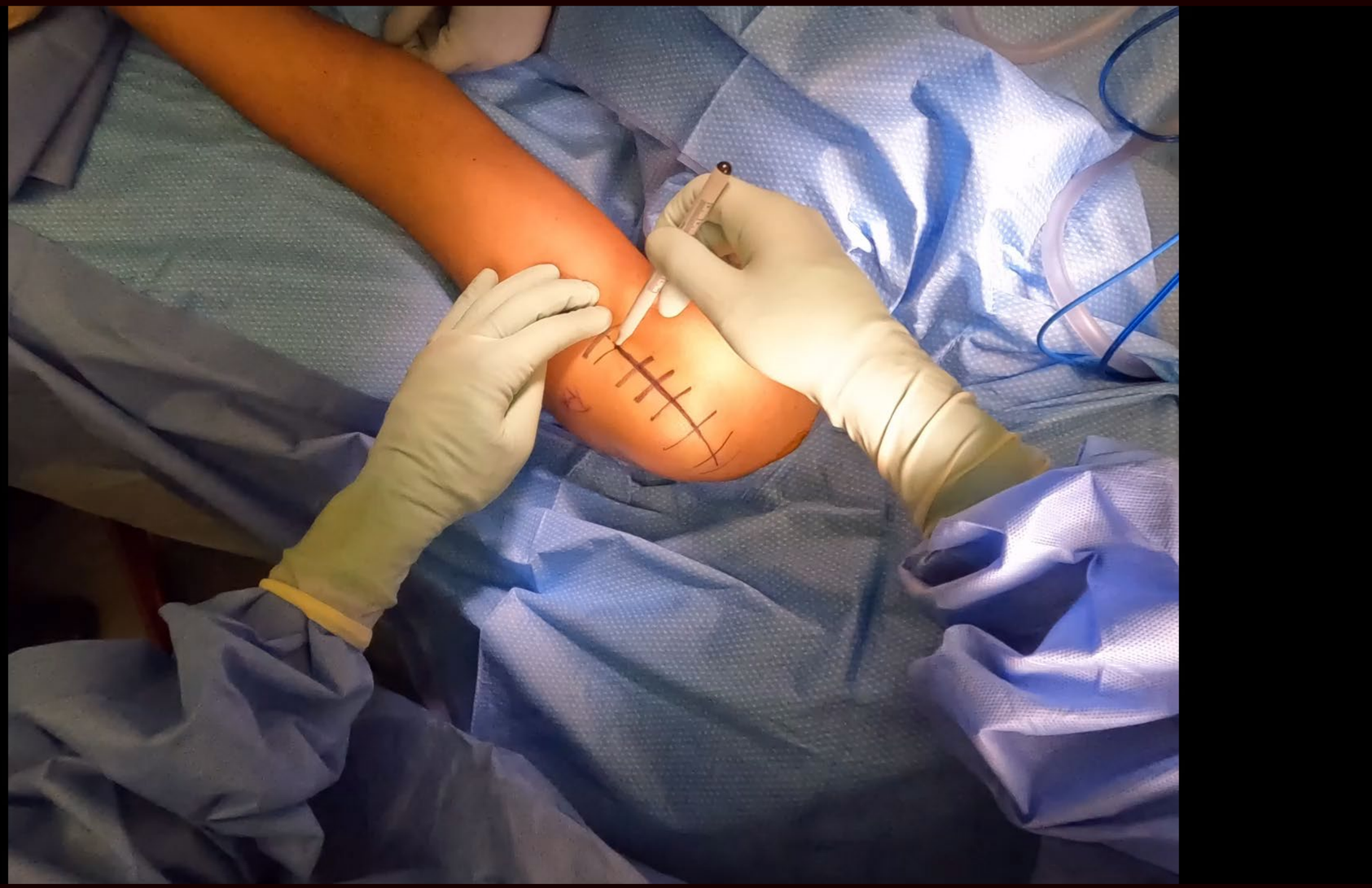
CASE LOG: https://apps.acgme.org/ADS/CaseLogs/Default/Landing

XRs:

Weber B 7.11.21.pdf 2 MB

[Case examples]

Narrated Surgery



Summary

- Embrace the practical realities of education
  - Time Crunch
  - Adult learning style
  - Variable Engagement
- Retention Strategies
  - Case based learning
  - Multiple exposures to same topic
- Identify and Take Advantage of Resources
  - Online tools
  - Motived residents
  - Motived attendings
- Perioperative skills
  - Preop planning
  - Evernote organizing tool
  - Video prep and feedback

End

- Thanks

Preparing for Current Knowledge Assessment: OITE & ABOS

Current & Future

Derek Moore, MD
Orthopedic Spine Surgeon
Santa Barbara Orthopedic Associates
Cottage Hospital, Santa Barbara
Founder & CEO Orthobullets

Disclosures

- Split my Time between Clinical Practice & Company
- ~50% Share Holder in Bullet Health (orthobullets).
- While I am a practicing surgeon, consider this an industry talk.
  - my conflict influences all of my opinions in the area of medical education.

OVERVIEW

1. **Assessment**
    1. Current System
    2. Future Models
2. **Technology**
    1. Personalized
    2. Precise
    3. Time-Sensitive
3. **Data Science & AI**
    1. Role in Learning
    2. Role in Assessment

BACKGROUND

Edtech is moving fast. As a program director it is hard to stay current & speak the language of the next generation of learners.

OBJECTIVES

1. Give an update on modern **assessment trends**.
2. Give an update on **content trends** and platforms to deliver content.
3. Discuss **algorithms & AI**, and the roles they might play in resident education.

OVERVIEW

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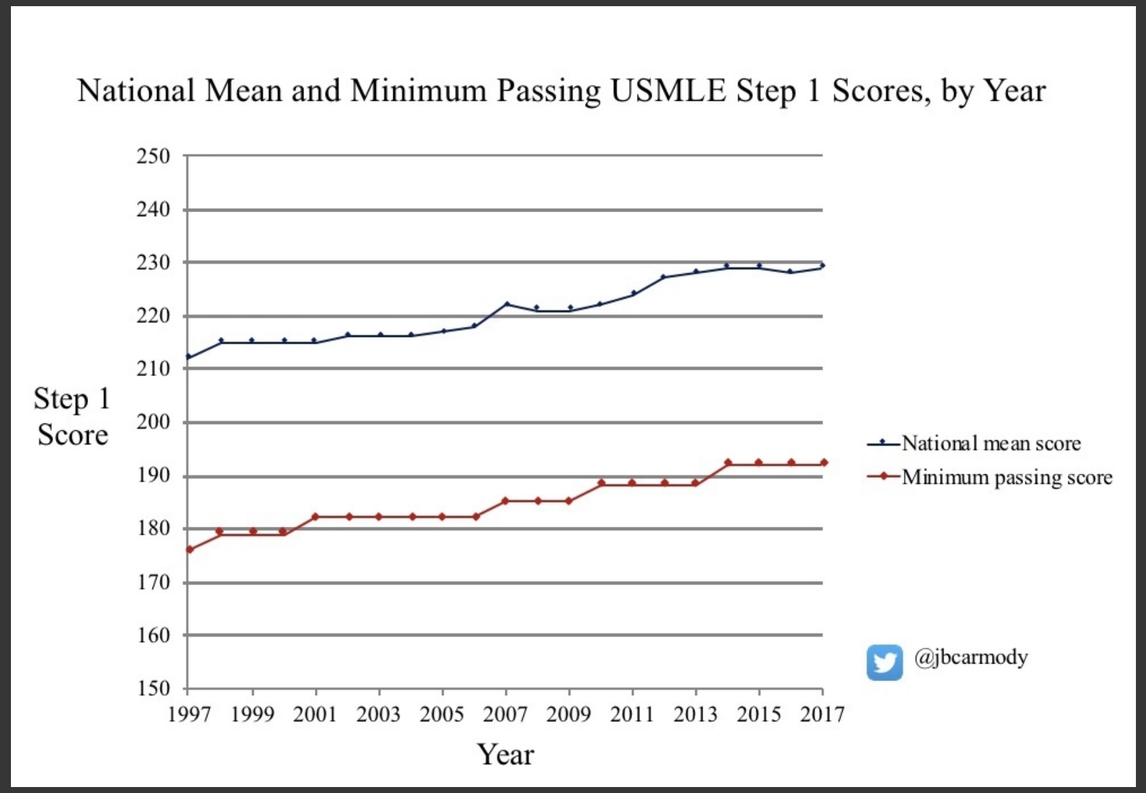
    2. Role in Assessment

ASSESSMENT

Assessment & Certification Drives Learning Behavior

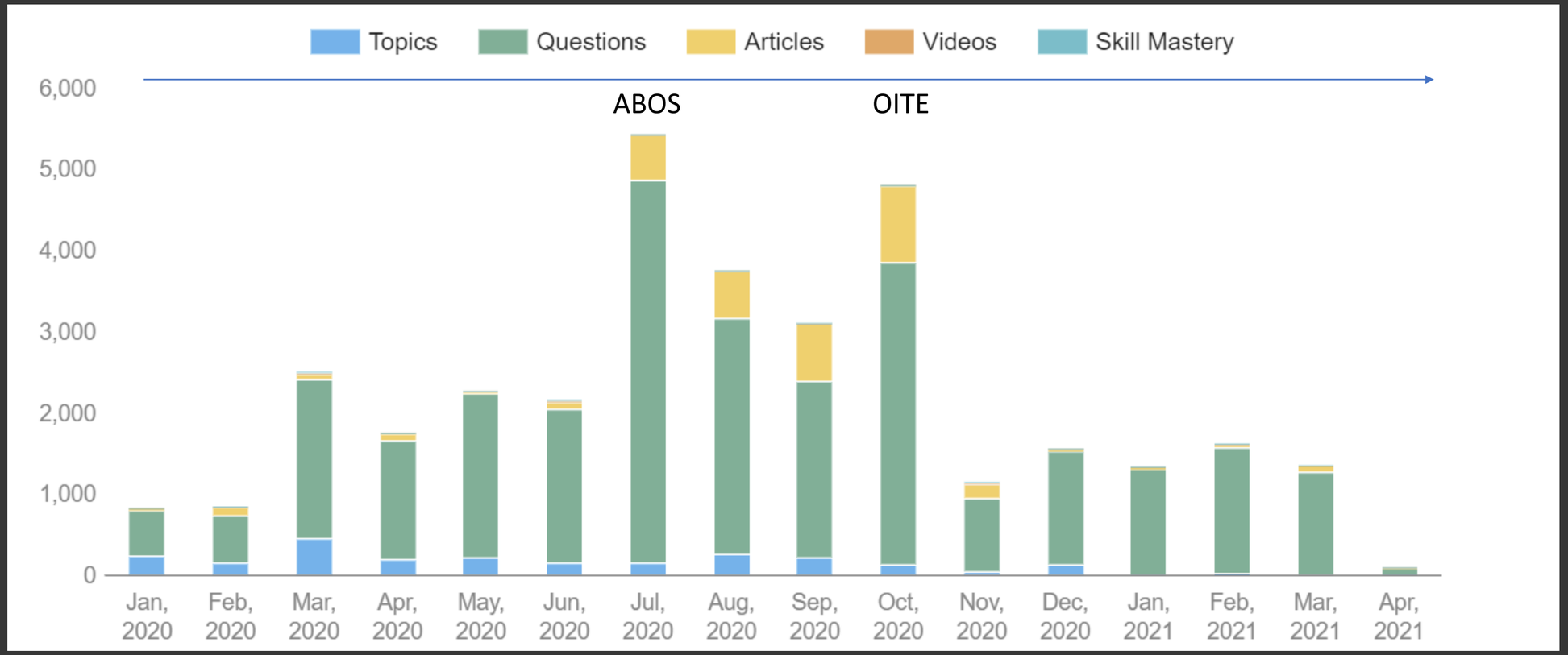
USMLE/CLASSROOM PARADOX



Nearly a quarter (23.5 percent) of second-year medical students reported in 2017 that they “almost never” attended class, an increase of 5 percentage points from 2015. And only about 13 percent of students reported attending lectures often.

Emphasis on USMLE Led to Drop in Medical Student Attendance

CURRENT ORTHOPAEDIC ASSESSMENT



Emphasis on OITE and ABOS1 Drives Sporadic Learning

ASSESSMENT

Predictive of Hemoglobin A1C

Modern Assessment Prevents Adverse Outcomes

ASSESSMENT

Are the OITE and ABOS Part I Equivalent to an A1C?

TECHNOLOGY

1. **Assessment**
    1. Current System
    2. Future Models

2. **Technology**
    1. Personalized
    2. Precise
    3. Time-Sensitive

3. **Algorithmic Learning & AI**
    1. Role in Learning
    2. Role in Assessment

Measuring Learning Quality

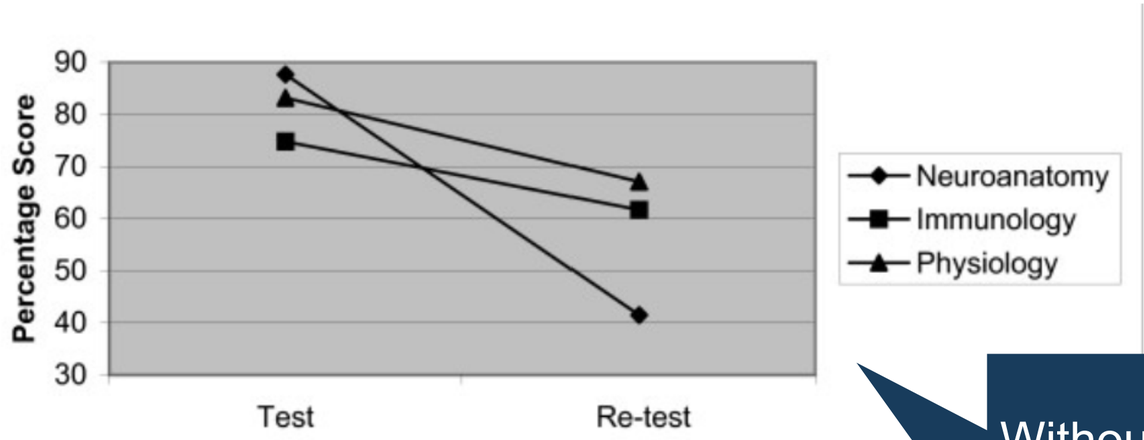
$$\textbf{Learning Value} = \frac{\text{QUALITY}}{\text{COST}} = \frac{\text{Stick} \times \text{Retention} \times \text{Importance} \times \text{Joy}}{\text{\$ Cost} \times \text{Incremental Time} \times \text{Frustration}}$$

TECHNOLOGY

PERSONALIZED SPACED-REPETITION ALGORITHMS

Learning Value = (Stick ↑↑ Retention, Importance, Joy) / (↓↓ $ Cost, ↓ Incremental Time, ↓ Frustration)

Figure 1



Test and Re-test scores 10 or 11 months apart for three basic science
at the University of Saskatchewan.

Without spaced repetition, medical students forgot **17.6% to 52.7%** of their basic science knowledge after 11 months

WIN

Fix the Forget

CLINICAL CLASSROOMS ARE NOT PERSONALIZED

Learning Value =

↓↓ Stick

Retention

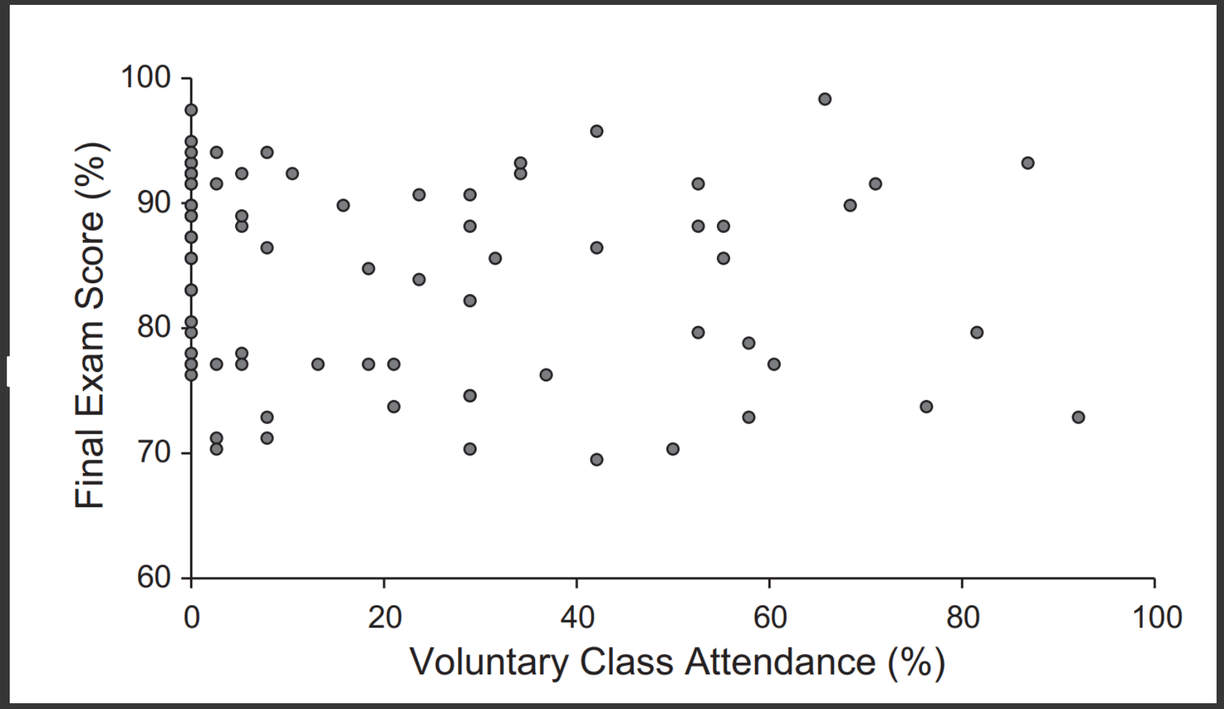
↓ Importance

↓ Joy

↑↑ $ Cost

↑↑ Incremental Time

Frustration



Little Correlation Between Classroom Attendance and Exam Scores

LOSE

Didactic Clinical Classroom Are Ineffective

CASE-BASED TEACHING

Learning Value =

↑↑ Stick

Retention

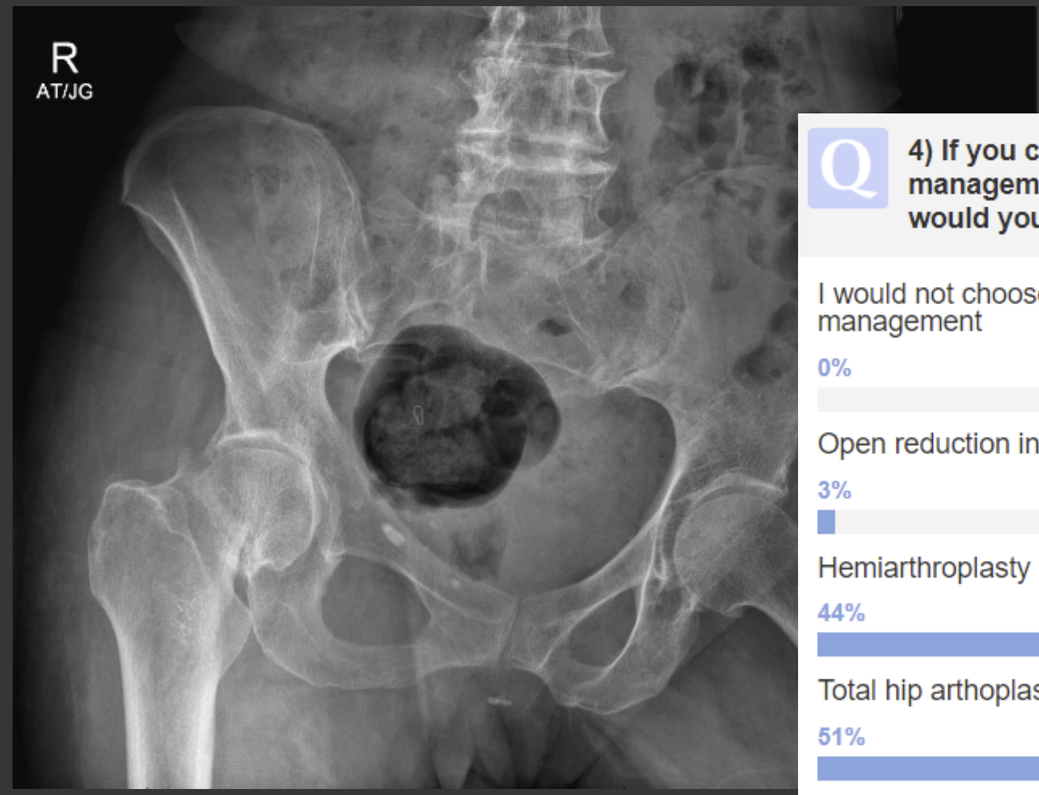
↑↑↑ Importance

↑ Joy

↑↑ $ Cost

↑↑ Incremental Time

Frustration



Q **4) If you choose Operative management, what surgical technique would you use?**

I would not choose Operative management
0% (3/2543)

Open reduction internal fixation (ORIF)
3% (82/2543)

Hemiarthroplasty
44% (1138/2543)

Total hip arthoplasty (THA)
51% (1301/2543)

Outside my area of expertise - best if I don't vote
0% (19/2543)

WIN Case-Based Teaching with a Focus on Gray-Zone Decisions

LONG-FORM CONTENT IS NOT PRECISE

Learning Value =

↓↓ **Stick**

Retention

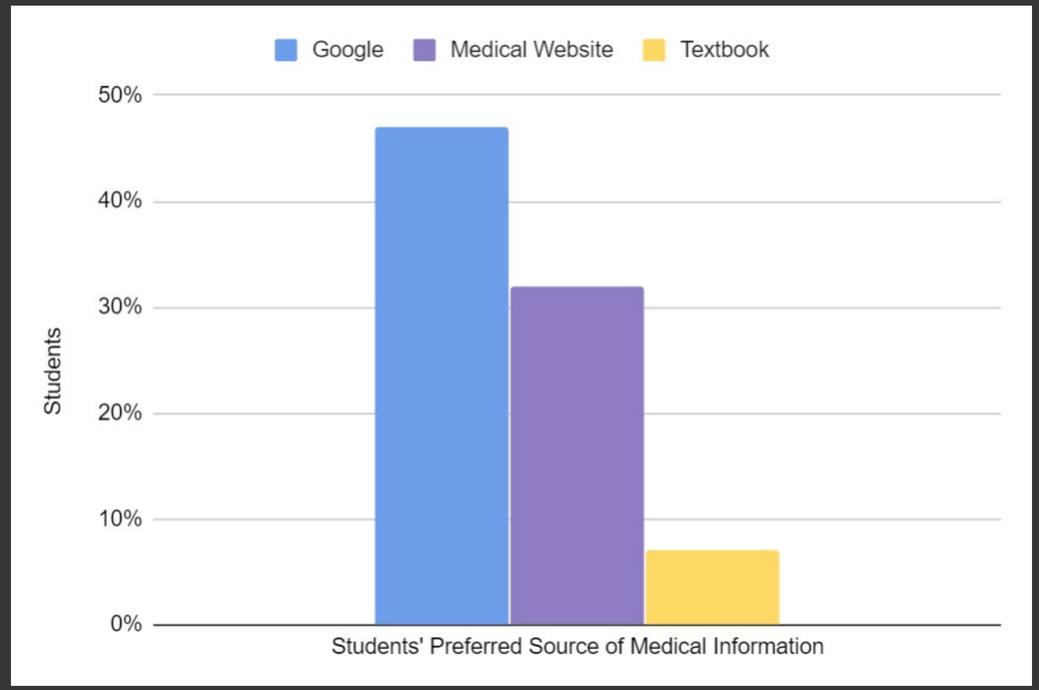
↑↑ **Importance**

↓ **Joy**

↑↑ **$ Cost**

↑↑ **Incremental Time**

Frustration



LOSE

Textbooks & Long-Form Content will continue to Decline

SHORT-FORM CONTENT IS PRECISE

Learning Value =

↑↑ **Stick**

Retention

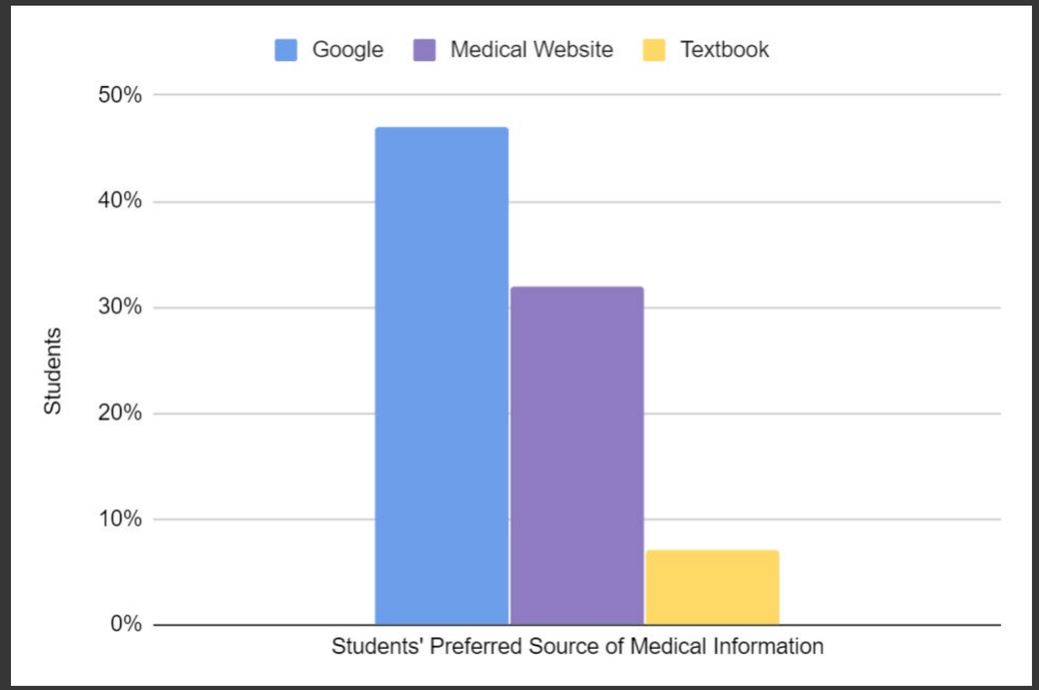
↑↑ **Importance**

↑ **Joy**

↑ **$ Cost**

↓ **Incremental Time**

Frustration



WIN Precise Short Content Fits the Learner's Immediate Needs

VOICE-ONLY SHORT-FORM CONTENT IS PRECISE

Learning Value =

↑↑ **Stick**

Retention

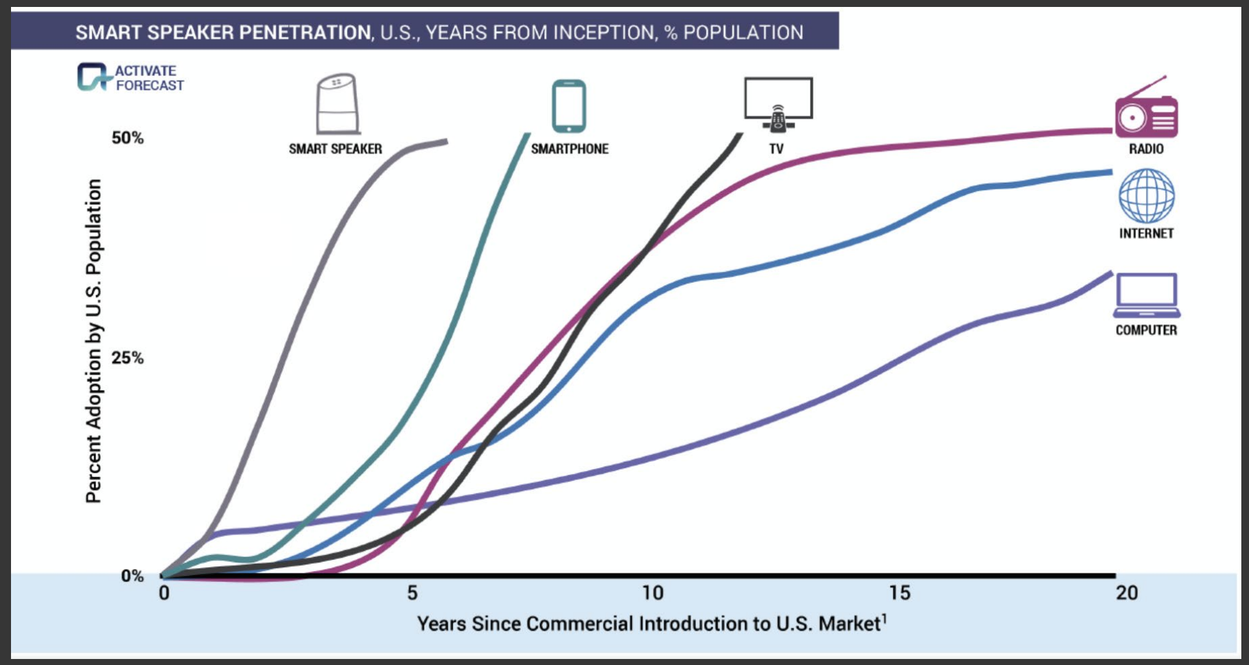
↑↑ **Importance**

↑ **Joy**

↑ **$ Cost**

↓↓ **Incremental Time**

Frustration



WIN

Voice-Only Multi-task Learning will be a Gamechanger

ALGORITHMIC LEARNING & AI

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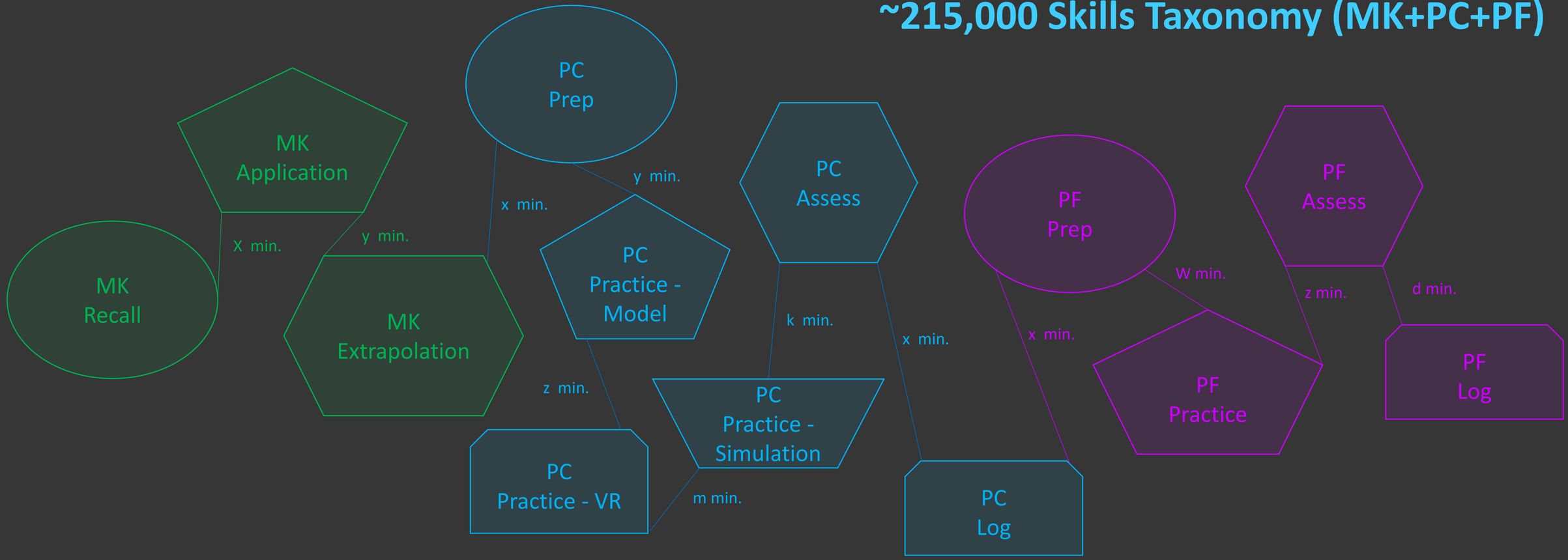
ALGORITHMIC LEARNING & AI

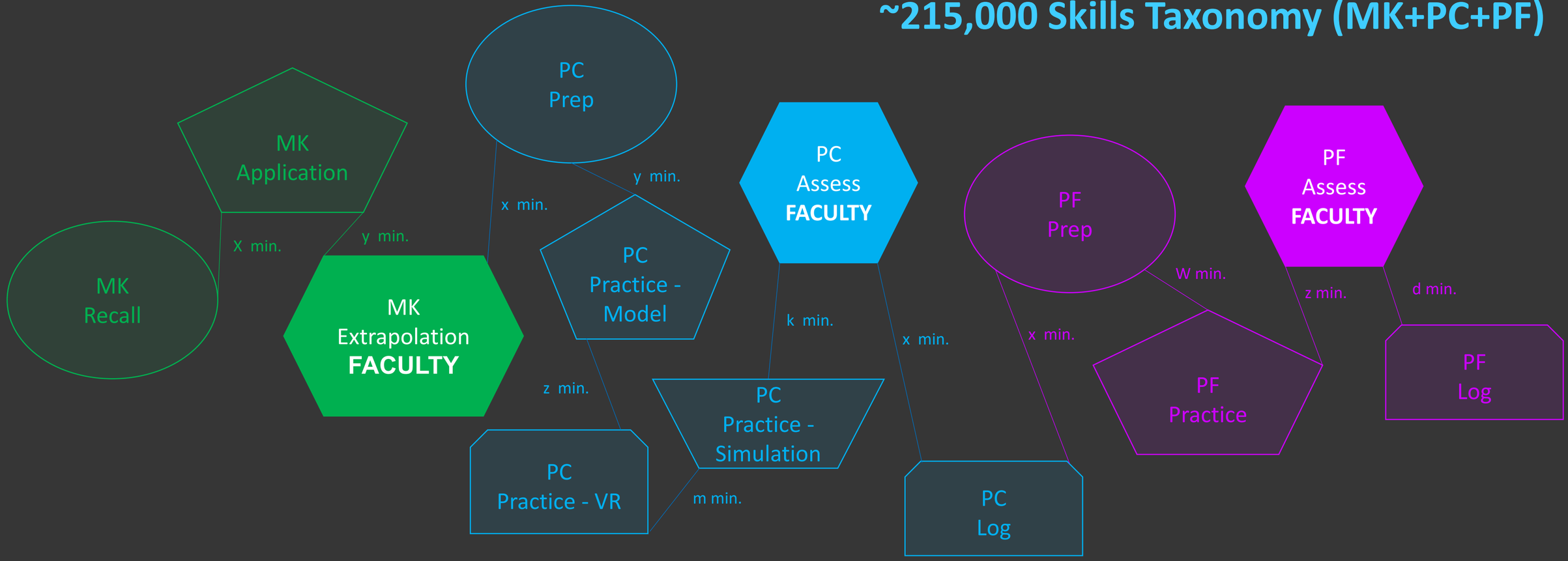
~215,000 Skills Taxonomy (MK+PC+PF)



Data Science & AI Will Be the Difference

ALGORITHMIC LEARNING & AI

~215,000 Skills Taxonomy (MK+PC+PF)



FACULTY* = Faculty Dependent Case-Based Teaching Conferences
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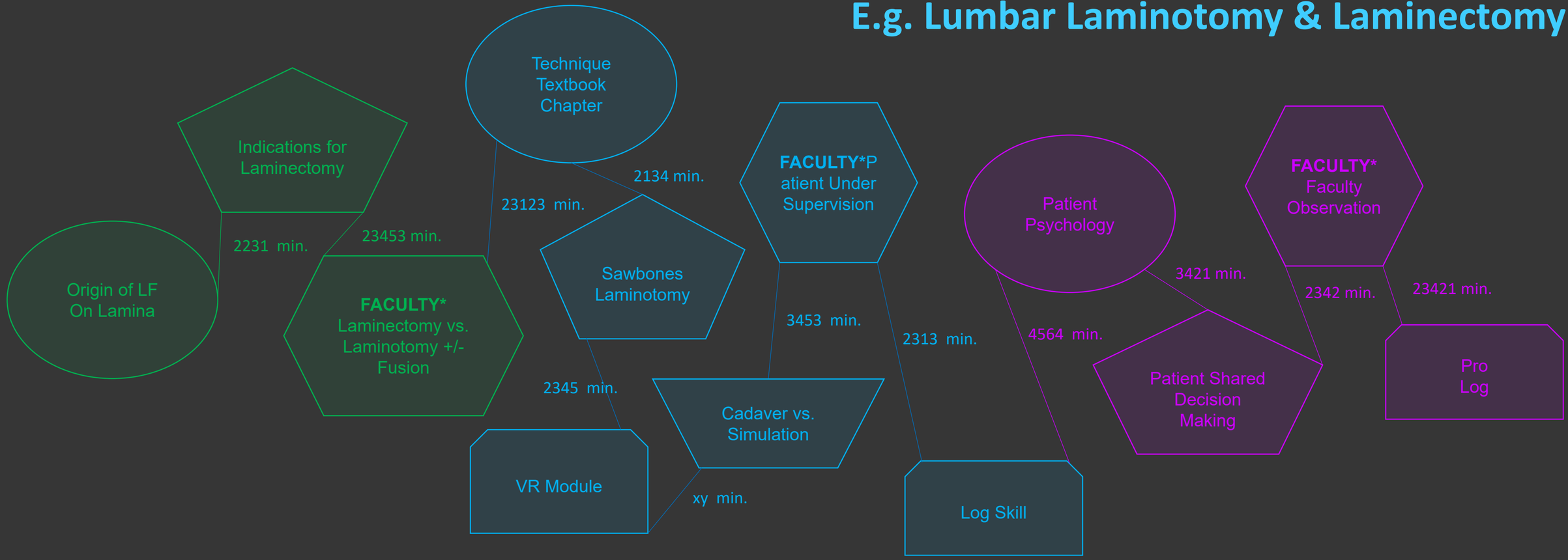
FACULTY TEACHING MORALE IS A PROBLEM WE NEED TO FIX

Data Science & AI Will Be the Difference

ALGORITHMIC LEARNING & AI

E.g. Lumbar Laminotomy & Laminectomy



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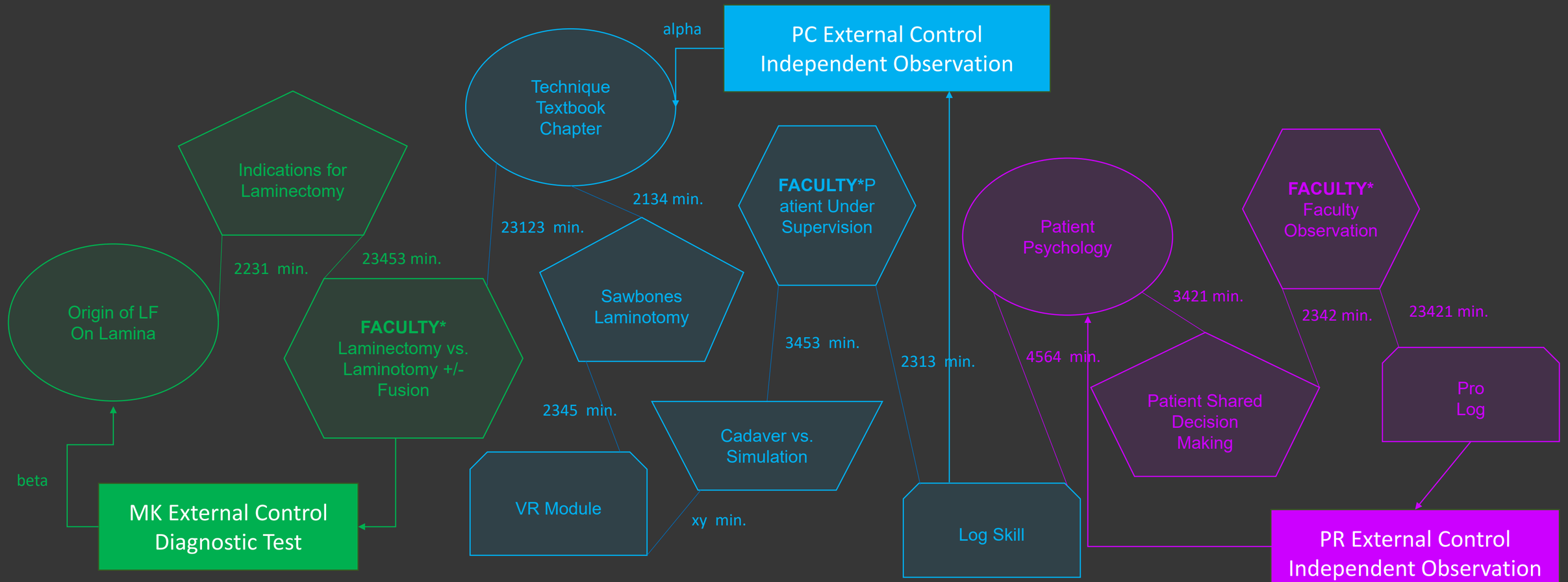
Data Science & AI Will Be the Difference

ALGORITHMIC LEARNING & AI



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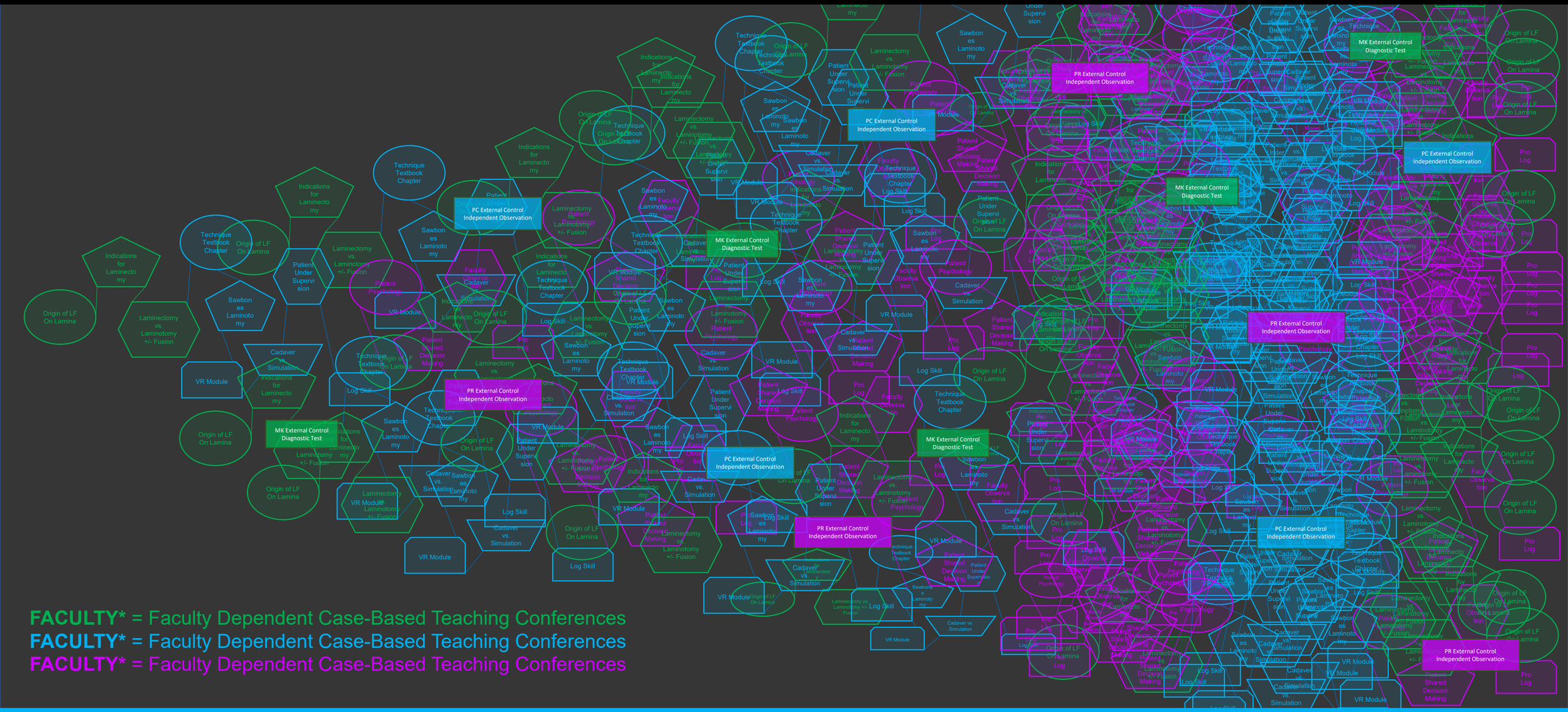
Data Science & AI Will Be the Difference

ALGORITHMIC LEARNING & AI



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Data Science & AI Will Be the Difference

CONCLUSION

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    1. Role in Learning
    2. Role in Assessment

GOALS

In modern HR we have learned to be great at your job you have to love it.
Residents have to love residency.

WHERE DO WE START

1. **Modernize Assessment**
2. Adopt **Innovative Technology**
3. Adopt **Algorithms & AI**.

CONCLUSION

CAREER VALUE = **QUALITY** / **COST** =

- Workplace enjoyment
- Off-work quality of life
- Lucrative
- Rewarding
- Freedom

- Cost - financial
- Risk
- Cost – time

=

1. Resident exchange platform
2. 40 hr. work week
3. 1.5-2X resident salaries increase
4. Performance-based employment
5. Trained in multiple revenue streams
6. 100% Board Certification
7. Dept-free by Graduation
8. **6-year training curriculum**

Is the Impossible Possible?

CONCLUSION

	Current	2030
1. **Medical School**	**4** Years	**2** Years
2. **Residency**	**5** Years	**3** Years
3. **Fellowship**	**1 Years**	**1 Years**
	10 Years	**6** Years

Think Big & Believe in It – Real risk if we do not.

OBSTACLES TO CHANGE

1. Cultural
2. Political (Academics)
3. Economic

But Do We Really Want it?