NEUROLOGY RESIDENCY EDUCATION IN THE AGE OF MILLENNIALS AND GEN Z

David Lee Gordon, M.D., FAAN, FANA, FAHA

Professor & Chair

Department of Neurology

Kathryn G. and Doss Owen Lynn, M.D., Chair in Neurology

The University of Oklahoma Health Sciences Center

AUPN Virtual Winter Session: *Program Directors Workshop*

NEUROLOGY RESIDENCY, MILLENIALS & GEN Z

Relevant Disclosure & Resolution

Under Accreditation Council for Continuing Medical Education guidelines disclosure must be made regarding relevant financial relationships with commercial interests within the last 12 months.

David Lee Gordon, M.D.

I have no relevant financial relationships or affiliations with commercial interests to disclose

(except that I am a Baby Boomer)

NEUROLOGY RESIDENCY, MILLENIALS & GEN Z

Learning Objectives

Upon completion of this session, participants will improve their competence and performance by being able to:

1. Discuss the differences in background experiences, viewpoints, and professional and personal goals and expectations that define Millennials and Generation Z
2. Describe the challenges and rewards involved with educating the next generation of neurologists
3. Discuss novel approaches to feedback, mentoring, teaching, learning, and work-life balance that aid in meeting the educational needs of our Millennial and Gen Z trainees
4. Describe how the next generation of trainees is changing the culture of medicine and how medicine is practiced

LEARNING OBJECTIVE 1:

Discuss the differences in background experiences, viewpoints, and professional and personal goals and expectations that define Millennials and Generation Z

Generation Y = Millennials

Generation Z = Zoomers

ARE GEN Y & Z LEARNERS DIFFERENT?

Yes & No

YES

- Medical trainees in the era of Generations Y & Z are different in 3 indisputable ways:
  - ***Presence of digital social media***
  - ***More women in the workplace***
  - ***Changes in societal culture***

NO

- Not every group member fits the group stereotype
- The human brain is not different
- Basic educational principles are not different
- Older generation bias exaggerates differences

GENERATIONS Y & Z

Definitions & Characteristics

GEN Y

- ***Born 1980 to 1996***
- ***Ages 26-32 in 2022***
- ***"Generation Me"***
- Entitled, overprotected
- Ambitious, overconfident
- Perfectionist
- Diverse, eclectic
- Tolerant, open-minded
- Dismissive of others
- Depressed, anxious
- Materialistic
- Seeking leisure time & work-life balance

Elmore 2010
Twenge 2006
Twenge 2009

GEN Z

- ***Born 1997 to 2012***
- ***Ages 10-25 in 2022***
- ***"Generation We"***
- Pragmatic, creative
- Ambitious, cautious
- Responsible
- Diverse, socially aware
- Tolerant, open-minded
- Justice-minded, canceling
- Compassionate
- Individualistic

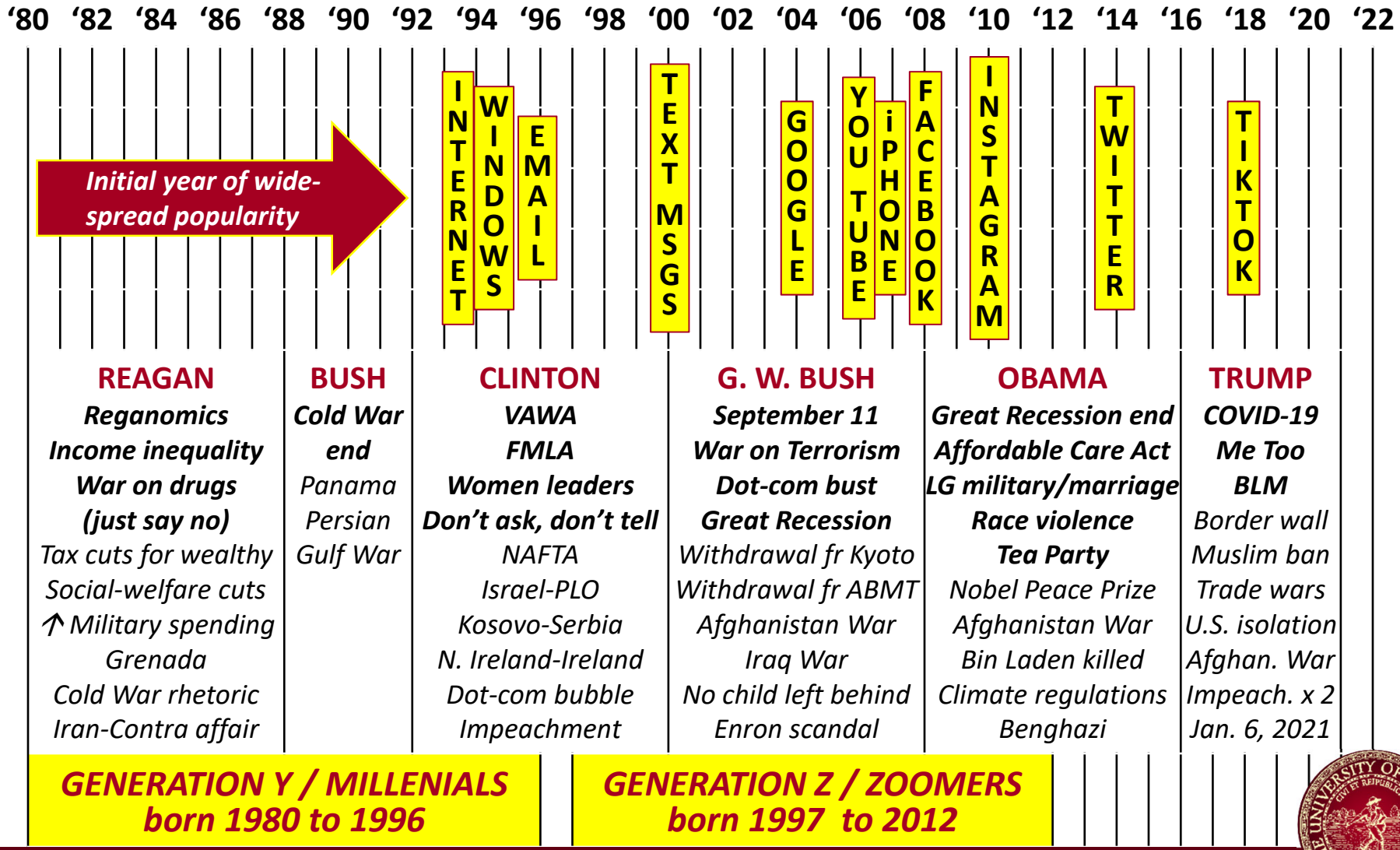
Hodgson 2018
Johnston 2018
Seemiller & Grace 2016

BOTH

- "Digital natives"
- More women in workplace
- Marriage delayed
- Religion less important
- Decreased use of sophisticated vocabulary
- FOMO is a motivator *("fear of missing out," term popularized in 2014)*

GENERATIONS Y & Z

Major Technological & Historical Events



GENERATIONS Y & Z
Digital Social Media Effects

- ***Breaks down geographic barriers & physical separation***
- ***Provides a peak behind the curtains*** of others' thoughts, concerns, & beliefs
- ***Facilitates shared experiences & empathy***
- ***Redraws group lines & redefines diversity***
- ***Binds its users—primarily Gens Y & Z—but also magnifies peer pressure & skepticism of nonuser opinions****
- ***Limits time for other experiences*** *(despite increased access)*
  - Less time to read books, watch old movies, listen to old songs
  - Effect is even greater in medicine with premed STEM focus & intense studying requirements during medical career

****"More than any other generation, today's youth are extensively connected to and shaped by their peers."*** *McCrindle & Wolfinger 2014*

GENERATIONS Y & Z
Digital Social Media Consequences

- ***Breakdown of traditional group identities, social constructs, & morality***
  - Nation, state, city, school, place of worship
  - Race, ethnicity, religion, economic class, mental health, musical interests
  - Sexual orientation, gender identification
- ***Facilitation of age-based group identities & morality (users mainly Gen Y/Z)***
  - Desire for acceptance by peers, respect from peers & elders
  - Goals & dreams
  - Sense of fairness & justice
- ***Increased knowledge of current events with increased tolerance toward those in their own age groups***
- ***Decreased knowledge of past events (both historical & cultural) with decreased tolerance toward those in older age groups***
- ***Accelerated acquisition of generational dialect/vocabulary***
- ***Inhibited acquisition of traditional, sophisticated dialect/vocabulary***
- ***Emotional expression on screen rather than in person***

GENERATIONS Y & Z
Digital Social Media Conclusions

Digital social media

has had a profound effect on Gen Y & Z:

- Group identities
- Cultural knowledge
- Vocabulary
- Emotional expression
- Mental health

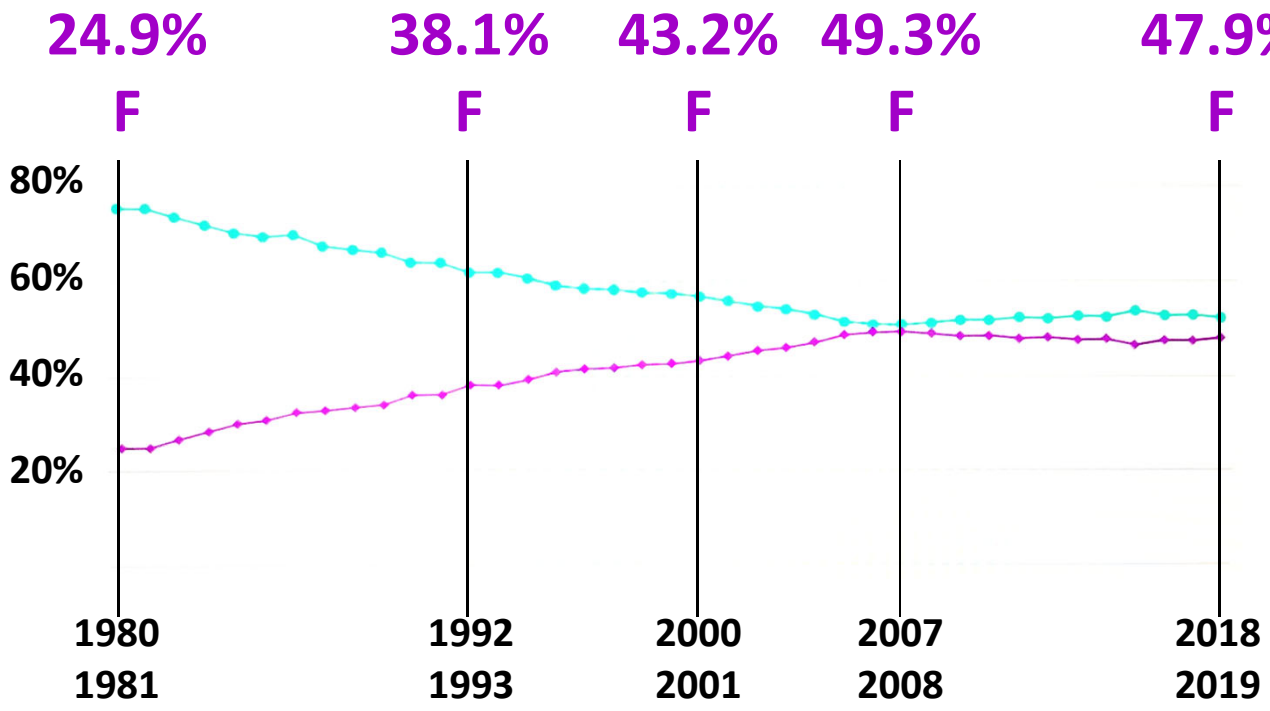
More socially aware ("woke"), but less historically aware.

More sensitive, both personally & in defense of others.

GENERATIONS Y & Z

↑ *Women Physicians*

U.S. Medical School Graduates 1981-2019



In 2019, for the first time, women comprised > 50% of all medical students (50.5%)

Women physicians in the workforce:

2007 – 28.3%

2019 – 36.3%

https://www.aamc.org/data-reports/workforce/interactive-data/figure-12-percentage-us-medical-school-graduates-sex-academic-years-1980-1981-through-2018-2019

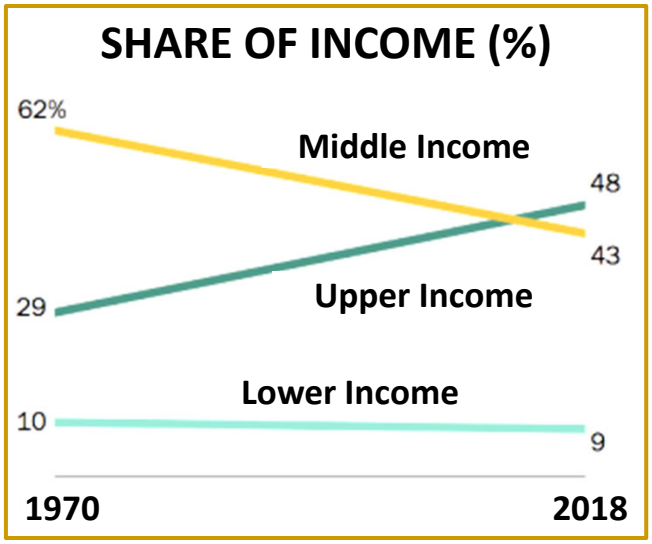
GENERATIONS Y & Z

↑ *Women Physicians Consequences*

- More right-brained thinking & empathy
- Increased emphasis on interpersonal skills
- Increased social awareness (“minority perspective”)
- Increased cooperation, less competition
- More two-income families
  - High individual salaries less important
  - Increased paternal responsibilities
  - Increased emphasis on wellness & work-life balance for both men & women
- Popularity of empathic fields ↑, procedural fields ↓
- Transformational (collaborative) as opposed to transactional (authoritative) leadership

GENERATIONS Y & Z
Societal Factors

- Generations Y & Z did not create:
  - Economic inequality
  - Systemic racism
  - Gender discrimination
  - Sexual intimidation & assault
  - Homophobia & heterosexism
  - The climate crisis
  - Mental illness



Horowitz et al 2020

- ***To their credit, however, their reactions to these phenomena have opened our eyes & awakened our collective prefrontal cortices***

LEARNING OBJECTIVE 2:

Describe the challenges and rewards involved with educating the next generation of neurologists

EDUCATING GENERATIONS Y & Z

Challenges & Rewards: 3 Factors

FACTOR	CHALLENGE	REWARD
Generational Bias	More effort*	Self improvement* Less biased healthcare
Leadership Style	More effort*	Self improvement* Learner respect & loyalty
Educational Strategies	More effort*	Self improvement* More effective education

**For the teachers*

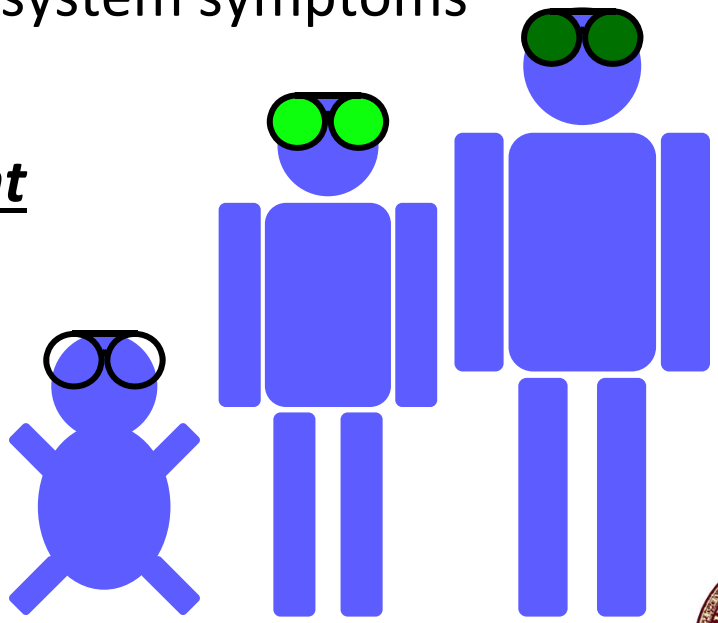
GENERATIONAL BIAS

We Are All Prone to Unconscious Bias

Unconscious bias = attitude or belief without awareness that is determined by previous experience(s)

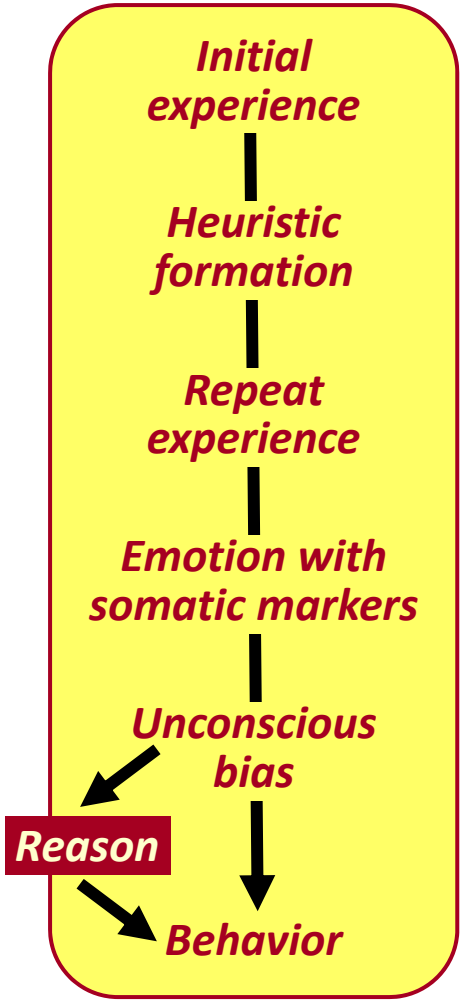
- Occurs as a normal consequence of experiential memory
- Manifested by gut feeling, intuition, or preconceived notion triggered by autonomic nervous system symptoms (somatic markers)
- ***May compel behavior or thought***
- Facilitates multitasking
- Promotes survival

Over the years, we all see the world through increasingly tinted (biased) glasses



After Damasio 1994

GENERATIONAL BIAS
Bias Acquisition & Suppression



- **Heuristic**
  - Mental shortcut based on experiences & associated emotion-tagged memories processed via amygdala
- **Somatic markers – *Warning Bells***
  - Autonomic nervous system symptoms generated by emotions in response to repeat experiences processed via amygdala & hypothalamus
- **Unconscious bias – *Thinking System 1***
  - Gut feeling, intuition, or preconceived notion triggered by somatic markers via amygdala that may directly compel behavior (fight or flight) or trigger…
- **Reason – *Thinking System 2***
  - Rational thought & awareness via prefrontal cortex triggered by gut feeling, incorporating factual memories from hippocampus

After Damasio 1994, Kahneman 2011

GENERATIONAL BIAS
We Like What We Know

- ***Status quo bias*** – being influenced by comfort with the status quo
  - Results in people preferring:
    - Music from their high-school & college years
    - To raise children the way they were raised
    - To teach they way they learned
  - Inhibits further learning & growth & facilitates:
    - ***Availability heuristic*** – generalizing based on personal knowledge or experience
    - ***Confirmation bias*** – interpreting information in a way that confirms preconceptions
- ***Clearly, familiarity does not imply superiority & satisfaction with the status quo stymies both self- & systems improvement***

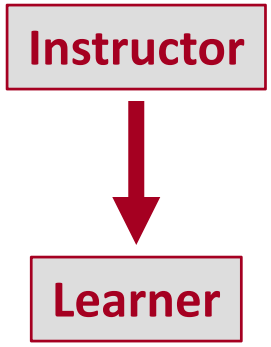
GENERATIONAL BIAS

The "Framing" Heuristic in Healthcare

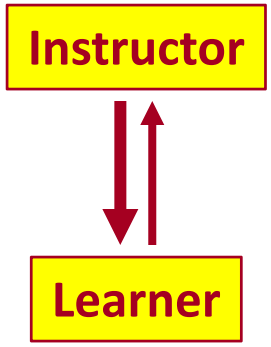
- **Framing heuristic** – being swayed by wording or the way information is presented
- ***Many traditionally used terms in healthcare promote bias against the patient or other health professionals***
- For example:
  - **"Noncompliant"** – paternalistic, pits patient vs. physician
  - **"Outside" hospital or "local" doctor** – derogatory
  - **"Denies"** – implies patient is untruthful &, thus, is insulting
  - **Drug or alcohol "abuse"** – moralizing & judgmental
  - **"Poor historian"** – derogatory (implies patient is either unintelligent or untruthful), defensive, & inaccurate (patient is the history, physician is the historian)
  - **Race** – social, not biologic construct; unhelpful & misleading

LEADERSHIP STYLE
Collaborative Instead of Authoritative

- Traditional, male-dominated leadership is ***authoritative*** (transactional)
  - Like coaching high-school athletes
  - ***Directions without others' input or explanations***
  - Transparency & modeling less important
  - "Do as I say (not as I do)"

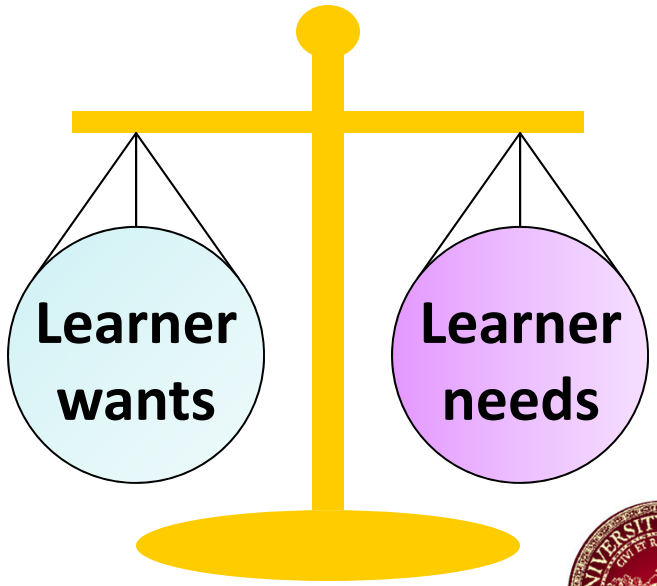


- Gen Y & Z, female-influenced leadership is ***collaborative*** (transformational)
  - Like coaching professional athletes
  - ***Directions with others' input and with explanations***
  - Transparency & modeling essential
  - "That's an excellent idea. Considering all the factors, I feel this is what we should do, because…"



LEADERSHIP STYLE
Learner Satisfaction Influence

- Learners don't always know what's in their best interests—in terms of both curriculum content & delivery (regardless of generation)
- Yet, (1) learner feedback is essential to curriculum quality improvement & (2) learner satisfaction scores are the primary means of curriculum assessment by external monitoring agencies
- Thus, educators must balance learner wants vs. needs
  - ***Respond to learner feedback AND***
  - ***Provide what's best for the learner regardless of learner feedback:***
    - Essential content
    - Effective educational strategies
- And educators now must continuously ***explain rationale for curriculum content & delivery strategies to learners***



EDUCATIONAL STRATEGIES

Effective Engagement

BOOMERS	GEN Z
Verbal	Visual
Sit & listen	Try & see
Teacher	*Facilitator*
Content (what)	Process (how)
Curriculum centered	*Learner centered*
Closed-book exams	*Open-book world*

After McCrindle & Wolfinger 2014

EDUCATIONAL STRATEGIES

The Modern Rs (NOT readin', 'ritin', 'rithmetic)

Gen Y	Preferences
Research-based methods	Varying teaching modalities
Relevance	Information relatable to learners
Rationale	Pertinence of content explained
Relaxed	Low-pressure learning environment
Rapport	Relationship with instructors

Laskaris 2016, Schrager 2021

Gens Y/Z	Preferences
Real	Credibility, transparency, honesty, understanding, & respect
Relevant	Both content & communication style that are pertinent & practical
Responsive	Learner-centric curricula & judicious, appropriate technology use
Relational	Openness & practical learning, blending knowledge, skills, experiences

After McCrindle & Wolfinger 2014

EDUCATIONAL STRATEGIES

↑ *DO & Women Neurology Residents*

	2007	2018
U.S. MD graduates	58%	55%
International MD graduates	36%	32%
U.S. DO graduates	***6%***	***13%***
Women residents*	***39.5%***	***43.1%***
Underrepresented minorities		9%

Gil Tommee et al. 2021
(similar data re: gender in Maqsood et al. 2020)

***Recall that, among U.S. physician workforce overall, women accounted for 28.3% in 2007 compared to 36.3% in 2019**

https://www.aamc.org/data-reports/workforce/interactive-data/figure-12-percentage-us-medical-school-graduates-sex-academic-years-1980-1981-through-2018-2019

EDUCATIONAL STRATEGIES
Neurology & Wellness

- ***Neurology*** is the only medical specialty among both
  - Highest rates of ***burnout***
  - Lowest rates of ***work-life balance satisfaction***[1]
- As of 2019, neurologists rank #2 in burnout among physician specialties (53% vs. urology 54%)[2]
- ***Neurology residencies should include a formal wellness curriculum***

1. https://www.aan.com/PressRoom/Home/PressRelease/1515
2. Patel 2020

EDUCATIONAL STRATEGIES

Competency-Based Medical Education

Milestones & Millennials: A Perfect Pairing		
Characteristics	**Millennial Educational Needs**	**Milestones-Based Educational Principles**
Educational expectations	Explicit & specific goals & objectives	Milestones & entrustable professional activities describe skills & behaviors in a transparent, specific manner
Educational process	Personalized & self-directed teaching methods	Provide rich developmental framework for institutional & self-directed education
Emotional quotient (EQ) & professionalism	Deliberate training in professionalism skills to enhance or strengthen EQ	Objective behaviors depicting EQ & professionalism integrated within milestones
Assessment	Continuous & frequent assessments using multiple methods	Supports frequent formative feedback; summative assessments use multiple methods (OSCEs, simulation, checklist rating scales, etc.)
Feedback	Explicit feedback based on specific tailored behaviors	Feedback based on direct observation of student behaviors compared with predefined milestones
Intended outcomes	Make an impact in the world & effect positive change	Overall goal is public accountability

After Desy et al. 2017

LEARNING OBJECTIVE 3:

Discuss novel approaches to feedback, mentoring, teaching, learning, and work-life balance that aid in meeting the educational needs of our Millennial and Gen Z trainees

COMPETENCY-BASED LEARNING

Definition

Outcomes-driven educational process utilizing the principle of curriculum alignment

- ***Systems of instruction & assessment based on learners demonstrating that they have acquired the knowledge, skills, attitudes, & behaviors (KSAB) they are expected to acquire as they progress through their education***[1]
- Identifies learners' strengths & weaknesses, including specific concepts & skills they have not yet mastered [1]
- Equivalent terms are outcome-, mastery-, proficiency-, performance-, & standards-based learning [1]
- Two essential elements are ***feedback*** & ***curriculum alignment*** [2]

1. *After https://www.edglossary.org/competency-based-learning/*
2. *Guskey 2007*

COMPETENCY-BASED LEARNING
Rationale in Medical Education

- Competent physicians demonstrate certain "core" knowledge, skills, attitudes, & behaviors (KSAB)
- Students & residents must demonstrate core KSAB appropriate for their level of training
- One can organize core KSAB in distinct categories based on physician level of training
  - Students – EPAs (entrustable professional activities)
  - Residents – Competencies & milestones

Competency-based medical education = CBME

COMPETENCY-BASED LEARNING
Optimizing Experiential Learning

Experiences result in optimal learning if learners are:	Corresponding <u>educational psychology</u> concepts:
Focused →	***Curriculum alignment***
Prepared →	***Priming***
Motivated →	***Flow***
Provided feedback →	***Deliberate practice***

These four concepts are interdependent and only possible in the setting of a standardized didactic curriculum that is separate from, but coordinated with, an experiential curriculum

COMPETENCY-BASED LEARNING
Curriculum Alignment

Curriculum alignment = the process of linking objectives, assessments, & learning experiences to ensure learners achieve what is expected of them

- Occurs within a ***standardized didactic curriculum*** utilizing a ***blended learning environment*** with varied strategies
- Has positive effect on learner growth, satisfaction, & ***flow***

After Benjamin S. Bloom (1913-1999), educational pioneer
(Bloom 1968)

You can expect what you inspect

W. Edwards Deming (1900-1993)
Quality improvement pioneer

Assessment drives learning

George E. Miller (1918-1998)
Medical education research pioneer

COMPETENCY-BASED LEARNING

Priming

Priming = influencing learners' responses to an experience by first exposing them to a related stimulus (e.g., didactic session, case-based learning, or simulation exercise) before seeing a patient

- Expands the knowledge base or "experience" of the learner in preparation for an upcoming experience, avoids missed opportunities
- Lessens anxiety & optimizes learning during experience
  - Utilizes **framing** heuristic positively – guides learners appropriately
  - Avoids **availability** heuristic – does not allow learners to generalize based on lack of knowledge or experience
- ***In clinical medical education, didactic curricula are formal priming exercises and are most effective when coordinated with experiential curricula***

After Lashley 1951

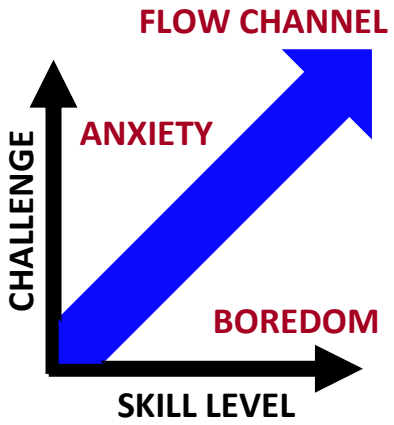
COMPETENCY-BASED LEARNING

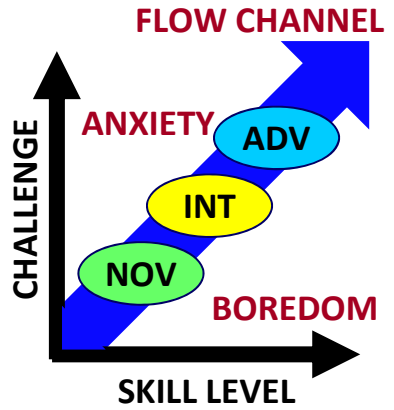
Flow

***Flow** = the state of optimal experience (enjoyment and maximal concentration)*

- Occurs when one:
  - ***Perceives skills match challenge difficulty***
  - ***Participates in a structured system with feedback*** (cannot be achieved by independent experiences)
- ***Provides a sense of accomplishment***
- ***Facilitates continued growth***
  - By gradually increasing challenge difficulty as skill level increases, one progresses from novice to advanced along the flow channel
- ***Facilitated by didactic curriculum, priming, curriculum alignment & deliberate practice***

After Csikszentmihalyi 1990



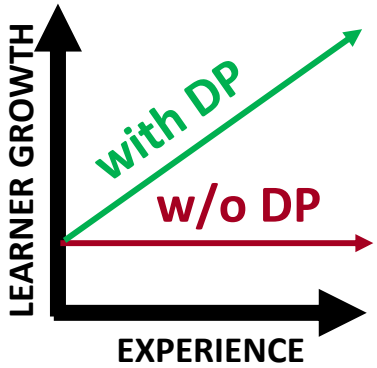


NOV = Novice
INT = Intermediate
ADV = Advanced

COMPETENCY-BASED LEARNING
Deliberate Practice

Deliberate practice (DP) = focused, repetitive practice designed by instructors to improve performance of specific tasks necessary to advance to the level of expert

- 10,000 hours of DP improves likelihood of achieving level of expert
- Essential components:
  - ***Motivated & attentive learner*** (***flow***)
  - ***Well-defined task & goals*** (***priming, curriculum alignment***)
  - ***Appropriate level of difficulty*** (***flow***)
  - ***Informative feedback from instructor*** (***curriculum alignment***)
  - ***Opportunities for repetition & refinements*** (***priming, flow***)



After Ericsson et al. 1993; Ericsson 2008; McGaghie et al. 2011

COMPETENCY-BASED LEARNING

Blended Learning Strategies

Didactic curriculum ≠ lectures + MCQ tests

Vary objectives, learning, & assessments based on KSAB & competency

Bloom's Taxonomy Objective Type (KSAB)	ACGME Competency	Learning Methods	Assessment Methods
Knowledge	Medical knowledge Patient care	***Lectures*** ***Small groups*** ***Simulation*** ***Readings***	***Written tests*** ***Oral exams***
Skills	Patient care Communication	Clinic/Hospital ***Simulation***	Clinic/Hospital ***Simulation***
Attitude/Behavior	Communication Professionalism Systems-based practice Practice-based learning	Clinic/Hospital ***Simulation*** ***Essays*** ***Discussions*** Readings	Clinic/Hospital ***Simulation*** ***Essays*** ***Discussions***

Bloom et al. 1956

COMPETENCY-BASED LEARNING

Blended Learning Strategies

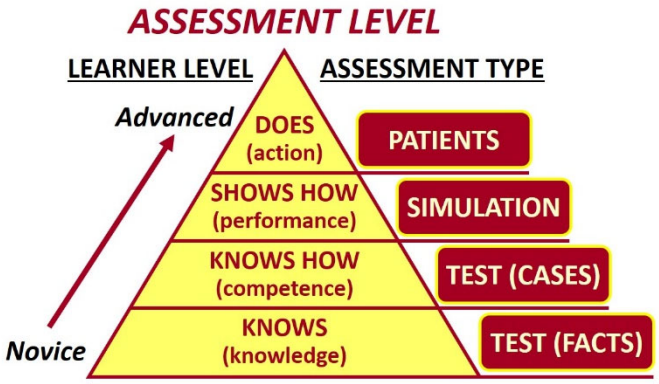
Blend lectures designed for online review with simulation (OSCEs) & other interactive sessions (case presentations, discussions, journal clubs, etc.)

Bloom's Taxonomy of Educational Objectives

- **K = Knowledge**
- **S = Skills**
- **AB = Attitude/behavior**

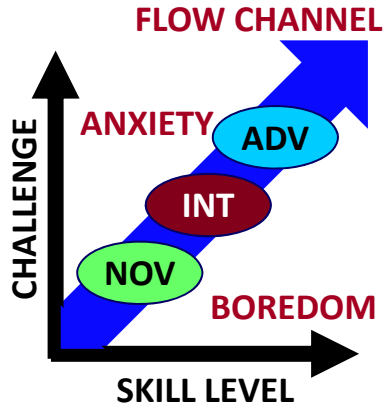
Bloom et al. 1956

Miller's Pyramid of Clinical Assessment



Miller 1990
Wass et al. 2001

Flow Channel



NOV = Novice
INT = Intermediate
ADV = Advanced

Csikszentmihalyi 1990

COMPETENCY-BASED LEARNING
Blended Learning Strategies

Lectures & Slides Are Still Valuable—with Modification

Lectures

- Past
  - Projector with dark room
  - Live, full audience, not recorded
  - Not reviewable, not interactive
  - Ineffective
- ***Current***
  - ***TV screen with well-lit room***
  - ***Live, empty audience, recorded***
  - ***Reviewable & highly interactive upon review w/ pause, rewind, & intermittent googling***
  - ***Highly effective***

Slides

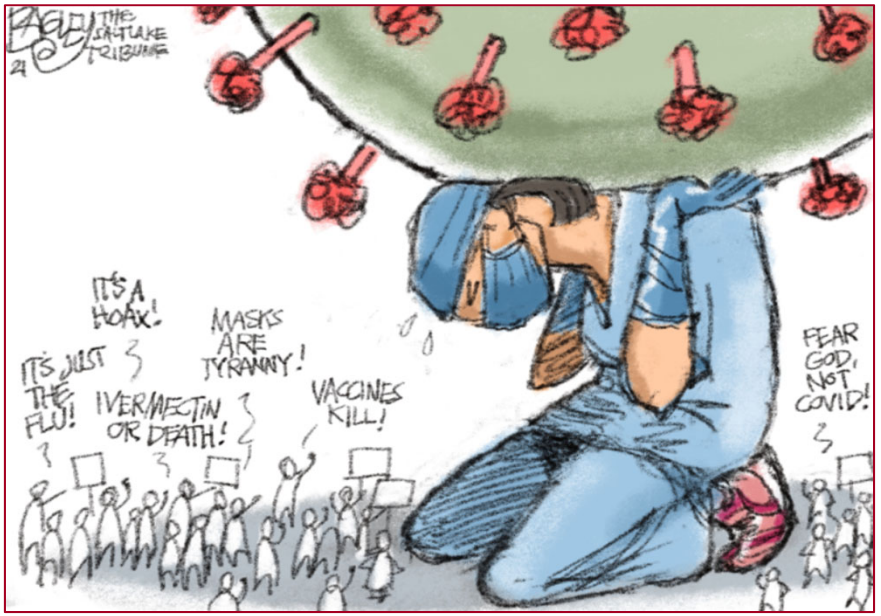
- Past
  - Bullets without details
  - Blue background optimal
  - White or yellow font optimal
  - Not designed for later review
- ***Current***
  - ***Bullets with details***
  - ***White background optimal***
  - ***Dark font of variable colors***
  - ***Highlight key items (bold, etc.)***
  - ***Designed for use as study guide on screen or paper (PDF)***

Note: PowerPoint became popular around 1993

COMPETENCY-BASED LEARNING
Blended Learning Strategies

COVID & the Zoom Dilemma

- ***Zoom is <u>practical</u> for didactic sessions, but <u>ineffective</u> due to learner distractions***
- Residents often attend sessions in a busy clinical environment such as a team room &, thus:
  - Multitask during sessions
  - Absorb less
  - May eat or drink with others during sessions, paradoxically increasing risk of infection



Cagle 2022

COMPETENCY-BASED LEARNING
Feedback in the Era of Gens Y & Z

- ***Distinguish generalizable from personal feedback***
  - Give generalizable feedback in front of the group
  - Give personal feedback privately
- ***Identify interaction as "feedback"***
- Include ***both achievements & opportunities for improvement***
- Use ***transparent***, mutual learning approach (not "sandwich")
- Facilitate ***deliberate practice*** by promoting:
  - ***Growth mindset*** (vs. fixed mindset) – emphasize effort & self-improvement over talent & personality
  - ***SMART goals*** – **S**pecific, **M**easurable, **A**ttainable, **R**elevant, **T**ime-bound
- Provide ***rationale*** for your feedback/advice
- ***Request feedback from learner(s) & take it positively***

Schwarz 2013, Dweck 2006, Doran 1981

COMPETENCY-BASED LEARNING
Feedback in the Era of Gens Y & Z

R2C2 CATEGORY	PHASE	GOAL
Relationship	Build rapport & relationship; explain the purpose of the assessment & learn about its context	Facilitator engages learners, builds relationship & trust, & establishes credibility of assessment
Reaction	Explore reactions to & perceptions of the report	Learners feel understood & know their views are heard & understood
Content	Explore learner understanding of the report's content	Learners are clear about what the reports mean for their practices & opportunities for change
Coaching	Coach for performance change	Learners engage in "change talk" & develop an achievable action plan

Sargeant et al. 2015

COMPETENCY-BASED LEARNING

Learning Environment

Learning Environment = **Declared Curriculum** + **Hidden Curriculum**

- **Learning environment** = the sum of declared & hidden curricula; includes all circumstances & influences surrounding & affecting a person's learning
- **Declared curriculum** = formal curriculum promoted by the institution; primarily occurs in classrooms & skills centers; ***represents ideal practice***
- **Hidden curriculum** = informal learning that differs from what is taught in declared curriculum; primarily occurs in clinical settings; may have negative or positive influence on learners; most effective when it complements or enhances the declared curriculum; represents real-life practice; ***not always consistent with ideal practice***

After Hafferty & Franks 1994

Gen Y & Z learners expect a SUPPORTIVE learning environment & are especially sensitive to hypocrisy & misalignment of the declared & hidden curricula

COMPETENCY-BASED LEARNING

Learning Environment Extended

Formal Wellness Program

- OU Neurology Residency Wellness & Mentorship Program
  - Faculty leader
  - Resident leader
  - Resident social chair
  - Class-specific wellness champions
  - Faculty career mentors (residents choose & may change annually)
  - Protect resident duty hours & work load
- OU Neurology Wellness Activities
  - Internal newsletter
  - KARMA (Kick-Ass Resident of the Month) recognitions
  - Fall & Spring half-day resident retreats
  - Dance fitness class
  - Culture-sharing sessions
  - Wellness journal club
  - Nonmedical book club
  - Thanksgiving decoration party
  - Department holiday party
  - Zoom cooking class
  - Picnic potluck
  - Zoom hobby club
  - Residency graduation party

COMPETENCY-BASED LEARNING

S.M.A.R.T.© Clinical Teaching

***S*et expectations**

establish structure, define responsibilities, prime learner

***M*odel positive behavior**

create positive hidden curriculum, model humility, control biases

***A*ffirm declared curriculum**

supplement, but never contradict formal (declared) curriculum

***R*epeat feedback**

timely & meaningful, facilitate deliberate practice

***T*arget audience(s)**

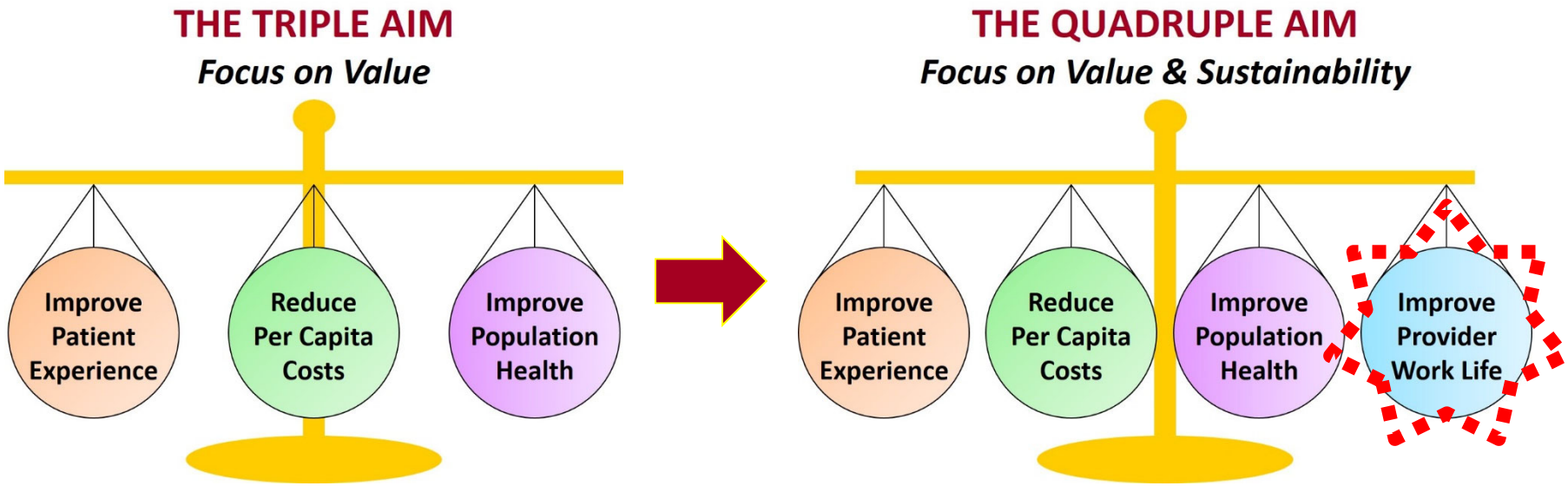
consider learner training level & flow; use priming, modeling, personalization, anecdote, dogma

LEARNING OBJECTIVE 4:

Describe how the next generation of trainees is changing the culture of medicine and how medicine is practiced

GENERATIONS Y & Z
Effect on U.S. Healthcare System

Increased Emphasis on Provider Work Life



Berwick et al. 2008

Bodenheimer & Sinsky 2014

GENERATIONS Y & Z
Making Us Better Educators

Effective teaching of Gen Y & Gen Z learners requires that you:

- Practice collaborative rather than authoritative leadership
- Explain what your teaching & why & be sure you're accurate—assume learners will Google everything
- Utilize assessments to drive learning—rigorously practice curriculum alignment (teach to the test, make assessments pertinent & practical)
- Promote cooperation over competition
- Develop curricula with multiple teaching modalities, including lectures designed for online review, simulation, & interactive sessions
- Avoid sophisticated English words & outdated cultural references
- Display support of wellness & work-life balance

GENERATIONS Y & Z
Making Us Better Physicians

Effective teaching of Gen Y & Gen Z learners requires that you:

- Avoid using anti-patient or biased language when communicating with or about patients
- Avoid stating race or ethnicity in presentations, notes, or risk-factor discussions
- Display empathy toward historically marginalized patient groups such as Blacks, LGBTQIA+, non-English speakers, & homeless

GENERATIONS Y & Z
Making Us Better Human Beings

Effective teaching of Gen Y & Gen Z learners requires that you:

- Engage your prefrontal cortex to modify personal biases
- Be humble, admit mistakes & ignorance, learn from learners

TEACHING GENERATIONS Y & Z

Summary

- As with all learners & interpersonal interactions, “seek first to understand, then to be understood” *(Covey 1989,2004)*
- Be aware of how you & your learners differ in terms of:
  - Experiences, biases, culture, history, & humor
  - Vocabulary
- Utilize technological advances to your advantage in promoting evidence-based educational strategies
- Explain when & why you are stating opinion, consensus, & science
- Use competency-based education strategies rooted in sound educational psychology principles
- Be patient with learners—reassure them they will achieve flow
- Be grateful you are improving as an educator, physician, & human being

NEUROLOGY RESIDENCY, MILLENIALS & GEN Z

References 1 of 3

- Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Affairs. 2008;27:759-769
- Bloom BS, Engelhart MD, Furst EJ, Hill WH, Krathwohl DR. Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: David McKay Company.1956
- Bloom BS. Learning for Mastery. Evaluation Comment 1968; 1(2):1-12
- Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. Ann Fam Med. 2014;12:573-576
- Cagle D, COVID burden. The Oklahoman, January 9, 2022
- Chen HC, van den Broek WES, ten Cate O. The case for use of entrustable professional activities in undergraduate medical education. Acad Med 2015;90:431-436.
- Covey SR. The 7 Habits of Highly Effective People. New York: Simon & Schuster. 1989, 2004
- Csikszentmihalyi M. Flow: The Psychology of Optimal Experience. New York: Harper & Row; 1990
- Damasio AR. Descartes' Error: Emotion, Reason, and the Human Brain. New York: Grossett/Putnam. 1994
- Desy JR, Reed DA, Wolanskyj AP. Milestones and Millennials: A Perfect Pairing—Competency-Based Medical Education and the Learning Preferences of Generation Y. Mayo Clin Proc. February 2017;92(2):243-250
- Doran GT (1981). "There's a S.M.A.R.T. way to write management's goals and objectives". Management Review. 70 (11): 35–36
- Dweck C. Mindset: The new psychology of success. New York: Random House. 2006
- Elmore T. (2010). Generation iY: Our last chance to save their future. Atlanta, GA: Poet Gardener
- Ericsson KA, Krampe RT, Tesch-Römer C. The role of deliberate practice in the acquisition of expert performance. Psychological Review 1993;100:363-406
- Ericsson KA. Deliberate practice and acquisition of expert performance: a general overview. Acad Emerg Med 2008;15:988-994

NEUROLOGY RESIDENCY, MILLENIALS & GEN Z

References 2 of 3

- Gil Tommee C, Nalleballe K, Dandu V, et al. (September 06, 2021) Trends in Demographics of Neurology House Staff in the United States. Cureus 13(9): e17754. doi:10.7759/cureus.17754
- Guskey TR. Closing Achievement Gaps: Revisiting Benjamin S. Bloom's "Learning for Mastery. Journal of Advanced Academics 2007; 19:8-31
- Hafferty FW, Franks R. The hidden curriculum, ethics teaching, and the structure of medical education. Acad Med 1994;69:861
- Hodgson A in https://www.businessinsider.com.au/generation-z-things-gen-z-are-killing-facebook-ralph-lauren-2018-5
- Horowitz JM, Igielnik R, Kochhar R. https://www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/
- https://www.aamc.org/data-reports/workforce/interactive-data/figure-12-percentage-us-medical-school-graduates-sex-academic-years-1980-1981-through-2018-2019
- https://www.aan.com/PressRoom/Home/PressRelease/1515
- https://www.edglossary.org/competency-based-learning/
- Johnston R. (2018) https://www.naylor.com/associationadviser/generation-z-future-associations/
- Kahneman D. Thinking, Fast and Slow. New York: Farrar, Straus and Giroux. 2011
- Lashley KS. The Problem of Serial Order in Behavior. In Jeffress LA (ed) Cerebral Mechanisms in Behavior. Pp 112-131. New York: Wiley; 1951
- Laskaris J. https://www.efrontlearning.com/blog/2016/03/5-strategies-to-engage-the-millennials.html
- Maqsood H, Naveed S, Chaudhary AMD, Khan MT, Khosa F. Gender and racial trends among neurology residents: an overview. Postgrad Med J. 2020. Epub ahead of print
- McCrindle M, Wolfinger E. The ABC of XYZ: Understanding the global generations. V3. Bella Vista, Australia: McCrindle Research Pty Ltd; 2014

NEUROLOGY RESIDENCY, MILLENIALS & GEN Z

References 3 of 3

- McGaghie WC, Issenberg SB, Cohen ER, Barsuk JH, Wayne DB. Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence. Acad Med 2011;86:706-711
- Miller GE. The assessment of clinical skills / competTence / performance. Acad Med 1990;65:S63-S67
- Obeso V, Brown D, Aiyer M, et al., eds.; for Core EPAs for Entering Residency Pilot Program. Toolkits for the 13 Core Entrustable Professional Activities for Entering Residency. Washington, DC: Association of American Medical Colleges; 2017.
- Patel UK, Zhang MH, Patel K, Malik P, Shah M, Rasul BM, Habib A, Lavado L, Kavi T, Tadi P, Jani V, Lunagariyaa A. Recommended Strategies for Physician Burnout, a Well-Recognized Escalating Global Crisis Among Neurologists. J Clin Neurol. 2020 Apr; 16(2): 191–201
- Sargeant J, Lockyer J, Mann K, Holmboe E, Silver I, Armson H, Driessen E, MacLeod T, Yen W, Ross K, Power M. Facilitated Reflective Performance Feedback: Developing an Evidence- and Theory-Based Model That Builds Relationship, Explores Reactions and Content, and Coaches for Performance Change (R2C2). Acad Med. 2015;90:1698–1706
- Schrager S. Adapting Medical School Curriculum to Millennial and Generation Z Learners. WMJ 2021;120(1):6
- Schwarz R. The “sandwich approach” undermines your feedback. HBR. April 19, 2013
- Seemiller C, Grace M. (2016). Generation Z Goes to College. New York, NY: Jossey-Bass
- Ten Cate O. Entrustable professional activities as a framework for assessment. Lecture at the 2015 ACGME Annual Educational Conference. February 28, 2015.
- Twenge JM. (2006). Generation Me: Why today's young Americans are more confident, assertive, entitled--and more miserable than ever before. Free Press
- Twenge JM. Generational changes and their impact in the classroom: teaching Generation Me. Med Educ. 2009;43(5):398-405
- Wass V, van der Vleuten C, Shatzer J, Jones R. Assessment of clinical competence. Lancet 2001;357:945-949

NEUROLOGY RESIDENCY, MILLENIALS & GEN Z

Learning Objectives

Upon completion of this session, participants will improve their competence and performance by being able to:

1. Discuss the differences in background experiences, viewpoints and professional and personal goals and expectations that define Millennials and Generation Z
2. Describe the challenges and rewards involved with educating the next generation of neurologists
3. Discuss novel approaches to feedback, mentoring, teaching, learning, and work-life balance that aid in meeting the educational needs of our Millennial and Gen Z trainees
4. Describe how the next generation of trainees is changing the culture of medicine and how medicine is practiced

THE END