How to Teach Quality and Safety…Even if You Aren't an Expert

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Disclosures

- None

Learning Objectives

- Share how the Mayo Clinic in Arizona teaches quality and safety topics to residents
- Discuss the educational strategies that allow for non-subject matter experts to offer a high-quality educational experience to learners
- Utilize techniques from this session in the programs of attendees, to improve the knowledge and skills of their residents or graduate students

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Residency at the Mayo Clinic in Arizona

- Two year program, with a combination of continuous, rotational, and independent modules
- We introduced a “Quality Systems and Project Management” module in 2016
  - This is a rotational module, two months in length
  - In the PGY-1 year, after treatment planning, before dose measurements
  - 8 residents so far (two PGY-2 residents joined in during the first offering)

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Outline of the Module: All Activities

1) Quality Systems
    i) Introduction to Safety Culture – **Video/Short summary**
    ii) Guided Reading of TG-100 – **Reading/Group Activity**
    iii) Risk Assessment Tools
        (a) Process Tree principles/applications – **Video/Group Activity**
        (b) Failure mode effects analysis (FMEA) principles/applications– **Videos/Group Activity**
        (c) Fault Tree Analysis (FTA) principles/applications – **Video**
    iv) Evaluation Tools
        (a) Statistical Process Control principles/applications – **Video/Activity**
        (b) Root cause analysis (RCA) principles/applications – **Video/Group Activity**
        (c) Demonstrate Change/Improvement - **Reading**
    v) Healthcare Specific Issues - **Reading**
        (a) Legalese : HIPAA, Discoverability, Protection, Patient Safety Work Product, etc
    vi) Reporting Systems
        (a) State and Federal Reporting – **Reading/Report**
        (b) RO-ILS – **Videos/Group Activity**
    vii) Mayo Specific
        (a) Mayo Reportable Events – **Training**
        (b) RadOnc: QA Committee - **Activity**
        (c) RadOnc: PIM - **Activity**
        (d) Quality Academy – Bronze Certification – **Training**
        (e) Quality Symposium – **Group Activity**
2) Project Development and Tools
    i) Introduction – **Video/Short summary**
    ii) Scope Triangle, Scope Creep and Gantt Chart – **Reading**
    iii) Cost/Benefit – **Reading with Problem Set**
    iv) PDSA – **Reading/Short Activity**
    v) CQI -- **Activity**
    vi) PQI – **Reading/Video**

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Our Educational Approach

- We utilize a flipped classroom approach
- We have clear goals and milestones for class preparation, activities, and assignments
- We perform monthly assessments, given in a panel setting, to establish competency

	Watch Something	Read Something	Attend Something	Write Something	Present Something	Certificate	Test
R3 1.i Introduction to Safety Culture	3/4/2018			3/7/2018			
R3 1.ii.a Process Tree principles/applications	3/10/2018		3/13/2018	3/15/2018			
R3 1.ii.b FMEA	3/16/2018		3/20/2018				
R3 1.ii.c FTA	3/24/2018	3/24/2018					
R3 1.iii.a SPC	3/24/2018		3/29/2018		3/29/2018		
R3 1.iii.b Root cause analysis (RCA)			4/5/2018				
R3 1.iii.c Demonstrate Change/Improvement		3/24/2018					
R3 1.iv.a Legalese: HIPAA, Discoverability, Patient Safety Work Product, PSO		4/4/2018					
R3 1.v.a State and Federal Reporting		3/26/2018		4/9/2018			
R3 1.v.b RO-ILS	3/29/2018		4/10/2018				
R3 1.vi.a Mayo Reportable Events	3/28/2018	3/28/2018				3/28/2018	
R3 1.vi.b QA Committee		3/30/2018		4/24/2018			
R3 1.vi.c Rad Onc PIM			4/25/2018; 6/13/2018	4/27/2018			
R3 1.vi.d Quality Academy	3/28/2018	3/28/2018				3/28/2018	
R3 1.vi.e Quality Symposium			3/6/2018		3/15/2018		
Introduction	4/2/2018			4/2/2018			
R3 2.ii Scope Triangle, Scope Creep and Gantt Chart		4/4/218					
R3 2.iii Cost Benefit Analysis		4/13/2018	4/19/2018				4/19/2018
R3 2.iv PDSA		4/8/2018	4/24/2018	4/8/2018			
R3 2.v Continuous Quality Improvement		4/9/2018		4/9/2018			
R3 2.vi PQI	4/8/218	4/8/2018					

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What does it mean to “flip the classroom”?

- Learner’s first exposure to new material happens outside class
  - Read a source document
  - Watch a lecture/presentation
- Class time can then be used to reinforce and augment the knowledge, with guidance from an instructor
  - Hands-on activities help assimilate the knowledge
    - Problem-solving
    - Discussion
    - “Homework”

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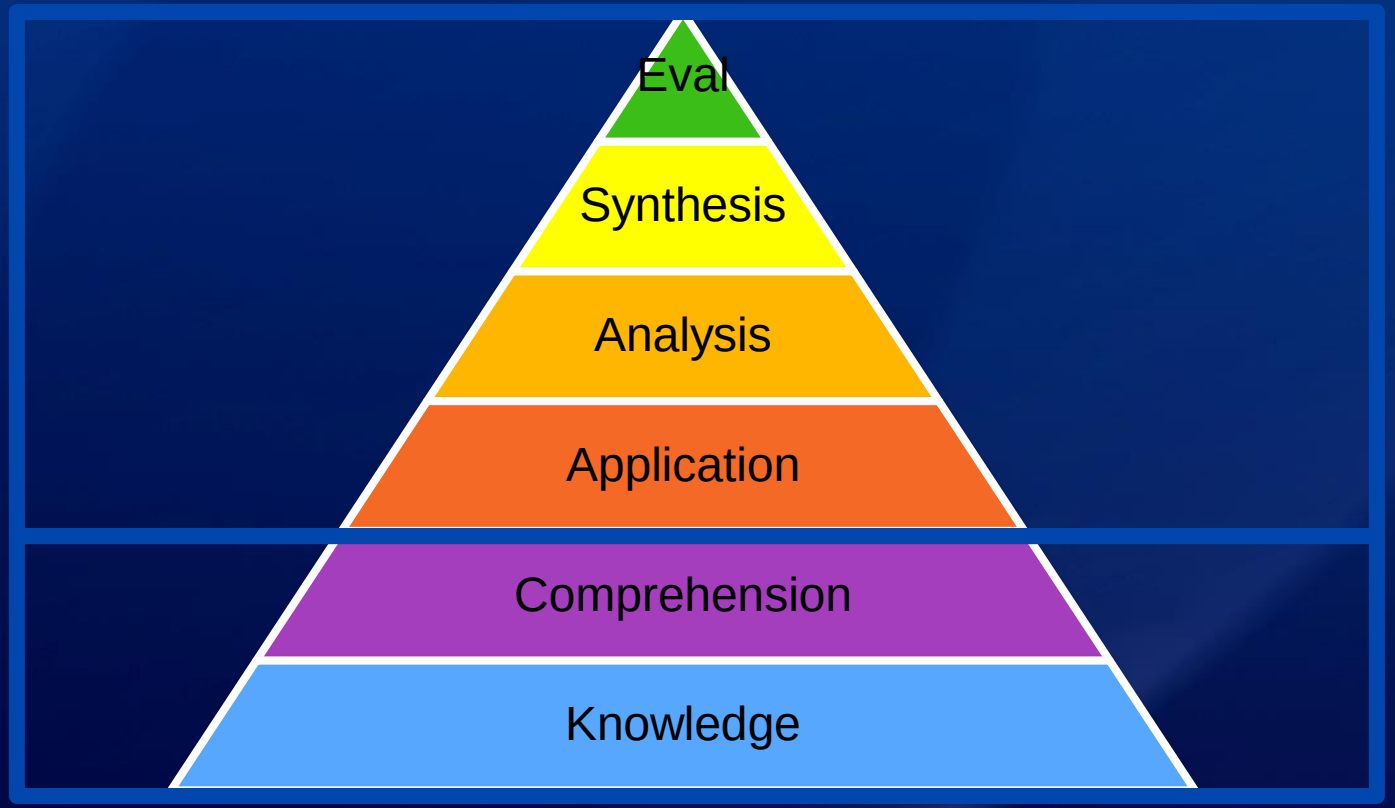
Bloom's Taxonomy

Flipped classroom focus

Traditional classroom focus



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Outline of the Module: Classroom Time

- **Week 0** - Kickoff Meeting
- **Week 1** - Guided Reading of TG-100 (*New in 2018, highly recommended*)
- **Week 2** - Process Tree Principles/Applications Activity
- **Week 3** - FMEA Activity
- **Week 4** - FMEA Wrap Up & SPC Discussion
- **Week 5** - FTA and RCA Activities
- **Week 6** - RO-ILS Activity
- **Week 7** - Cost Benefit Analysis "Test"
- **Week 8** - PDSA Discussion, Wrap Up

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Resources We Utilize

- We are fortunate to draw upon a wonderful safety community for our source materials
- We use online learning modules and reference materials from many sources, including:
  - AAPM Virtual Library
  - Treat Safely
  - AHRQ
  - IAEA and DOE
  - IHI

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Some Specific Selection Suggestions

- Searching “Safety” in the AAPM VL, returns more than 300 results!
- Process Mapping: AAPM VL, 2015 Incident Learning Systems Workshop
- FMEA: AAPM VL, 2014 Spring Clinical Meeting
- FTA: AAPM VL, 2014 Annual Meeting
- RCA Topic Introduction: AAPM VLC, 2015 Incident Learning Systems Workshop
- RCA Situational Assessment: iTreatSafely.org, Any of the excellent incident recreations

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A Representative Sample: Process Tree

Mayo Clinic in Arizona
Medical Physics Residency Project

R3 1.ii.a Process Tree principles/applications

Purpose: To familiarize the resident with process mapping, to demonstrate the importance of process maps to incident learning systems, and to create a process map.

Instructions:

Watch the 20 minute video on Process Mapping from the 2015 Incident Learning Systems Workshop. (Slides are blurry if you don't watch in HD.) http://www.aapm.org/education/VL/vl.asp?id=4063 The presenter, Anne Greener, will advise you to break into groups of 5-6, but for this exercise you are going to break into a group of you and your fellow resident(s) + your proctor. (Depending on availability, other pertinent staff members may join you in the effort.)

Choose one of the eight process groups from the video for your topic. Work together to generate the process map.

Provide a short write-up of what you feel the challenges were. (3 or so paragraphs.)

Grading expectations:
In order to pass this project, all of the steps must be completed to the satisfaction of the staff member proctoring the project. Questions from this topic may appear on a monthly evaluation during the residency.

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Conclusions

- There are a number of online resources available to teach quality and safety to residents and graduate students
- Instructors do not need to be experts to provide expert-lead learning opportunities
- A flipped classroom approach allows for experts to do the knowledge delivery, and then the group can work together to refine the understanding and application of the topic

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