

**CRITICAL  
THINKING  
ENGAGING THE STUDENT**

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# OBJECTIVES

- **Define** critical thinking
- **Summarize** the characteristics of good critical thinkers
- **Recognize** the need for critical thinking skills within the OR
- **Discuss** the benefits of critical thinking exercises
- **Understand** how to implement a critical thinking exercise within your classroom to promote teamwork
- **Identify** the goals of a critical thinking exercise

"Thinking is skilled work. It is not true that we are naturally endowed with the ability to think clearly and logically – without learning how, or without practicing."

– A.E. Mander

# THE DEFINITION OF CRITICAL THINKING

- *“Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.”*
- *– The Foundation for Critical Thinking*

# THE CHARACTERISTICS OF A STRONG CRITICAL THINKER

- inquisitiveness with regard to a wide range of issues
  - concern to become and remain well-informed
  - alertness to opportunities to use critical thinking
  - self-confidence in one's own abilities to reason
  - open-mindedness regarding divergent world views
  - flexibility in considering alternatives and opinions
  - understanding of the opinions of other people
  - fair-mindedness in appraising reasoning
  - honesty in facing one's own biases, prejudices, stereotypes, or egocentric tendencies
  - prudence in suspending, making or altering judgments
  - willingness to reconsider and revise views where honest reflection suggests that change is warranted
- *Based on the [APA Expert Consensus Delphi Report](#)*



7

# Top Traits Of A *Critical Thinker*

Eight

Infinity

Wave

Pretzel

DNA



# 7 TOP TRAITS OF A CRITICAL THINKER...

- **Objective in their approach:** They know their goals and work towards them
- **Rational and not impulsive:** always weigh the pros and cons of the situation
- **Creative:** give a fair chance to new and creative ideas.
- **Modest and humble:** always learning and are open to suggestions and new ideas
- **Reflective in their approach:** take their previous knowledge and experiences into account
- **Keen observers and active listeners:** They listen to others and are always open to discussions on their ideas and decisions
- People who are critical thinkers are always curious for more knowledge and are ready to research the topic if they are not satisfied with an idea or plan. They just do not settle for anything that they are not convinced of.
- Source: <https://www.wisdomtimes.com>



It must be remembered  
that the purpose of  
education is not to fill the minds  
of students with facts... it is to  
teach them to think, if that is  
possible, and always to think  
for themselves.

Robert Hutchins



# WHAT ABOUT GENERATION Z STUDENTS?

- In a recent article from *Emily Kuhn, Realityworks Communications Specialist*, she asks:
- “How do you engage learners who demand connection, who will disengage with the discussion if they don’t see the relevance, and who wish to not only hear about a topic, but see it, touch it and feel it?”
- **Her answer:** “You’re already working hard to equip your students with technical and academic skills. **By creating an interactive, hands-on learning environment where Generation Z students can engage in active learning opportunities**, you’re setting them up for even greater success.”



SO WHAT HAVE WE  
DONE TO  
IMPLEMENT  
CRITICAL THINKING  
WITHIN OUR  
CLASSROOM?

# SURGICAL PROCEDURES APPLICATION GROUP EXERCISE

- What exactly is this?
- Why we decided to start doing this (upcoming slides)
- What materials are they allowed to use and when can they use them
- Not originally an assignment grade
- Incentive (when first introduced)
- How often/what surgical specialties



# GUIDELINES FOR THIS EXERCISE

- Assigned groups/surgical cases
- Graded group exercise
- Added operative sequence/Lab portion
- What they are allowed to use
  - 5 groups made up of 5 students assigned by professors
  - Worth 30% of final grade (same as homework)
  - After completion of the whiteboard activity, students proceed to lab for the operative sequence portion.
  - Only allowed to use notes, textbooks, and other paper forms of text. NO media allowed at all for whiteboard activity – 30 minute timeframe.
  - Lab presentation (operative sequence): NO notes allowed.

# REASONS FOR THE CHANGES

- The incentive alone was not enough
- Students were not taking the exercise seriously
- To get them out of their comfort zone and force them to think
- Put to use the knowledge they have obtained via clinicals, lecture, and group research



# GRADING CRITERIA

## Surgical Procedure Application Exercise

SRGT 1542

Spring 2019

Surgical Procedure: \_\_\_\_\_

Members:

1. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_ 4. \_\_\_\_\_

5. \_\_\_\_\_

Definition of Case	5%	_____
Pathology	5%	_____
Surgical Pack Required	2%	_____
Instrument Sets Required	5%	_____
Mayo & Back Table Set-ups	15%	_____
Position & Positioning Aids Required	5%	_____
Prep Type & Parameters	5%	_____
Drapes Required	5%	_____
Incision(s)	3%	_____
Operative Sequence (LAB)	15%	_____
Medications Required	3%	_____
Suture Needed	2%	_____
Basic Supplies Needed for Case	5%	_____
Anatomy Relevant/Accessed	10%	_____
Specimen Name/Care	3%	_____
Counts	3%	_____
Wound Class	1%	_____
Dressings	3%	_____
Teamwork	5%	_____
<b>Total</b>	<b>100%</b>	_____

GRADE

## Grading Criteria

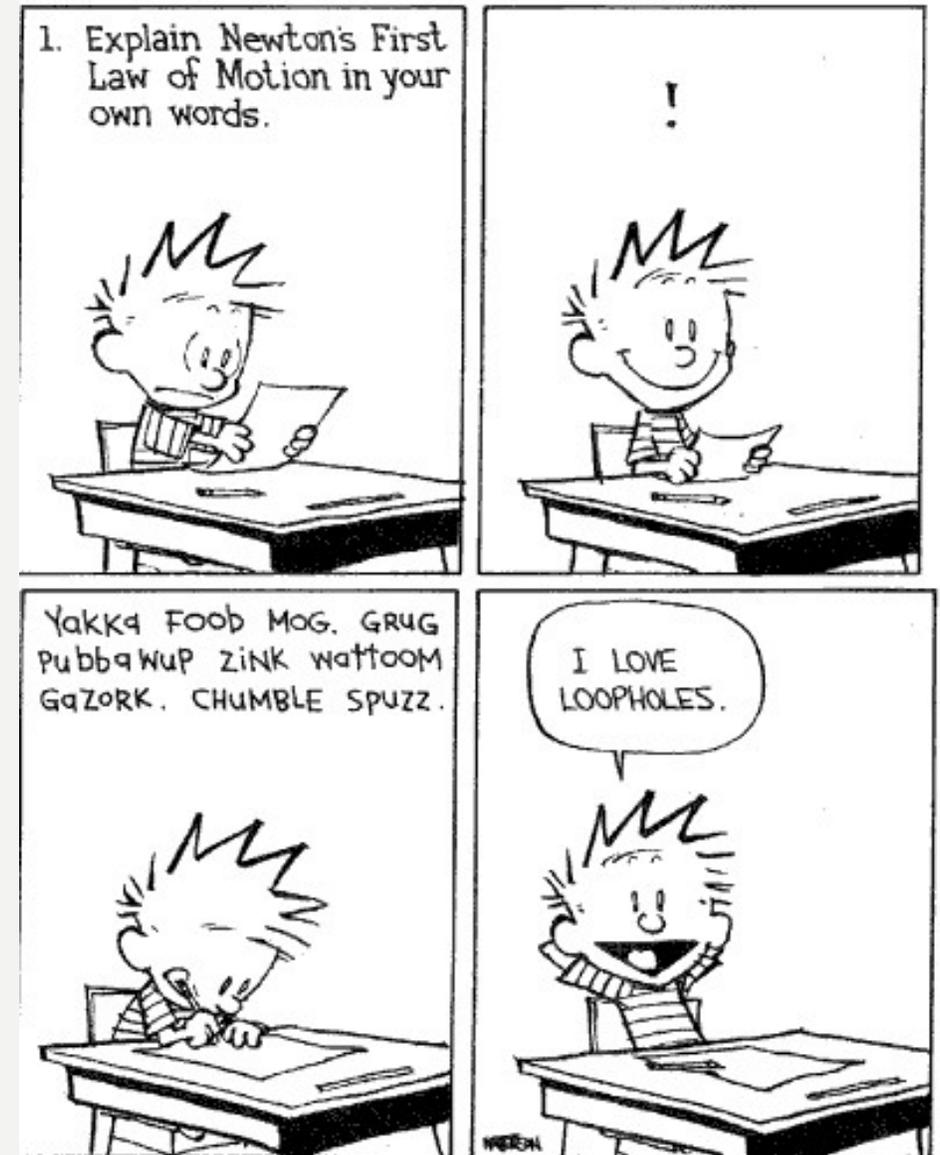
- There will be two parts to this graded group exercise.
- The first part you will be given 30:00 minutes to complete your case on the whiteboards located in the classroom.
- You may **ONLY** use your lectures notes, textbooks, preference cards, anything in paper format for the first part of the exercise.
- **NO CELL PHONES, LAPTOPS, IPADS, COMPUTERS, SMART WATCHES, INTERNET/MEDIA ALLOWED** for the first part of the exercise.
- Once you have completed your case on the board each group will present to the entire class their case (i.e. what you have written on the whiteboard).
- You cannot add anything once the time has run out and you cannot add anything verbally.
- In order to get credit it **MUST** be written on the whiteboard prior to the time running out.
- If a certain section is not applicable to your case then you must write down N/A for that section.
- If you do not indicate that it was N/A then you will be counted off and receive a 0% for that section.
- Once this portion of the exercise has been completed we will go to the LAB where each group will then present their case by explaining in detail the steps of the operative sequence.
- **NO NOTES, TEXTBOOKS, PREFERENCE CARDS, INTERNET/MEDIA ALLOWED** for the second part of the exercise.
- **EACH** member of the group must participate in order to get the full credit (example: if only one or two team members correctly explain the steps of the procedure your group will get counted off in the operative sequence **AND** in the teamwork percentages).

# GRADING CRITERIA

- We have also added:
- \*\*\*If you are absent on the day of this exercise then you will receive a zero (0) for this graded assignment, but if you have prior approval (see Make-Up Work section in the Student Handbook on Pages 25-26) for your absence then you may complete a case study form for the surgical procedure you were originally assigned and it will be due on the very next class date.\*\*\*

# GRADING CRITERIA

- We have found that we have to be very specific otherwise the students will find a loophole
- This holds them accountable and very clearly lays out what the expectation is for them



# WHY LECTURING ALONE ISN'T GOOD ENOUGH

- Each student has a different learning style and this exercise appeals to *all* learning styles
- When you apply your learned skill it “sticks” better
- It’s one thing to memorize something, but to put it to use gives you experience not just knowledge
- With modern technology answers are always at our finger tips, we need to focus on giving our students questions not just handing over the answers all the time
- More prepared for clinical assignments (start to think of case as a whole)
- Better prepared for employment

Knowledge without application is a waste. Those who just "know" will always come second to those who "do." Put what you know in motion... apply what you've learned.

- Rob Hill Sr.

# STUDENT INVOLVEMENT IS KEY

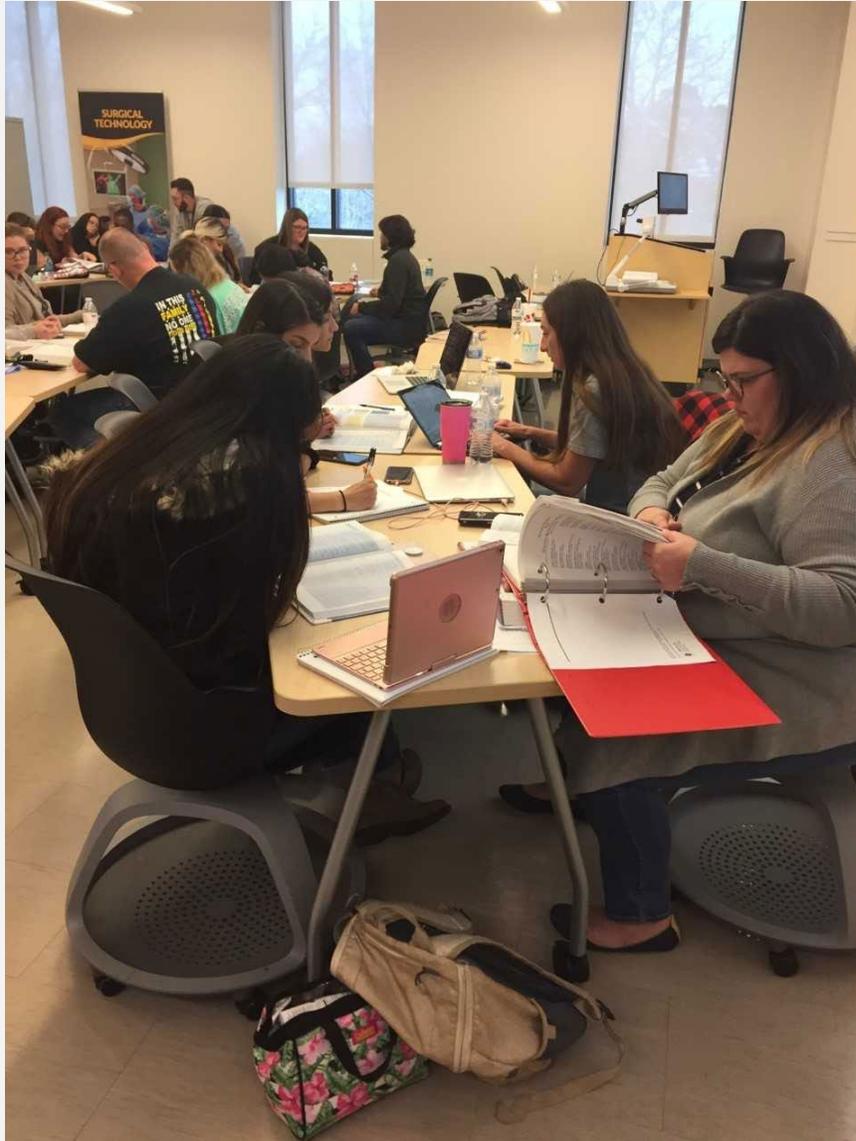
## Why did we create this exercise?

- We needed another way to increase student involvement and get the students to really use ***critical thinking skills*** as well as teamwork within the classroom.

## How does this apply to clinical cases?

- This helps the student know how to use their critical thinking skills when it comes to the “real world” of surgery.
- Add-ons are an every day occurrence and you cannot always rely on a surgeon’s preference card to assist you due to many factors (emergency – no time to print, new doctor – no P.C., no P.C. for this procedure yet, routine case turns into an emergency, etc.)

# SURGICAL PROCEDURES APPLICATION EXERCISE





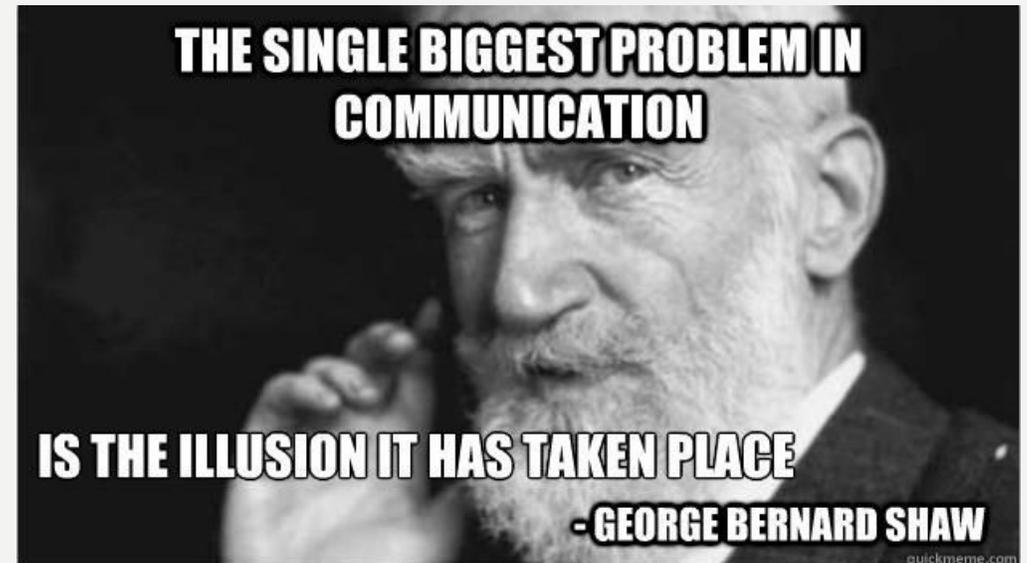
# BENEFITS OF THIS EXERCISE

- Forced ***critical thinking***
- The more often they are forced to use their critical thinking skills the better the outcome will be when faced with challenges in the clinical setting (where there are no notes or textbooks)
- Students will be able to apply this to new situations
- Each student gets exposure to what's happening inside their OR, but not every student is faced with having to pull/prepare for an emergent case, this helps prepare them for when that time comes



# BENEFITS CONTINUED

- Improves their **communication** skills with their classmates, but also in the OR with their surgical team
- This enhances their ability to work with different personalities
- Exposure to being put “on the spot” much like when a surgeon or preceptor quizzes a student about a case
- **Teamwork** with classmates to emulate teamwork in the OR
- Bring awareness to the importance of studying your surgical cases



# BENEFITS CONTINUED

- It's not good enough to just show up and watch your preceptor if you wish to be a stellar Surgical Technologist
- This helps students not only think about what they are doing and how it is going to be done, but **WHY** they are there doing this for their patient
- Which will improve their academic performance
- We also have them write down what instruments and supplies are to be “available” for their case which further drives home critical thinking



# BENEFITS CONTINUED

- Teaches them to prioritize their time by making the right judgment call on what exactly they need for any given case – especially traumas

*“What do we absolutely need **FIRST** in order to save this patient’s life”*





# PAST MOCK SURGERY PRESENTATIONS

- Students would role play a case from each surgical specialty
- They would each present their assigned part: Surgeon, Assistant Surgeon, Surgical Technologist, Circulator, and Anesthesiologist
- Surgeon and Assistant Surgeon split up the Operative Sequence
- They would act out the entire surgical procedure peri-operatively
- Not allowed to use notes
- Alternate role playing case and presenting case in power point form

# PAST MOCK SURGERY PRESENTATIONS

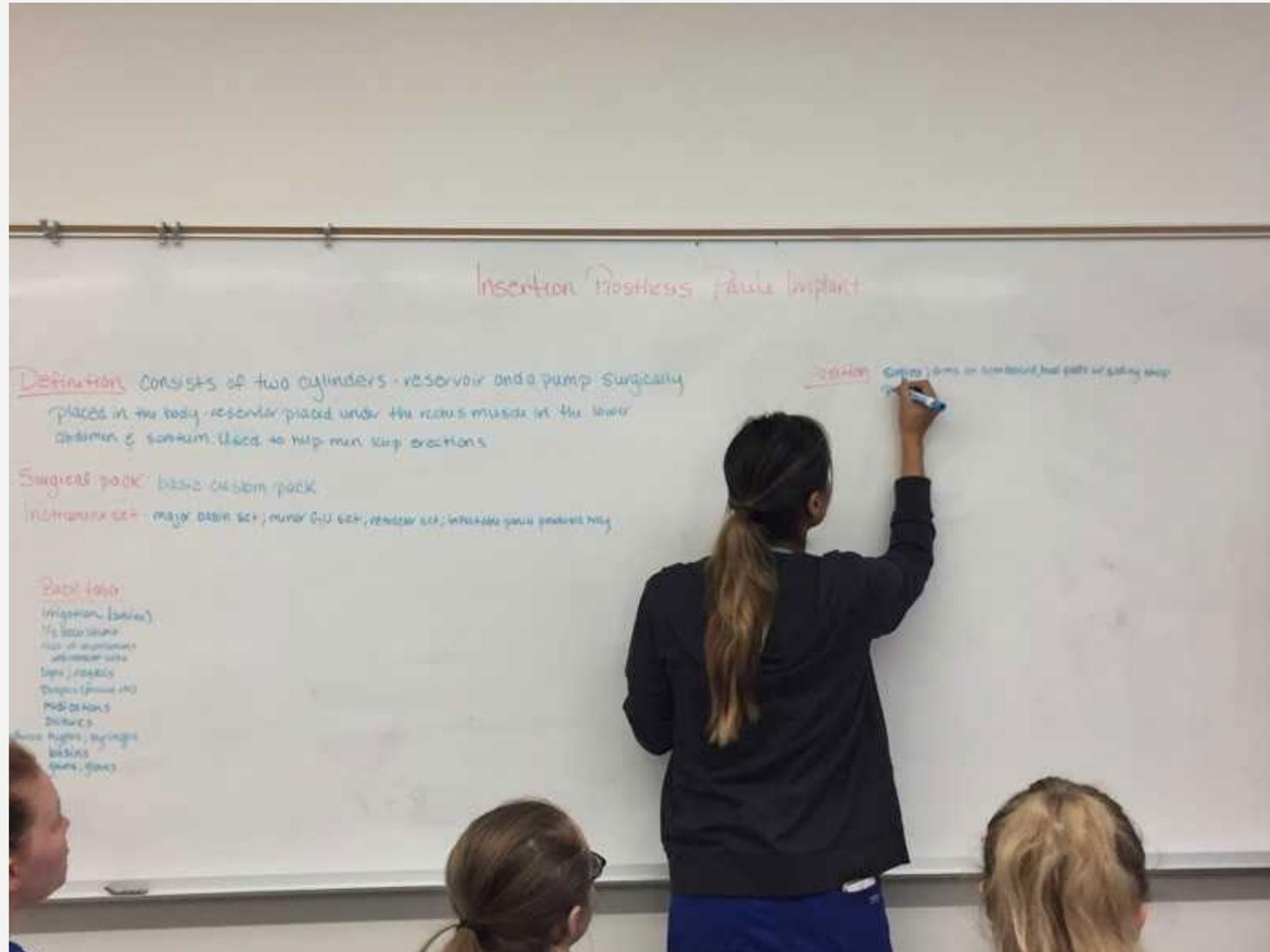
## PROS

- Each student had to learn the role of each member of the OR Team to help gain an appreciation for what everyone does
- They had to think their way through all the steps of a surgical procedure while acting them out in front of their peers
- When they played the role of the Surgeon and Assistant Surgeon they really had to study the anatomy involved, instruments used, and steps of the entire procedure

## CONS

- **Students would ONLY memorize their part.** They were unable to help each other out if someone forgot something
- Time consuming and the other students didn't take it seriously because they lost interest quickly
- Difficult to grade based on nothing being written or recorded. Could only grade based on what we saw (aseptic technique errors mainly) and heard and were able to write down ourselves
- Power point form turned into "copy & paste"

# SURGICAL PROCEDURES APPLICATION EXERCISE



# SURGICAL PROCEDURES APPLICATION EXERCISE

## bronchoscopy w/ VATS decortication of lung

**definition** - bronchoscopy (a diagnostic test that allows examination of airways)  
 decortication (surgical removal of surface layer, membrane, or fibrous covering of lung w/ VATS)

**pathology** - decortication If pus or blood is not drained from pleural cavity, it coagulates and forms a fibrin layer over visceral and parietal pleura

**Surgical pack** - basic pack

**instrument sets** - endoscopic set, large and rib set (possibly)

**mayo (bronchoscope):**

- suction 25 gauge
- lubricant bronchoscopy brush
- ki fa
- biopsy forceps
- bronchoscope
- light cord
- lukens specimen trap
- small basin
- syringe
- straight mayos
- test tube

**Drapes:**

4x4s, lap + skat, ioban, 3/4 skat

**Incisions:**

- tracheal incisions
- anterior axillary
- posterior axillary
- upper posterior axillary

**mayo (VATS):**

- endoscopes #11; #15
- endoscopic graspers
- endoscopic dilator clamp
- endoscopic babcock
- 10+12mm trocars
- hemoclips
- Uner stapler
- endoscopic probes

**Medication:**

marc .5% w/ epi  
 5000 u bacitracin  
 .9% NaCl

**Suture:**

2-0 vicryl CT-1 x2  
 3-0 monocryl PS-1 x2  
 0 silk FS1  
 2-0 silk FS1

**Basic supplies:**

endoscopic equip.  
 light source / camera  
 scopes talc  
 FRED  
 chest tube

**Anatomy:**

- lungs
- mediastinum
- bronchus
- trachea
- diaphragm
- ribs
- visceral pleura
- pleural pouch
- thymus
- lymph nodes
- parietal pleura

**Back table:**

- Gowns rest of thoracic inst. tray
- Gloves rest of endo. set
- drapes Chest tube
- Suture Kitnos
- laps FRED
- rays vascular loops
- basins
- towels

**position/aids:** start w/ supine then to lateral; axillary roll, gel pad, bean bag, silk tape, safety straps, pillows, mayo stand (for arm)

**prep:** chloraprep; start @ incision & extend circumferentially to the shoulder & axilla to the iliac crest & bilaterally as far as possible \* no prep for bronch

**counts:** full count before (+ @ end if it goes open)

**anesthesia:** general

**dressings:** 4x4s, <sup>+tape</sup> Kerafirm, steri-strips + mastisol

**position/aids:** start w/ supine then to lateral; axillary roll, gel pad, bean bag, silk tape, safety straps, pillows, mayo stand (for arm)

**prep:** chloraprep; start @ incision site & extend circumferentially from the shoulder & axilla to the iliac crest & bilaterally as far as possible \* no prep for bronchoscopy \*

**counts:** full count before (+ @ end if it goes open)

**anesthesia:** general

**dressings:** 4x4s, <sup>+tape</sup> Kerafirm, steri-strips + mastisol

# SURGICAL PROCEDURES APPLICATION EXERCISE

**Open Thorax**

**\*DEF:** THORACOTOMY- SURGICAL PROCEDURE TO OPEN THORAX  
 PNEUMONECTOMY- SURGERY PERFORMED TO REMOVE LUNG

**\*PATHO:** TYPICALLY DUE TO NEOPLASMS; REMOVAL OF EXTENSIVE UNILATERAL BRONCHIECTASIS/IRREVERSIBLE DILATION OF BRONCHI

**\*SURGICAL:** BASIC PACK

**\*INSTRUMENT SETS:** MAJOR TRAY & THORACOTOMY TRAY #1 & 2  
 BASKETS: SHARP RETRACTOR, HEMOCLIP PAK(LONG), ROLINEUR LOCKSELL

**\*MAYO:** MAY HAVE TWO MAYOS ☺

**\*BACK TABLE:**

CURVED HEMOSTATS X4	VASCULAR FORCEPS	ZEST OF BASIC PACK	JP DR
STRAIGHT HEMOSTATS X2	SELF RETAINING DIS RETRACTOR	SPECIMEN BASIN W/ LID	WATER
KELLY X2	SMALL ZICHAROSON X2	DRAPES	CHEST
CURE X2	HARRINGTON RETRACTOR X2	SUTURE	YELV
ZIGHT HANDLE FORCEPS X2	DOHEN X2	VESSEL LOOPS	NEPT
VASCULAR CLAMPS	ALEXANDER PEREOSTOTOME	ACCU-COUNT	ESU
KOCHERS X2	ZIB APPROXIMATE	LAPS X2	FOU
SPONGE STICKS X2	SKIN STAPLER 35 WIDE	BASINS	
#10 BLADE ON #3 KNIFE HANDLE		[PASSED OFF] BONE	
#15 BLADE ON #3 KNIFE HANDLE (LONG)		SECTION	
LONG METE SCISSORS & SHORT		GOWN & GLOVES	
MAYO CURVED & STRAIGHT		LIGHT HANCOLES	
RUSSELL FORCEPS			
DEBRACKS			

**\*SUTURE:**

0 SILK FS L XZ  
 3-0 MONO PS I XZ  
 2-0 SILK TIS  
 2-0 SILK SH TOPS  
 0 PDS/LENE SH (HOLD)  
 4-0 PDS/LENE RB I (HOLD)  
 2-0 VICRYL TP I  
 1 VICRYL CT I  
 2-0 VICRYL CT I

**\*BASIC SUPPLIES:**

JP DRAINAGE  
 WATER SEAL DRAINAGE UNIT  
 CHEST TUBES X2  
 YELMBS  
 NEPTUNE  
 ESU  
 FOLEY TRAY

**Open Thoracotomy for Pneumonectomy:**

**\*SUTURE:**

0 SILK FS L XZ  
 3-0 MONO PS I XZ  
 2-0 SILK TIS  
 2-0 SILK SH TOPS  
 0 PDS/LENE SH (HOLD)  
 4-0 PDS/LENE RB I (HOLD)  
 2-0 VICRYL TP I  
 1 VICRYL CT I  
 2-0 VICRYL CT I

**\*BASIC SUPPLIES:**

JP DRAINAGE  
 WATER SEAL DRAINAGE UNIT  
 CHEST TUBES X2  
 YELMBS  
 NEPTUNE  
 ESU  
 FOLEY TRAY

**ANATOMY:**

- CARDIAC ARCH
- V
- INTERNAL THORACIC ARTERY & VEINS
- INTERCOSTAL MUSCLES
- PECTORALIS MAJOR & MINOR
- DESCENDING AORTA
- STERNUM
- LUNGS
- SUPERIOR & INFERIOR VENA CAVA
- DIAPHRAGM
- VIX

**Specimen name & care:**

- ENTIRE LUNG (R OR L)
- CULTURES - aerobic/anaerobic depending on surgeon

**Counts:**

- FULL COUNT
- SPONGES, SHARPS, MISCELL, INSTRUMENTS

**HOLD HATS:**

- CLASS 1 - GOWN

**DRESSINGS:**

- CHECK W/ SURGEON
- CHEST TUBES X2
- 4X4S
- HYPAFIX TAPE
- PAINPAPR/DEPENDS ON SE.
- PRICO AVAILABLE

**Drapes:**

- Ioban Large, drape top of pouch, 4 unites.

**Incisions:**

- posterolateral

**POSITION/POSITION AIDS:**

- Lateral
- EXTRE MAYO
- ANKLEBOARD
- MINKIE TAPE (HYBRIDS)
- SAFETY STRAP
- 4 PILLOWS
- PADDED KIDNEY REST
- BRAN BAG W/ SUCTION
- AXILLARY ROLL
- GEL PADS
- FINGER TRAP POSITIONER

**Prep type & parameters:**

- Chloraprep
- Start @ incision site, extend to shoulder, down to iliac crest, anteriorly & posteriorly at ankle, axillary line.

**Medis:**

- general anesthesia
- morain 25% E epi
- Bausman 50,000 ml
- 0.4% NaCl

# OPERATIVE SEQUENCE PRESENTED IN LAB

## The groups take one of two approaches:

1. They each divide up the different parts of the surgery to explain (beginning, middle, end, etc.)
  2. They all collectively talk out the operative sequence. One person starts and another picks up where they left off adding more information and another picks up anything that might have been skipped. They all do the entire operative sequence together.
- We like the second approach best because this way EACH student in the group has memorized the *entire* operative sequence, not just “their part”. This also helps in case someone forgets a step someone else in the group can help them out.

# OPERATIVE SEQUENCE PRESENTED IN LAB

- [insert video of students presenting operative sequence]

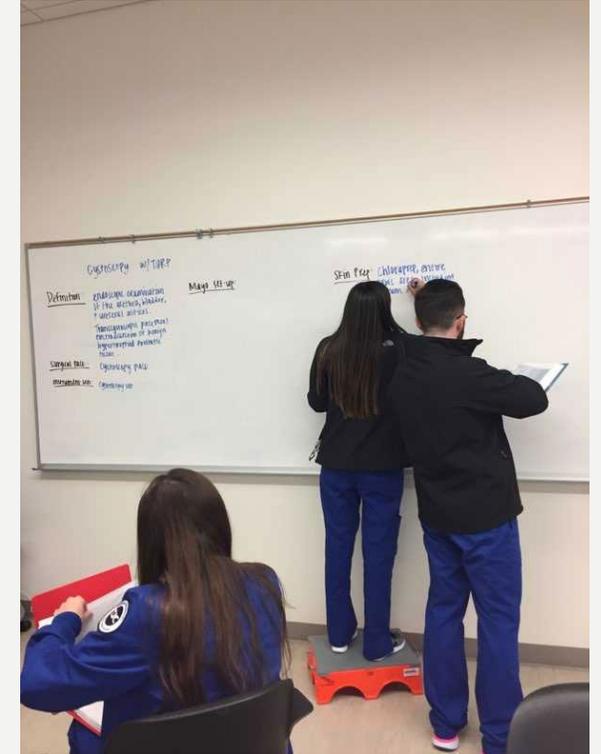
# **OPERATIVE SEQUENCE PRESENTED IN LAB**

# **SURGICAL PROCEDURES APPLICATION EXERCISE OPERATIVE SEQUENCE IN LAB**



# READ, RESEARCH, RETAIN, RECALL

- They are *reading* in their textbooks for lectures and homework
- *Researching* their cases for the group exercise
- This exercise measures how much they are actually *retaining* by challenging them to *recall* the information



# STUDENT RESPONSE

Why students enjoy this exercise:

- It gets them up and moving (instead of just listening to us lecture)
- They are forced to work as a team (much like in the OR)
- They are able to build on previous knowledge/experiences from classroom/clinical rotations
- Forces them out of their comfort zone when presenting the operative sequence in the lab which helps them in the OR
- They loved the incentive and were quite competitive (before it was graded)





# **PROFESSOR/STUDENT RESPONSE**

## **(AS A RESULT OF THIS EXERCISE)**

### **PROFESSOR**

- Surgeon preference card books created for each surgical specialty from all clinical sites

### **STUDENT**

- Group shared document filled with surgical notes from each surgical case they were involved in

# SURGICAL PROCEDURES APPLICATION GROUP EXERCISE

## FIND A GROUP

- Get into groups of 5 people per group
- Write down your case needs on a piece of paper
- You will have **10 minutes** to complete the exercise with as much of the information as you can (you do NOT have to write out operative sequence)



## SURGICAL CASES

- Modified Radical Mastectomy
- Lap Chole with IOC
- Open Inguinal Herniorrhaphy

# GRADING CRITERIA

## Surgical Procedure Application Exercise

SRGT 1542

Spring 2019

Surgical Procedure: \_\_\_\_\_

Members:

1. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_ 4. \_\_\_\_\_

5. \_\_\_\_\_

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Counts	3%	_____
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Teamwork	5%	_____
<b>Total</b>	<b>100%</b>	_____

GRADE

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- **NO NOTES, TEXTBOOKS, PREFERENCE CARDS, INTERNET/MEDIA ALLOWED** for the second part of the exercise.
- **EACH** member of the group must participate in order to get the full credit (example: if only one or two team members correctly explain the steps of the procedure your group will get counted off in the operative sequence **AND** in the teamwork percentages).



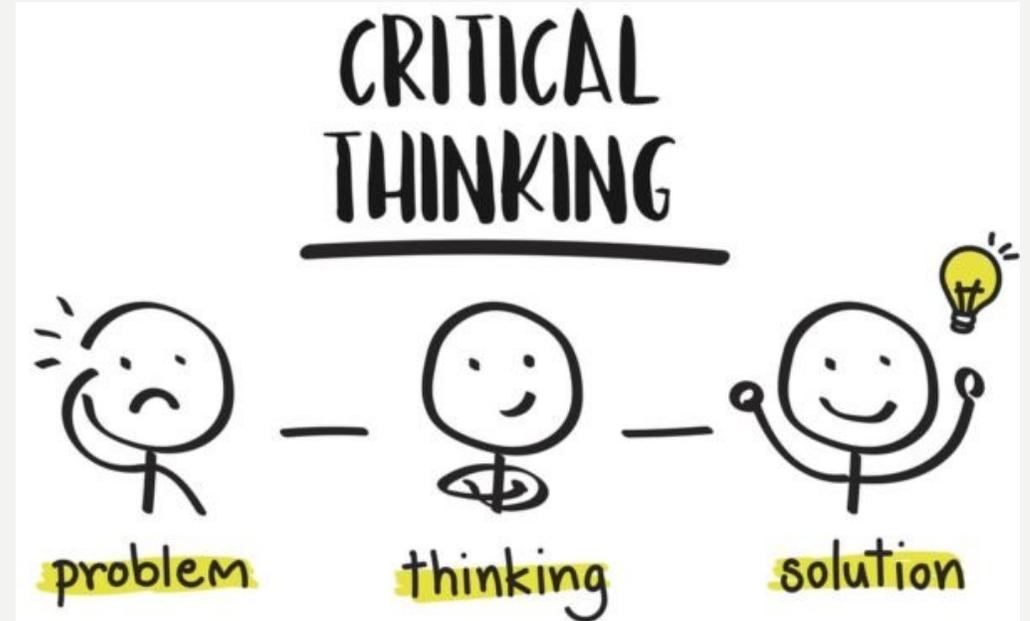
# QUESTIONS FOR THE AUDIENCE

- Were the instructions clear enough?
- What did you like/dislike about this exercise?
- Did this open up your eyes to anything our students might face in a clinical situation?
- Do you think this was beneficial to how you might prepare for a case?
- Did the time counting down help you gather your thoughts or place stress on you?
- Did you work as a team?
- Was your written work based off of your own knowledge or experience from the procedure?
- Is this something you think would benefit your students?
- What critical thinking exercises do you have in your program?



# OUR GOALS

- To prepare each student for what it's like to be placed "on the spot" for an add-on case
- To give them an idea of how to use their critical thinking skills when it is most needed
- To show them the importance of teamwork within the OR
- To open their eyes to being put in tough situations where all you can rely on is your own knowledge and experiences
- Provide tools to teach them how to use their critical thinking skills when it comes to the CST Exam



# OUR GOALS CONTINUED

- To instill **self-confidence** within our students
- Teach them to want to **remain well-informed**
- Show them how to be **flexible** by taking into account alternative opinions
- Teach them **discretion** when it comes to making judgements
- Open their eyes to the importance of **remaining inquisitive**



"Thinking is skilled work. It is not true that we are naturally endowed with the ability to think clearly and logically – without learning how, or without practicing."

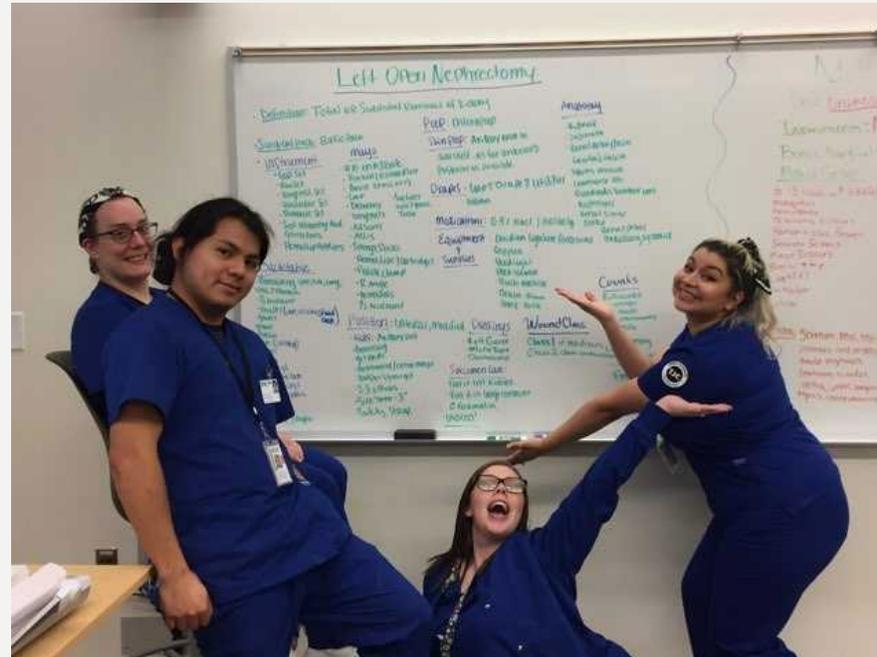
– A.E. Mander

# ***“AEGER PRIMO”***

- We want to prepare our students as much as possible for employment
- This is a way to help expose them to being placed in a situation where you have to use your own knowledge and/or experience to better your patient’s care
- Of course we want to prepare our students for employment for their hospital and for themselves, but the main goal is to prepare them as much as we can for providing the best patient care



# IN THE END WE ALL WANT TO CREATE **PROACTIVE** SURGICAL TECHNOLOGISTS, NOT REACTIVE SURGICAL TECHNOLOGISTS.



# REFERENCES

- <https://collegeinfo geek.com/improve-critical-thinking-skills/>
- <http://www.criticalthinking.org>
- <https://www.realityworks.com/blog/5-secrets-to-engaging-todays-generation-z-students/>



# **QUESTIONS & COMMENTS**

**THANK YOU FOR ALLOWING US THE  
OPPORTUNITY TO SHARE WITH YOU!**

**FEEL FREE TO CONTACT US WITH ANY  
FURTHER QUESTIONS YOU MAY HAVE!**

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