CRITICAL THINKING
ENGAGING THE STUDENT

BRENDA KORICH, CST/FA &
STORMIE PERRY, CST
TYLER JUNIOR COLLEGE - TYLER, TX
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
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

- 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).
• 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
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

THE SINGLE BIGGEST PROBLEM IN COMMUNICATION

IS THE ILLUSION IT HAS TAKEN PLACE

- GEORGE BERNARD SHAW
• 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
• 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”
CRITICAL THINKING SKILLS APPLIED

What skills are the students applying during this exercise?

• Have to think about the case as a whole – not just what instruments do I need on my Mayo
• Originally we didn’t have them do the operative sequence, but they were forced to think about it in order to complete all areas of the exercise
• Now, they have to present the operative sequence in our lab
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

Insertion, Position, Plasma Implant

Definition: consists of two cylinders - reservoir and a pump surgically placed in the body, usually under the skin's muscle or fat layer. Bypasses kidney or provides nutrients to help maintain function.

Surgical pack: basic operation pack
- Instruments set: major, optional set; minor & basic set; optional set; includes instruments necessary for the procedure.
SURGICAL PROCEDURES APPLICATION EXERCISE

**bronchoscopy w/ VATS de-airing of lungs**

**Definition:** Bronchoscopy is a diagnostic test that allows examination of airways. Bronchial lavage (surgical removal of sloughed mucus, membrane, or debris) as a lung of VATS.

**Pathology:** Bronchoscopic lavage or washout is not drained from general cavity, it digagulates and forms a thin layer over visceral and parietal pleura.

**Surgical Pack - Basic Pack**

- Instrument sets: endoscopic, large, and rigid set (possibly)
- Mayo (bench) instruments:
  - Scissors
  - Gum
  - Forceps
  - Bicanalicular
  - Tweezer
  - Retractors
- Tissue
- Gauze
- Sponges
- Swabs
- Metastatic muffs
- Ice tube
- Drapes:
  - 1x10 rents, 1x20 rents
  - 1x3 rents, 3/4 rents
- Incisions:
  - Anterior axillary
  - Posterior axillary
  - Upper posterior axillary

**Medication:**
- Marcaine 5% w/v emulsion 5000 u
- Metaraminol 1:10,000
- Suxamethonium 20 mg
- Propanolol 10% x 2
- 0.5% TCB
- 2.5% lidocaine

**Basic Supplies:**
- Endoscopic equipment
- Laryngoscope
- Shears
- Forceps
- Cuff tube

**Anatomy:**
- Lungs
- Trachea
- Tracheobronchial tree
- Esophagus
- Heart
- Diaphragm
- Anterior peritoneum

**Setup:**
- Left lateral decubitus, gel pad
- Blanket, sterile drapes, safety stapes
- Sponges, Mayo stand (for arms)

**Prep:**
- Chlorhexidine
- Start at incision site
- Extend circumferentially from the shoulder to axilla to the iliac crest laterally as far as possible & no pop for bronchoscopy.

**Counts:**
- Full count before (+ end)
- Anesthesia: general
- Dressings: 4 x 4" Kenform, sterile
- Vaseline
SURGICAL PROCEDURES APPLICATION EXERCISE

Open Thoracotomy for Pneumonectomy:

**Anatomy**
- Thoracic and mediastinal structures

**Approach**
- Anterior Approach

**Equipment**
- Chest tube
- Chest drain
- Suction

**Preparation**
- Sterile drapes
- Sterile gloves

**Steps**
1. Incision
2. Exposure
3. Anastomosis

**Postoperative Care**
- Chest tube
- Suction

**Complications**
- Hemorrhage
- Infection

**Surgical Techniques**
- Sleeve resection
- Lobectomy

**Postoperative Management**
- Fluid balance
- Pain management

**Preoperative Evaluation**
- Chest X-ray
- CT scan

**Operative Procedure**
- Incision
- Exposure
- Hemostasis

**Conclusion**
- Recovery
- Discharge

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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
How 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)
• One of our students that already has a BS in Biology is quoted as saying:
• “This is the most fun I’ve had when it comes to learning and I’ve been through a lot of classes.”
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. __________________________

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Case</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Pathology</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Surgical Pack Required</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Instrument Sets Required</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Mayo &amp; Back Table Set-ups</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Position &amp; Positioning Aids Required</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Prep Type &amp; Parameters</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Drapes Required</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Incision(s)</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Operative Sequence (LAB)</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Medications Required</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Suture Needed</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Basic Supplies Needed for Case</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Anatomy Relevant/Accessed</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Specimen Name/Care</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Counts</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Wound Class</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Dressings</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td><strong>GRADE</strong></td>
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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
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://collegeinfogeek.com/improve-critical-thinking-skills/

• http://www.criticalthinking.org

• https://www.realityworks.com/blog/5-secrets-to-engaging-todays-generation-z-students/
THANK YOU FOR ALLOWING US THE OPPORTUNITY TO SHARE WITH YOU!

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

BREND A KORICH, CST, FA
BKOR@TJC.EDU (903)-510-2963

STORMIE PERRY, CST
STORMIE.PERRY@TJC.EDU (903)-510-3332