

Centre for Advanced Patient Care Simulation




**Critical Thinking, EMS and High Fidelity Simulation**

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Blair Lindsay - Background

- EMS / Fire x 25 years
- Paramedic x 23 years
- Teaching x 15 years
- HF Simulation x 10 years



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- SAIT Established 1916
- 3 campus locations
- Calgary, Alberta
- 2,200+ Employees
- 80+ programs
- CAPCS established 2005



Southern Alberta Institute of Technology

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- CAPCS was built in 2005 in response to a need to increase student learning in a realistic environment



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(Attempting) to Define Critical Thinking



Peter C. Facione

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(Attempting) to Define Critical Thinking

*Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation and inference, as well as explanation of the evidence, conceptions, criteria or context on which the judgment is based.*

Adapted from Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction "The Delphi Report" – 1990 – American Philosophical Association

### Why Worry About Critical Thinking?

- CT part of what we're trying to build in our students
- **Non self-regulatory behaviour contributes to a significant number of medical errors**
- So... lets find what works well and do more of it -  
Find out what isn't working and improve

### Two significant components of HF Sim teaching

1. Development / application of skills in a (graduated) chaotic environment
2. Development of thought processes that can be successfully applied in a real environment



### What are we doing right?

- Relatively good at measuring skills acquisition...
  - ET tube is in the right orifice – teeth aren't broken
- Measuring development of thought processes / critical thinking much more problematic
  - Patient tubed **at the right time** and **for the right reasons**



### Design – Environment

- Versatile (think theatre) – plan for anything you *may* want to do
  - Extra wiring
  - Lots of electrical
  - Lots of display options – same screen displays METI waveform – but tomorrow could broadcast streaming video

### Design – Environment

- Ability to control all elements from control room (power, lighting)
- **Real** equipment / **Real** procedures / **Real** time
  - Sometimes this is tough to do but more 'just pretend' moments = more student withdrawal from 'reality' of sim
  - If students not used to 'real' equipment, they don't troubleshoot problems – short circuits crucial part of critical thinking necessary in real life

### Design – Environment

- All this adds up to a realistic environment with very little teacher intervention / prompting and more opportunity for student critical thinking
- Instructor in or out of area where students are watching scenario?



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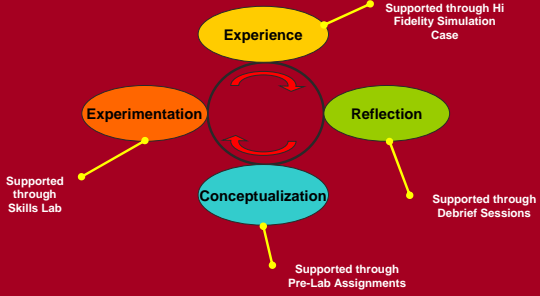
### Curriculum Considerations to Create an Environment that Promotes Critical Thinking

- I will not neglect integration of sim into curriculum
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- I will not neglect integration of sim into curriculum



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### Kolb's Cycle of Experiential Learning



- Experience: Supported through Hi Fidelity Simulation Case
- Reflection: Supported through Debrief Sessions
- Conceptualization: Supported through Pre-Lab Assignments
- Experimentation: Supported through Skills Lab

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### Curriculum



- Shallow water first – then graduated levels of increasing difficulty
- No “drive by” sim-ing
- Coordinated (this is difficult to do with multiple scheduling demands and multiple teachers)
  - Pre-lab → Skills Training → HF Sim / Debriefing should link together in an appropriate fashion

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### Curriculum – Sim During Practicum




- HF Sim can play an important role in solidifying student critical thinking on practicum
  - Students experiencing low volumes of certain patient types can bolster their experience
  - Students experiencing difficulty with certain patient events can be re-mediated in HF sim
  - This tends not to happen unless built into program from start

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### Debriefing

- Crucial part of encouraging development of critical thinking
- Discussion vs. lecture
- Eliciting thinking processes important




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### Debriefing

- Faculty training and regular re-connection important to consistent approach (is there a process for training new faculty in sim and debriefing?)
- The moment you look away things bounce back
 


*Dan Raemer*

...(and usually toward less realism)

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### Debriefing

- Can confuse (apparently) correct actions with well reasoned thought process
- ... or fail to adequately investigate apparently illogical actions

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### Debriefing

- When things go wrong
  - Tend to think it's a deficit in knowledge, skills or attitude
  - May lead to misdirected educational efforts
- *Often fail to investigate thinking processes that led to bad outcomes*

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### Debriefing


- When things go right
  - Tend to think it's because wonderful thinking processes (due to our exceptional teaching skills) are in place
  - People sometimes do the right thing for stunningly wrong reasons
- *Regularly fail to investigate thinking processes that led to 'good' outcomes*

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### Measurement of CT


- Tested / Validated Rubrics for Critical Thinking
- Watson Glaser Critical Thinking Appraisal
- Holistic Critical Thinking Rubric *Facione & Facione*
- Critical and Integrative Thinking Rubric *Washington State University*
- **Health Sciences Reasoning Test** *Facione & Facione*
  - Sim Improves CT Scores in Nursing Students
  - Sullivan-Mann MSN, RNC, Perron RN

Good Samaritan College of Nursing & Health Science Cincinnati, Ohio

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### Measurement of CT

- *Most CT Scores / Rubrics dependent on student disclosure of thinking processes*
- *Usually applied to verbal discussion or (more often) student written material*
- CT Rubrics that do not access student thinking can not be considered completely valid

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### Measurement of CT

- Sometimes we (mistakenly) believe that students are completely disclosing thinking processes in debrief
- Many reasons why this may not always be so...
  - Peer pressure (I'm seeing this differently than everyone else)
  - Fear of exposing lack of knowledge
  - 'Lecture' tone of discussion (I'd better just agree with the teacher)
  - ...others

### Measurement of CT

- Possible ways of accessing student thinking...
  - Ensure debriefing process encourages disclosure of thinking
  - Journaling post simulation
  - Creation of patient care records directly after simulation
  - Directed inter-student discussion post simulation
  - Health Sciences Reasoning Test *Facione & Facione*
  - ...others?

**Thank you**

### Questions?

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<http://learnat.sait.ca/healthpublicsafety/emtp/capcs/simlab.htm>

