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Unconscious Bias and Its Impact on Feedback & Evaluations in Medical Education

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My Background

- Educational Psychology – Learning sciences



Today

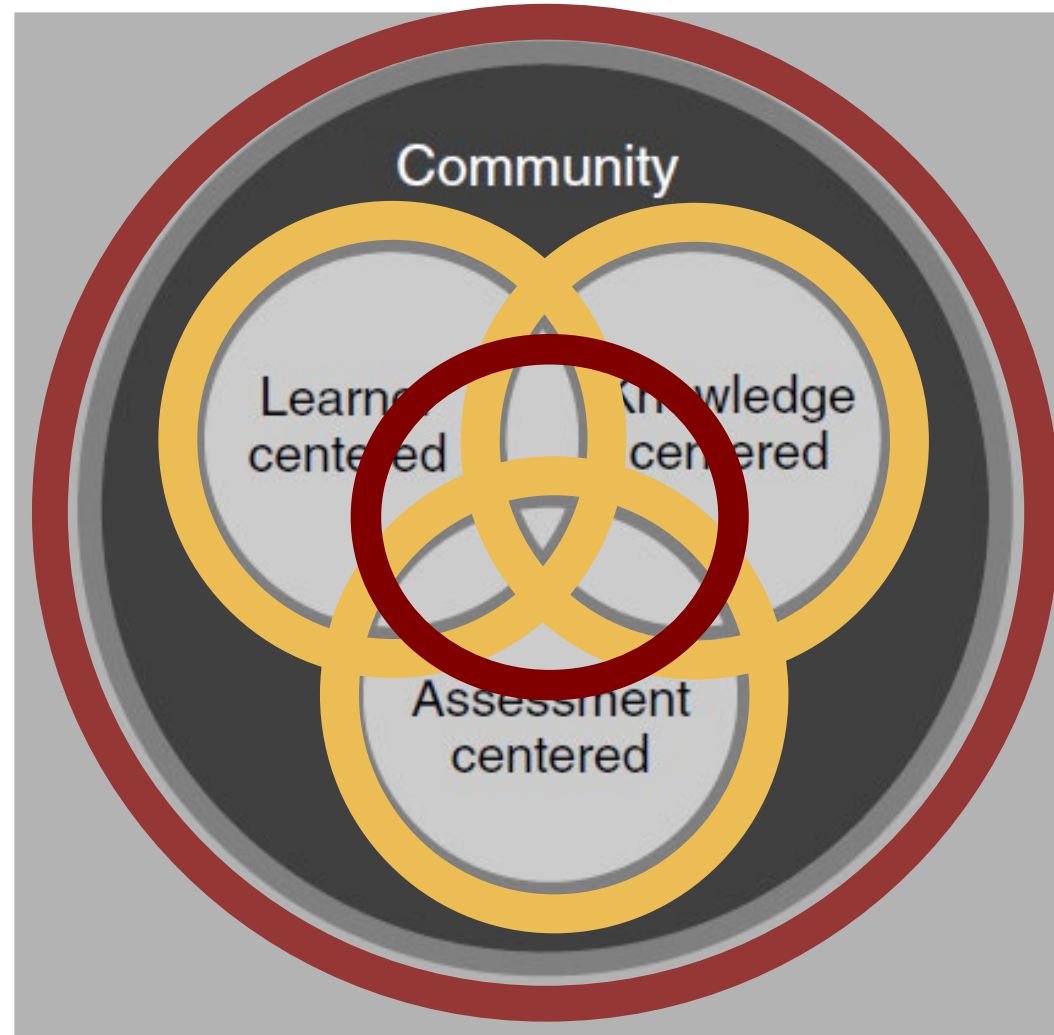
- What is Unconscious Bias?
- Learning Environments
- Assessment
 - Why?
 - Different Methods
- What to assess
- Equity in assessment
- Enhancing motivation, confidence, and learning
- Framing conversations around assessment data
- Reliability and Validity



Unconscious Bias (Implicit Bias)

- Prejudice or unsupported judgments in favor of or against one thing, person, or group as compared to another
 - Occurs automatically
 - Certain people benefit and other people are penalized
- Many unconscious biases tend to be exhibited toward minoritized groups based on factors such as:
 - Class
 - Gender
 - Sexual orientation
 - Race
 - Ethnicity
 - Nationality
 - Religious beliefs
 - Disability, etc.

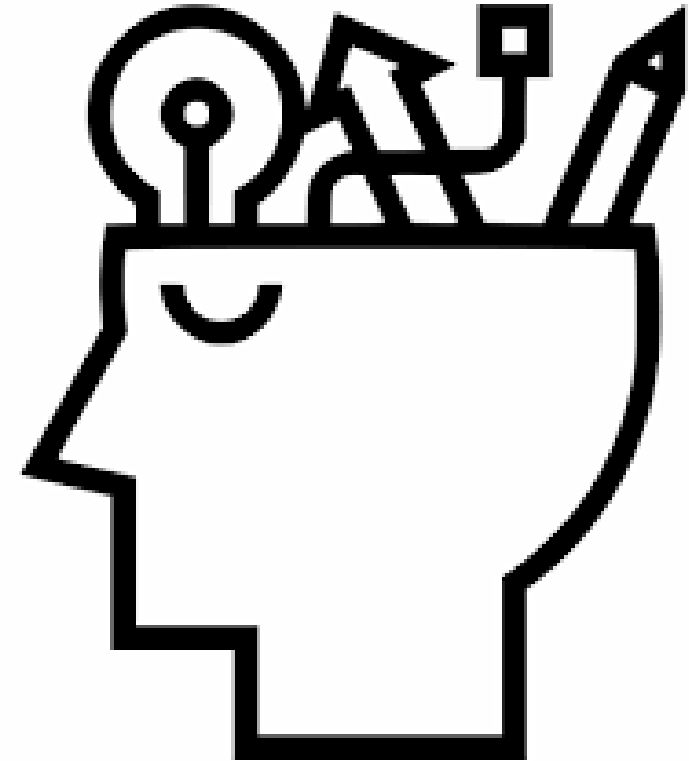
Learning Environments



Bransford, J.D., with Cognition and Technology Group at Vanderbilt 1998
Designing environments to reveal, support, and expand our children's potentials.
How People Learn. Edited by Bransford, Brown, and Cocking.

Knowledge-Centered

- Things to consider...
 - Medical knowledge
 - Technical skills
 - Clinical reasoning
 - Applying knowledge and skills to practice
 - Interpersonal interactions



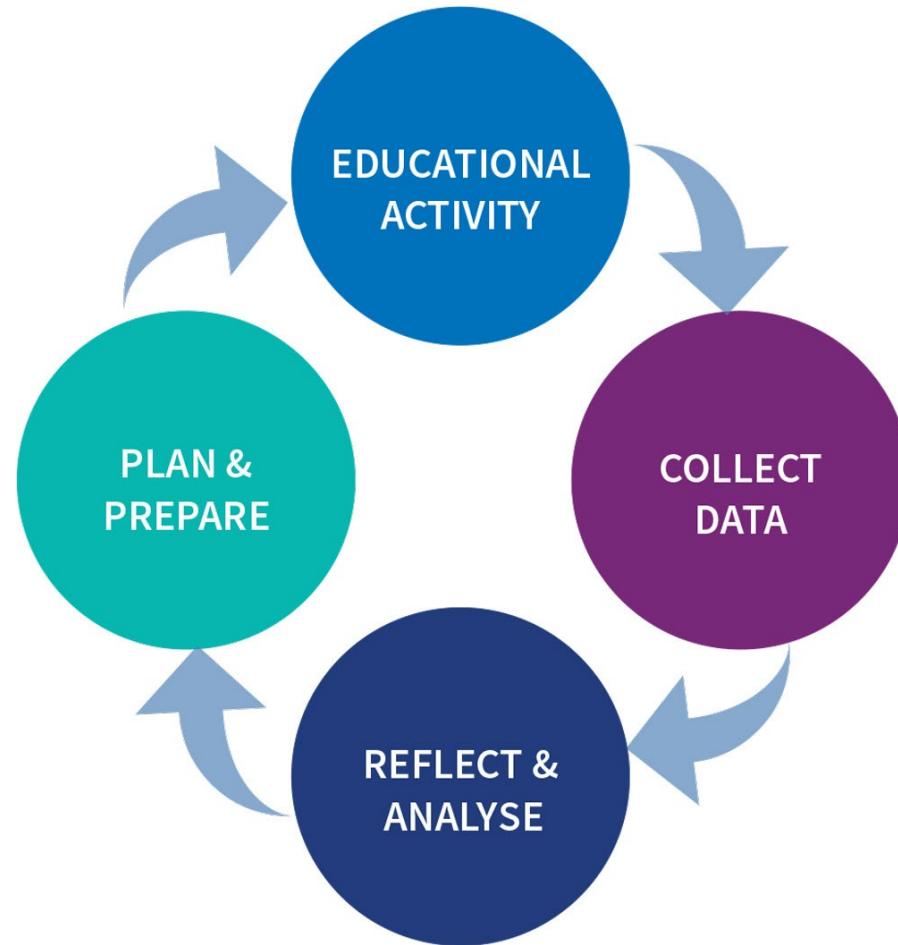
Assessment-Centered

- Things to consider...
- We assess to inform decisions
- Three broad purposes for assessment
 - Assisting Learning - Formative
 - Measuring Individual Student Achievement - Summative
 - Evaluating Programs

What are assessment and evaluation?

- Assessment: Estimate the nature, ability, or quality of something.
- Evaluation: The making of a judgement about the amount, number, or value of something.

Why Spend Time Planning for Assessment?



Graphic From Trinity College Dublin

Assessment Plans

- A plan ensures that our standards, instruction and assessment are aligned.
 - Includes
 - Learning Objectives
 - Time Frame
 - Types of Assessment
- You should always know how you will assess before you teach!

Some Assessment Types

- Formal vs. Informal
- Formative vs. Summative
- Traditional vs. Authentic or Performance

Different Assessment Instruments

- Checklists
 - Especially good for performances where something happens or doesn't
- Rating Scales
 - Can be graphic, numeric, or descriptive
- Rubrics
 - Good when you have multiple criteria being assessed
 - Clarifies standards

Checklists

Airway assessed	
Spinal precautions maintained at all times	
Oxygen applied	
Chest auscultation	
Time between awareness of difference in breath sounds to start of decompression of pneumothorax <3 min	
Reassessment of chest after chest tube placement	
Assessed pulses	
Recognize initial hypotension and administer fluids/blood	
Full complete exposure	
ABCDE before secondary survey	
2nd IV access achieved	
Obtain chest x-ray	
Obtain pelvis x-ray	
Recognize pelvic fracture	
Perform FAST examination	
Verbalization of positive FAST	
Assessed pelvis	
Applied pelvic binder	
Proper technique for pelvic binder	
Assessed pupils	
Report GCS	
Insert Foley catheter	
Recognize repeat hypotension and administer blood	
Assessed temperature	
Recognized hypothermia	
Apply warm blankets / warming device	
Completed full secondary exam	
Obtained AMPLE history	
Administered pain control	
Administered TXA	
Verbalize indication for OR vs CT	
Time to disposition </= 10 min	
Total Score	/32

Rating Scales

Overall Performance

5	4	3	2	1	
Excellent	Very Good	Good	Fair	Poor	NA

Rubrics

Topic	5 = High Performing	4 = Above Average	3 = Satisfactory	2 = Below Average	1 = Poor Performing
Overall Approach Interaction with patient and nursing staff to successfully evaluate the patient and obtain pertinent clinical information in a timely and organized fashion	Organized approach results in efficient obtainment of clinical data, medical decision making, clinical treatment and notification of senior resident	Generally organized, however misses an important aspect of care	Becomes sidetracked in evaluation of the patient, resulting in loss of care efficiency.	Provides appropriate medical care but disorganized approach hinders the timing or delivery of that care	Scattered or disorganized approach interferes with timely care and management of the patient
	5 = High Performing	4 = Above Average	3 = Satisfactory	2 = Below Average	1 = Poor Performing
Data Collection Orders diagnostic tests appropriate to and focused on the clinical setting	Obtained all critical data points	Obtained most of the critical data	Obtained some critical data	Required prompting to obtain critical data	Failure to obtain critical data
	5 = High Performing	4 = Above Average	3 = Satisfactory	2 = Below Average	1 = Poor Performing
Differential Diagnosis Creates a differential diagnosis appropriate to the clinical setting	Comprehensive Included Critical Diagnosis	Appropriately Broad	3-4 Diagnoses	One or Two Diagnoses	No Differential Diagnosis
	5 = High Performing	4 = Above Average	3 = Satisfactory	2 = Below Average	1 = Poor Performing
Medical Decision Making Appropriate to the clinical setting	Initiated all appropriate therapies Appropriate disposition of patient	Initiated some appropriate therapies	Delayed decision making resulted in delay of care	Some ideas but no clear decisions made	Delay in treatment of urgent condition Stumped
	5 = High Performing	4 = Above Average	3 = Satisfactory	2 = Below Average	1 = Poor Performing
Communication and Interaction w/ RN	Requested appropriate work up at initial call Professional behavior. Good Communication.	Provided some Communication	Incomplete communication Didn't request additional testing/info	Delayed or repetitive communication	Excessively delayed communication Required prompting Disregarded RN or Rude
	5 = High Performing	4 = Above Average	3 = Satisfactory	2 = Below Average	1 = Poor Performing
Communication with Senior Resident	Called Senior in timely, appropriate fashion Concise report, with all needed information	Called within appropriate time period. Missing minimal information	Call delayed or missing some info	Required prompting to call senior	Excessively delayed Communication Required excessive prompting

What to assess?

- Core Competencies and Milestones
 - Give shared picture of the behaviors trainees will demonstrate when they are novice learners, advanced beginners, competent, proficient or experts
 - Can the integrate all these behaviors to deliver care in different clinical settings of contexts

Competencies and Milestones Example

Core competency
(patient care)

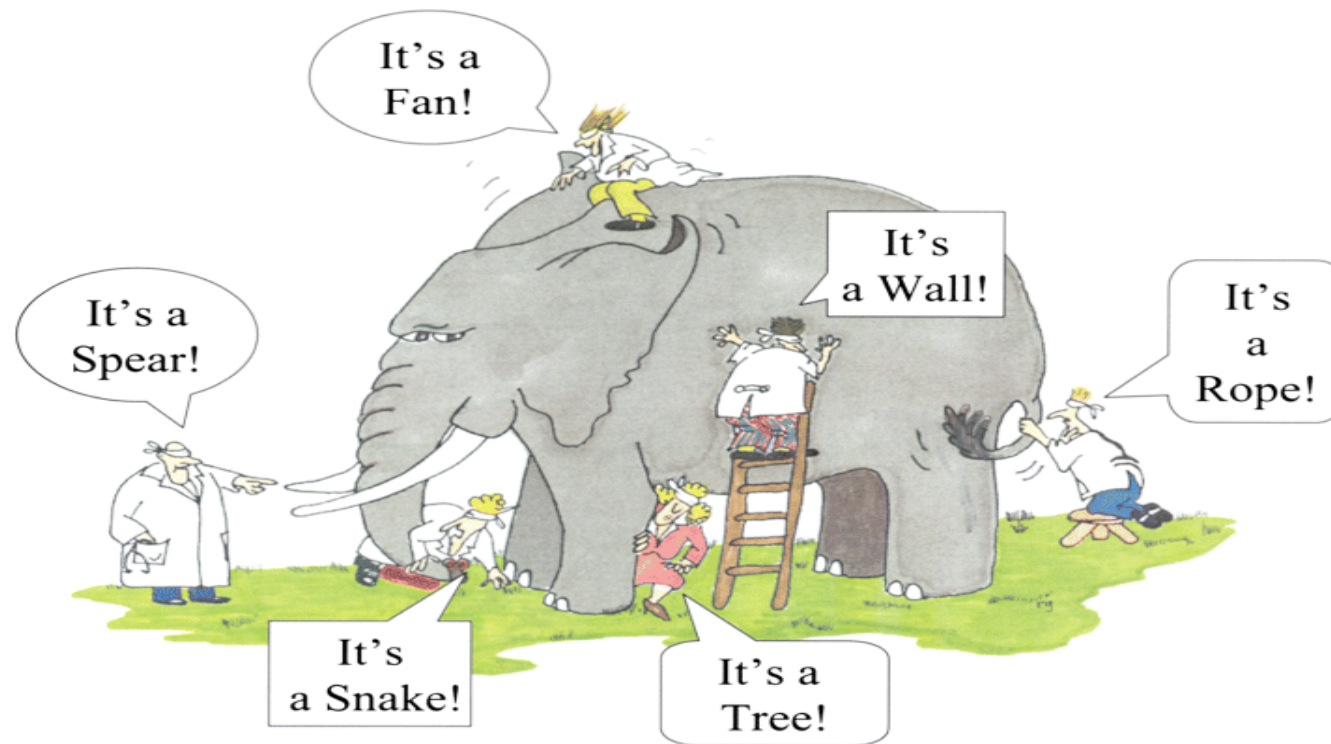
Subcompetency
(Technical skills- open
surgical skills)

Level of developmental
progression

Individual
milestone

PC6: Technical Skills – Open Surgical Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates basic surgical skills, including knot tying, simple suturing, suture removal, use of Doppler ultrasound, administration of local anesthetic, universal precautions and aseptic technique, and reliably performs some basic procedures	Demonstrates respect for tissue, and is developing skill in instrument handling Moves through portions of common operations without coaching, and makes straightforward intra-operative decisions Performs basic vascular procedures with limited supervision	Handles most instruments with increasing efficiency of motion during procedures Moves through most steps of most operations without much coaching, and is making intra-operative decisions Performs intermediate vascular procedures with limited supervision	Proficiently handles instruments and equipment, uses assistants, guides the conduct of the operation, and makes independent intra-operative decisions <div style="border: 2px solid green; padding: 5px;">Independently performs simple, intermediate, and advanced vascular procedures, including troubleshooting and management of complications</div>	Achieves mastery of instrument and equipment handling, using assistants, guiding the conduct of the operation, and making independent intra-operative decisions Competently teaches and supervises other learners
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Reductionist vs holistic assessment



Entrustable Professional Activities

- Work-based assessment
- Holistic assessment
 - Integrating all competencies
- Learner-driven
- Directly observable
- Frequent
 - NOT the same as end of rotation evaluation. Base solely on interaction being evaluated
- Level of entrustability for same EPA may change based on clinical context
 - Sicker patient, more difficult interpersonal skills, harder case



Assessment for Enhancing Motivation & Confidence

- More frequent assessment is more effective than less frequent
- Providing feedback
- Self & peer assessment
- Adjusting instruction based on assessment

Good Feedback to Support Learning

- *Approach* – uses a non-threatening but honest approach
- *Sets Goals/Expectations* – goals and expectations for performance are clearly set
- *Objective* – focuses on clinical skills and targets specific behaviors for change
- *Specificity* – clear and focused areas for improvement are identified
- *Application* – reinforces how improvement and growth relate to future clinical practice
- *Quantity* – concise yet comprehensive

Community-Centered

- Things to consider...
 - Adult learners must be active participants in their learning
 - Self-regulated learning
 - Application to practice
 - Appropriate skills are needed to be active learners
 - Forming of relationships and trust facilitate an environment for effective learning and practice to occur
 - How do we view ourselves as teachers and learners?

Equity

- Equity – focus on what individuals and groups bring to learning situations and how this may influence what they get out of it

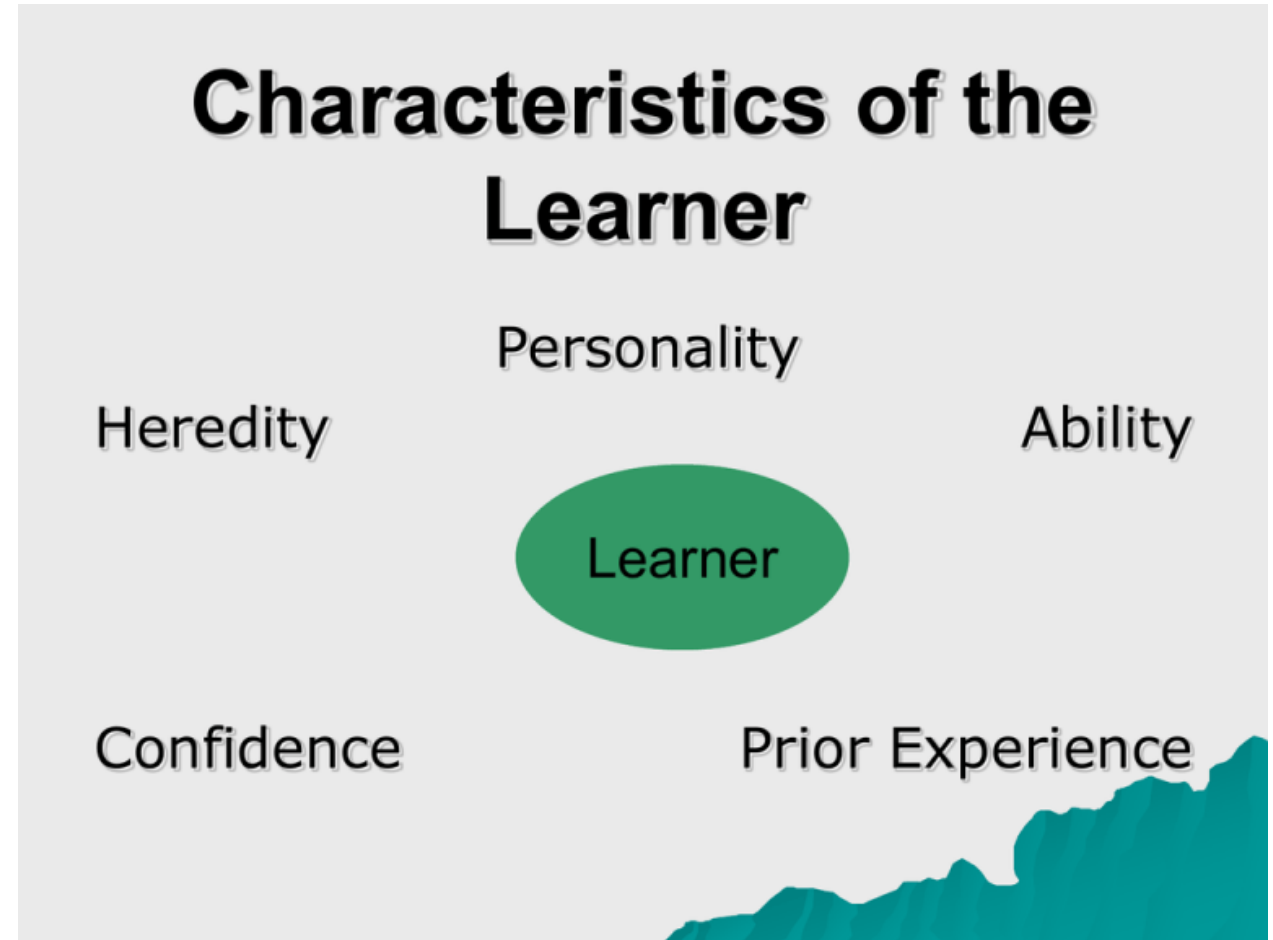
Guiding Principles for Equity by Design

1. Clarity in language, goals, and measures is vital to effective equitable practices.
2. Equity-mindedness should be the guiding paradigm for language and action.
3. Equitable practice and policies are designed to accommodate differences in the contexts of students' learning—not to treat all students the same.
4. Enacting equity requires a continual process of learning, disaggregating data, and questioning assumptions.
5. Equity must be enacted as a pervasive institution- and system-wide principle.

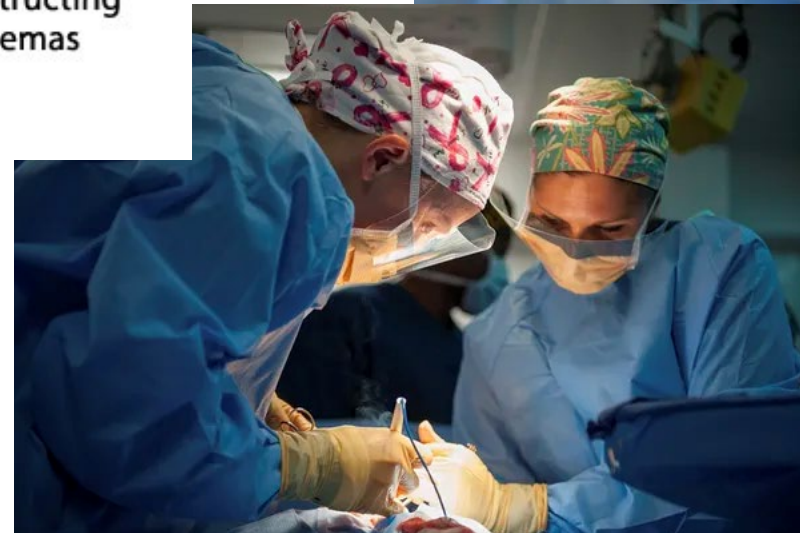
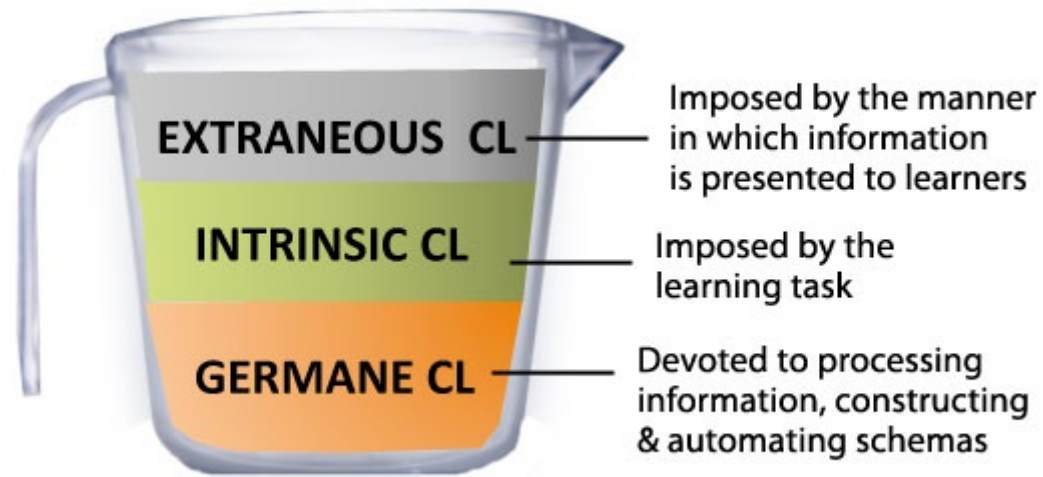
Sources: Bensimon, Dowd, and Witham 2016; and Witham et al. 2015.

Learner-Centered

- Things to consider...
 - Not about doing things exactly as the learner wants
 - Is about understanding what a learner brings to the situation



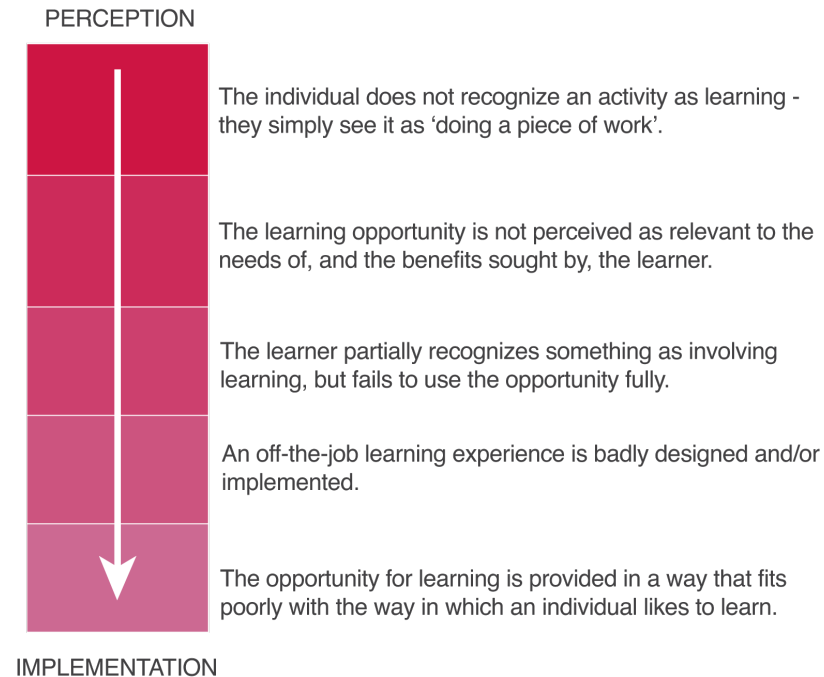
Cognitive Load, Expertise, Visualization



Learning Inefficiencies

- The continuum from failures of perception to failures of implementation

A five-point scale of learning inefficiencies



Adapted from Parsloe, et al., 2017, p. 89

Individual Learning Plans (ILPs)

- Only as good as the data you put into it and the actions it allows you to take

Stage 1 – Desired Results			
ESTABLISHED GOALS The enduring understandings and learning goals of the lesson, unit, or course.	<p style="text-align: center;"><i>Transfer</i></p> <p><i>Students will be able to independently use their learning to...</i></p> <p>Refers to how students will transfer the knowledge gained from the lesson, unit, or course and apply it outside of the context of the course.</p>		
	<p style="text-align: center;"><i>Meaning</i></p> <table border="1"> <tr> <td> <p>UNDERSTANDINGS <i>Students will understand that...</i></p> <p>Refers to the big ideas and specific understandings students will have when they complete the lesson, unit, or course.</p> </td> <td> <p>ESSENTIAL QUESTIONS</p> <p>Refers to the provocative questions that foster inquiry, understanding, and transfer of learning. These questions typically frame the lesson, unit, or course and are often revisited. If students attain the established goals, they should be able to answer the essential question(s).</p> </td> </tr> </table>	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <p>Refers to the big ideas and specific understandings students will have when they complete the lesson, unit, or course.</p>	<p>ESSENTIAL QUESTIONS</p> <p>Refers to the provocative questions that foster inquiry, understanding, and transfer of learning. These questions typically frame the lesson, unit, or course and are often revisited. If students attain the established goals, they should be able to answer the essential question(s).</p>
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	<p style="text-align: center;"><i>Acquisition</i></p> <table border="1"> <tr> <td> <p><i>Students will know...</i></p> <p>Refers to the key knowledge students will acquire from the lesson, unit, or course.</p> </td> <td> <p><i>Students will be skilled at...</i></p> <p>Refers to the key skills students will acquire from the lesson, unit, or course.</p> </td> </tr> </table>	<p><i>Students will know...</i></p> <p>Refers to the key knowledge students will acquire from the lesson, unit, or course.</p>	<p><i>Students will be skilled at...</i></p> <p>Refers to the key skills students will acquire from the lesson, unit, or course.</p>
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Stage 2 – Evidence and Assessment			
Evaluative Criteria Refers to the various types of criteria that students will be evaluated on.	<p>Assessment Evidence</p> <p>PERFORMANCE TASK(S):</p> <p>Refers to the authentic performance task(s) that students will complete to demonstrate the desired understandings or demonstrate they have attained the goals. The performance task(s) are typically larger assessments that coalesce various concepts and understandings like large projects or papers.</p>		
	<p>OTHER EVIDENCE:</p> <p>Refers to other types of evidence that will show if students have demonstrated achievement of the desired results. This includes quizzes, tests, homework, etc. This is also a good point to consider incorporating self-assessments and student reflections.</p>		
Stage 3 – Learning Plan			
<p style="text-align: center;"><i>Summary of Key Learning Events and Instruction</i></p> <p>This stage encompasses the individual learning activities and instructional strategies that will be employed. This includes lectures, discussions, problem-solving sessions, etc.</p>			

<https://cft.vanderbilt.edu/guides-subpages/understanding-by-design/>

FUEL Model to Frame Conversations

FUEL is a flexible framework designed to facilitate behavioral change and outcomes while challenging assumptions.

Supporting learners in self-reflection.

- **F**rame - set purpose and frame the conversation
- **U**nderstand - use data to understand
- **E**xplore - explore the desired outcomes, brainstorming
- **L**ay - lay the plans

Using the FUEL Model

Frame the Conversation

- Identify the issue, process, and outcomes

Understand the Current State

- Explore the learner's POV
- Explore consequences
- Offer perspective

Explore the Desired State

- What does success look like? What are the goals?
- What are some possible approaches?
- What are barriers?

Layout a successful plan

- Action plan and timeline
- What resources are available?
- Set milestones and plans for accountability

Clear Objectives

- For Training Program
- For Development or Remediation Plans



Reliability

- Consistency of information
 - Signal / Signal + Error/Noise

Different types of reliability, including –

- Test – Retest
 - Measuring at different points
- Internal – Consistency
 - Looking at item error variance
- Interrater Reliability
 - Agreement between raters
- All assessments include error!



Validity

- The estimate of performance and any associated decisions from the data are warranted

Different types of validity, including –

- Face validity: expert review
- Content validity: items measuring what trying to measure
- Construct validity: degree to which a construct is measured
- Concurrent validity: relation to other similar constructs
- Discriminate validity: can distinguish among groups/levels
- Predictive validity: data indicative of later performance

In Summary

- Assessments are our “data points” that inform decisions BUT are susceptible to bias
- Assessment can take multiple forms within the learning environment
- Expectations should be set and articulated to learners
- Assessments should be formative as well as summative
- Individual Learning Plans (ILPs) can help to organize assessment observations and facilitate conversations around learning progression
- Reliability and validity must be considered

References

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Thank you!

Comments? Questions?

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Remarkable People, Remarkable Results.