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Weill Cornell Medical College in Qatar
Medical Education Grand Round, March 8, 2015

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View from 7th Century Tatev Monastery, Armenia, 2014

"By three methods we may learn wisdom:

First, by reflection, which is noblest;

second, by imitation, which is easiest;

and third by experience, which is the

bitterest."

Confucius (600 BC) cited in Karen Hinnett; *Developing Reflective Practice in Legal Education:* Warwick Printing Press, 2002.

Overview & Objectives

- § Define and discuss types of reflections and their objectives, in medical education and in practice.
- § Explore how it has been incorporated into different health professions education and practice.
- § Discuss tools to evaluate reflective abilities of a practitioner.

Dialogue

Reflective practice is "a dialogue of thinking and doing through which I become more skillful."

Donald A. Schön, The Reflective Practitioner: How Professionals Think in Action (New York: Basic Books Inc., 1983)



The Cafesjian Museum of Art. Yerevan, Armenia 2014

Uncertainty

"...reflective practice requires training and practice..

Initial sessions may yield more questions than answers and create uncertainty where previously there had been the comfort of unquestioned certainty... those who persist take their practice to a, more sophisticated level."

Frances Westley, Brenda Zimmerman, & Michael Q. Patton, *Getting to Maybe: How the World is Change* (Toronto: Vintage Canada, 2007)

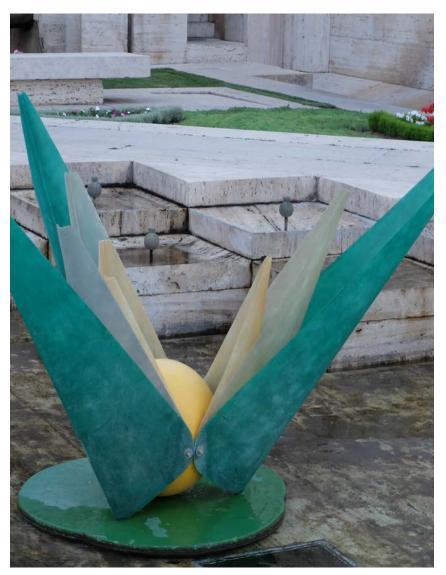


The Cafesjian Art Museum Yerevan, Armenia 2014

Lead by example

"The leader as a reflective practitioner sets the tone for learning... take a significant role in the change process by engaging in personal transformation. Become coaches and facilitators... Sustainability and continuity of learning ... seem more prevalent in organizations where leaders 'lead by learning'

K. Ayas & N. Zeniuk, "Project-based learning: Building Communities of Reflective Practitioners" in Christopher John Grey & Elena Antonacopoulou, eds., *Essential Readings in Management Learning* (Thousand Oaks, CA: Sage, 2004)

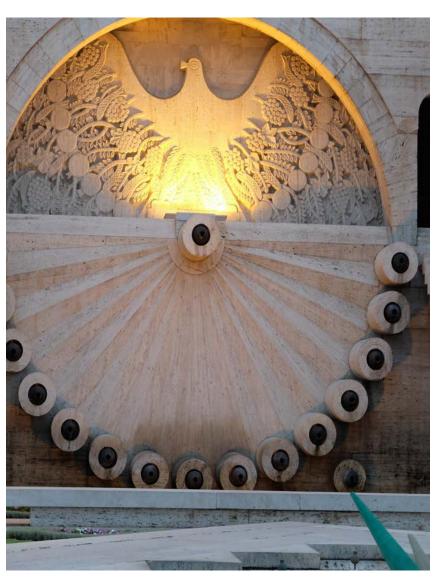


The Cafesjian Art Museum Yerevan, Armenia 2014

Prevent Burnout

"Each of us can bring the practice of wisdom into our careers & life choices... maintaining balance .. See & ... understand them in a large perspective of constant change.... It can help us deal with the problem of burnoutthe exhaustion of idealistic ventures where there is a bottomless well of needs and our efforts always fall short."

Charles Halpern, Making Waves and Riding the Currents: Activism and the Practice of Wisdom (San Francisco: Berrett-Koehler Publishers, Inc., 2008) at 259



Cafesjian Art Museum Yerevan, Armenia

Incorporating Reflection into Health Professions Education has shown

Enhanced development of

- § self-directed life long learning
- § mentoring
- § professionalism
- § critical evaluation
- § problem solving strategies
- § skills to link theory with practice
- § diagnostic accuracy by medical residents
- § management of complex health systems & patients

Improvement

- § examination scores
- § student performance with standardized patients
- § achievement of rotation goals for more residents

Regulators have called for integration of reflection at all levels of medical education & practice

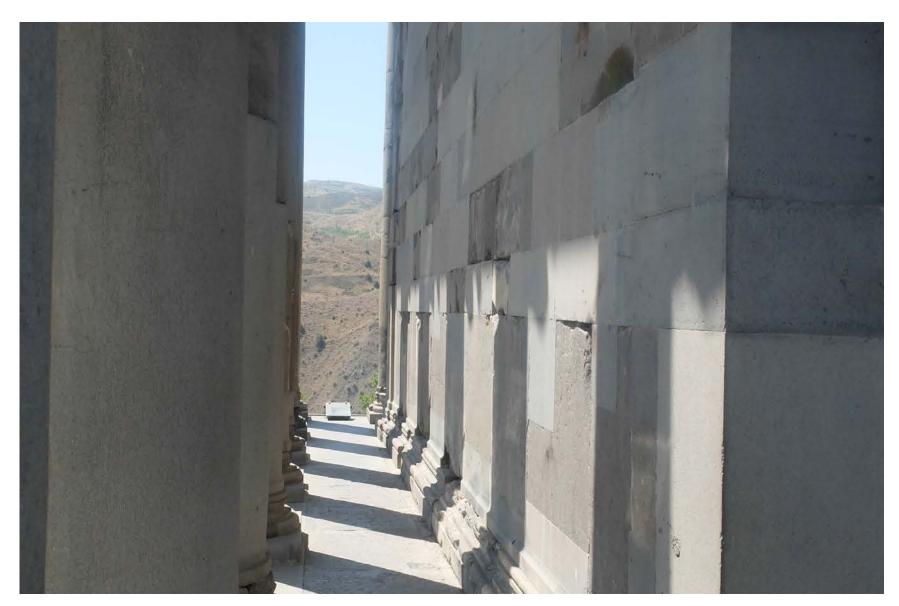
- ACGME 1999
- ABIM foundation
- ACP-ASIM Foundation
- European Federation of Internal Medicine 2002
- JR. Frank- (Competency Based Med Ed) 2009
- GMC 2009

Doctors in Society: Medical Professionalism in a Changing World- Working Party Report 2005

"What we need to do is to work towards a system where doctors recognize that they need to, on a regular basis, reflect on their practice, attitudes, everything that they do. They need to do that on a personal basis, but with someone else to get an external perception on it."

Sir Alan Craft

Chair, Academy of Medical Royal Colleges, UK President, Royal College of Pediatrics and Child Health, UK



View over the Ararat Valley from the Pagan Temple of "Garni", Armenia 2014

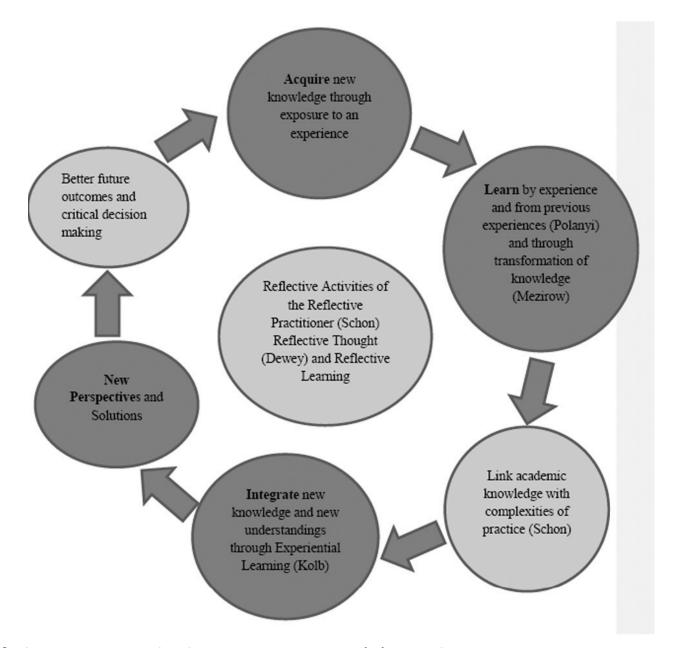
Timeline key educators in the development of reflective practice

Dewey 1910	Polanyi 1967	Schon 1983	Kolb 1984	Boud et al 1985	Mezirow 1990
					\Rightarrow
Reflective Thought	Tacit Dimension	Technical Rationality	Experiential Learning Theory	Seven Elements of Reflective Process	Transformative Learning
Reflection through inferences and 'thought training' through habit	Tacit knowledge 'We know more than we can tell'	Reflection- in-action Reflection- on-action	Integrating theory with practice	(1) Returning to the experience (2) Attending to feelings (3) Association (4) Integration (5) Validation (6) Appropriation (7) Outcomes and Action	Distinguishes between non- reflector, reflector and critical reflector

American Journal of Pharmaceutical Education 2014; 78 (1) Article 18.

Concepts Framework

Acquire
Learn
Integrate
New
perspectives



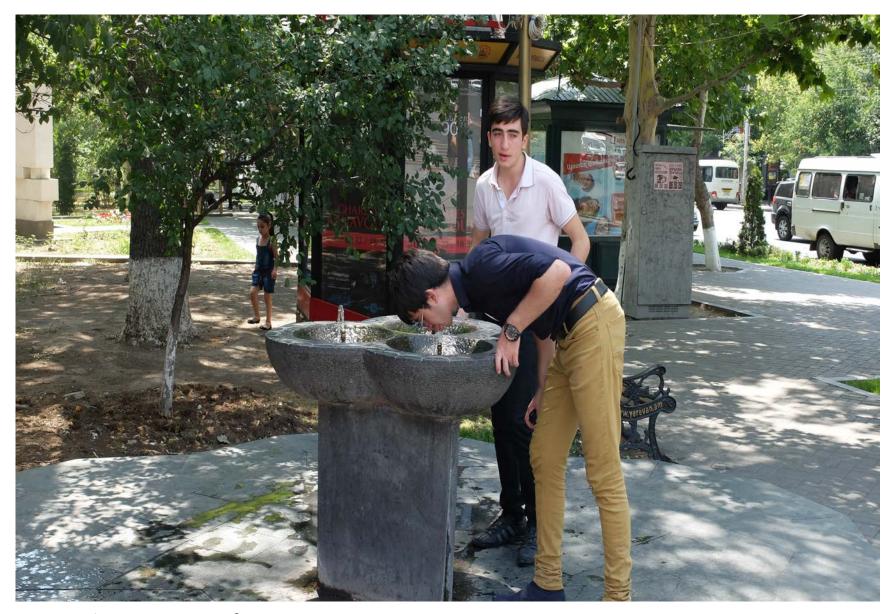
American Journal of Pharmaceutical Education 2014; 78 (1) Article 18.

Educators Challenges

- § Confusion? literature is full on reflection- diversity of pedagogical approaches and educational goals.
- § Reflection versus Critical reflection?

 Many educators implement exercises which generate anecdotes rather than analysis, there is a lack of questioning and reframing of experiences, which if done critically is more likely to result in meaningful educational outcomes.

L. Aronson Twelve tips for teaching reflection at all levels of medical education, Medical Teacher 2011



Natural spring water fountains, Yerevan Armenia, 2014

Definition in Medical Education

"Reflection is a metacognitive process that occurs before, during and after situations, with the purpose of developing greater understanding of both the self and the situation, so that future encounters with the situation are informed from previous encounters"

Prof. John Sanders; AMEE Guide No 44; Med Teacher 2009

Process

"Reflection is a metacognitive process that occurs before, during and after situations, with the purpose of developing greater understanding of both the self and the situation, so that future encounters with the situation are informed from previous encounters"

Meta-cognition

Knowledge about cognition(knowing what we think)

and

Control of cognition (knowing how we think).

Flavell (1979)

Suggesting that reflection is

- § A self-regulatory process
- § Which can be controlled
- § Can be enhanced through various educational strategies

Timing

"Reflection is a metacognitive process
 (thinking about the thinking) that occurs
 before, during and after situations, with the
 purpose of developing greater understanding
 of both the self and the situation, so that
 future encounters with the situation are
 informed from previous encounters"

Suggesting that Reflection

- § Can be done at anytime
- § Often performed after an event/situation/ experience

§ But can also be before an action- with a view to testing a perception or goal, with the potential for greater personal growth and learning.

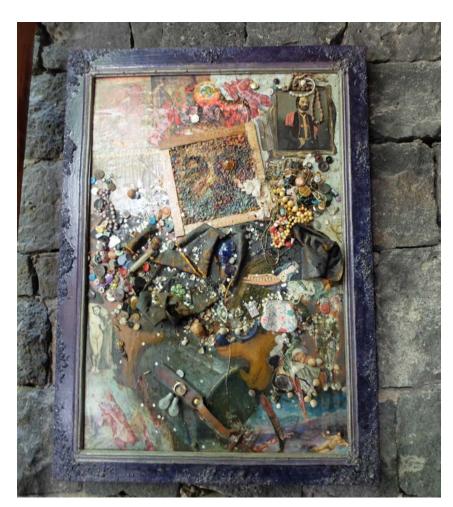
Purpose

"Reflection is a metacognitive process
 (thinking about the thinking) that occurs
 before, during and after situations, with the
 purpose of developing greater understanding
 of both the self and the situation, so that
 future encounters with the situation are
 informed from previous encounters"

Understanding the self

Research shows that sociological and psychological factors embedded in doctors reasoning, play a role in the diagnostic process.

S. Marmede et. al; Journal of Evaluation in clinical practice (2007)



Sergei Parajanov; self-portrait Parajanov Museum, Yerevan, Armenia 2014

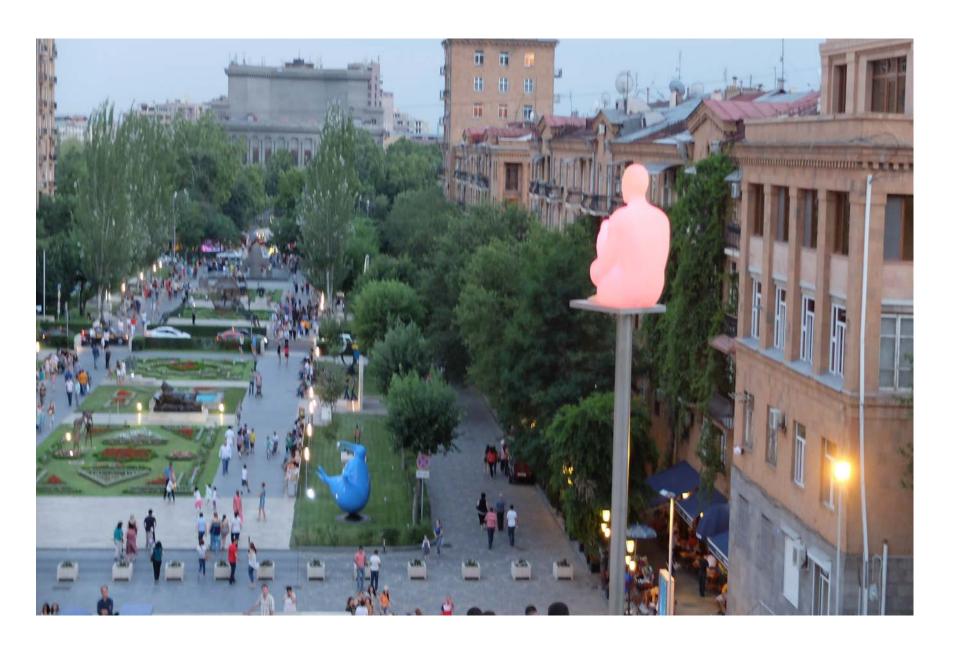
- § Therapeutic self in the therapeutic relationship One's beliefs, personal values, professional attitudes
- § Therapeutic relationship shows improved patient outcomes, compliance, practitioner satisfaction
- § Development of one's self-efficacy, much needed skill to become a self- directed learner
- § **Balint**¹ Groups- Trained leaders to help medical doctors discuss psychodynamic factors in relation to patients

Understanding the situation

§ Identifying learning needs e.g. New information, new skills

§ Understand how decisions are made, how errors can be avoided

§ Relevant to all levels of learners; undergraduate to CPD



Making Sense of the Situation...

Action or Outcome

"Reflection is a metacognitive process (thinking about the thinking) that occurs before, during and after situations, with the purpose of developing greater understanding of both the self and the situation, so that future encounters with the situation are informed from previous encounters"

Outcome

- § Reflection has a definite purpose
- § Making sense of a situation alone, does not necessary impact future action
- § The outcomes of the reflection inform future actions



Diagnostic errors & reflective practice

Categories of diagnostic errors

No fault error (disease with atypical presentation)

Systems related errors (flaw in health systems affecting doctors performance)

Cognitive errors (inadequate knowledge, faulty data gathering, inaccurate clinical reasoning or faulty verifications)

Despite high efficacy of expert doctors' reasoning strategies, they are not error proof.

Study of medical errors from a problem solving research perspective, points to possible:

Failures to generate the correct hypothesis, misperceptions and misinterpretation of evidence.

Experts face difficulties in reframing the problem and / or restructuring the initial hypothesis?

Medical Heuristics

- Mental shortcuts that are invoked, largely unconsciously, by clinicians to expedite clinical decision making.
- Powerful tools
 - Developed from experience, traditions, personal theories and assumptions
 - Not necessarily based on evidence or scientific rationale

Can be very helpful in facing clinical uncertainty and provide timely efficient care

But it can distort clinical reasoning throughout the diagnostic process, resulting in cognitive errors

- E.g. Availability
- E.g. Representativeness
- E.g. Confirmation bias
- E.g. Anchoring
- E.g. Premature closure
- E.g. Overconfidence
- E.g. Outcome bias v.s Regret
- E.g. Socio-cultural biases

The Reflective Practitioner



Searches for alternative explanations

Thinks of the outcomes of the alternative explanations

Is willing to test those predictions

Has an open attitude towards reflection to solve complex problems

Is able to reflect on their own thinking process (reflexivity)



Mount Ararat

Medical Communication

- Sore competency & a complex task
- S Constantly appraise goals, information, responses, effects in the interaction and making of decisions about responses and solutions.
- § Examples: History taking, Delivering bad news, counseling and decision-making, rapport building, agenda setting, responding to psychosocial cues and emotions, reaching common grounds.

Effective training

- § Should equip future physicians with fundamental skills in life long professional development to assist them in dealing with a diversity of patients, with wide range and constantly changing set of communicative needs.
- § Reflection is such an ability.

- § Video is a powerful tool for looking back on one's own performance, in an unbiased manner.
- Video reviews allow trainees to base their judgments of their own abilities on the same standards used to judge others.
- § Critical self evaluation, needed to identify key events in one's own performance, for creating alternative solutions, is a difficult task.
- § Reflective self-evaluation is often avoided and vulnerable to selective attention and kinds of cognitive biases.

- § To develop an accurate impression of oneself, the metacognitive judgments of one's own performance should be accompanied with systematic and intentional elicitation of views of others.
- Peer review may be able to provide essential feedback on areas of strength and weakness, not always gleaned from self-assessments or the instructors.
- § Self and peer assessment has been shown to help students get a better understanding of the quality of the criteria for performance, and to make a critical appraisal of their own performance.

Reflective teaching of medical communication skills with DiViDU; assessing the level of student reflection on recorded consultations with simulated patients

Objectives:

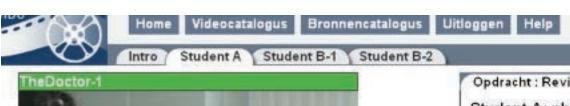
- § Develop a rating criteria for the students' level of reflection (to use in giving student feedback)
- § To collect evaluations of the reflective cycle components in the communication training

ALACT reflection model- Korthagen et al.

- § Acting
- § Looking back on Action
- § Awareness of essential aspects
- § Creating alternative methods of action
- § Trial testing the newly designed strategy (cyclical process)

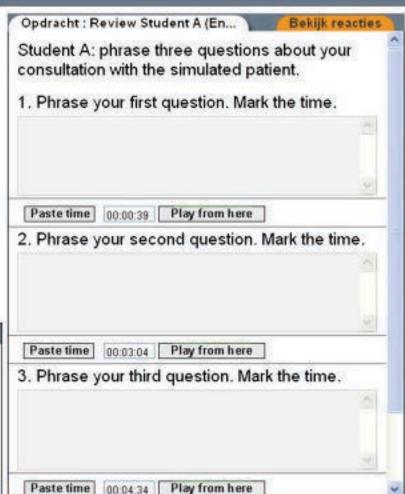
Methods

- § 304 second year Medical Students
- § Recorded a consultation with SP using DiViDU (web based ICT program)
- Students reviewed the video
- § Marked three key events
- § Attached written reflections
- § Provided peer feedback
- § Faculty rated the reflections on the basis of frequency of categories used over the three reflections.









Faculty Rating

Written reflections were rated on 4 categories:

- 1. Observation
- 2. Motive
- 3. Effects of the behavior
- 4. Goals of behavior change

Frequency scores generated.

 "The patient needs quite some time to make her complaints clear, making her story very lengthy (motive). In the beginning I let her talk for a while (observation), because I need to know her reason for the encounter (motive). Would it have been better to interrupt her already here? (student has marked the time) (effect of behavior). And if so, how can you do this without doing wrong and still finding out about her complaints (*qoal*)."

Faculty Rating

 Open, undirected questions, asking their peers for solutions, were used far more often (93%) than directed questions (7%) containing their own ideas about alternative strategies.

 Pursued goals or effects of their behavior were mentioned in 10.8% of the reflections.

Overall

§ Reflection levels were low

§ Overall students were inclined more to 'finding solutions' than to 'describing the key event'

§ Critical self reflection was found to be more difficult than providing peer feedback.

§ All stages of the reflection cycle in the training program were well received.

Conclusion

Early introduction of goal-oriented reflection, facilitates acceptance of an important ability for physicians for continued life long learning and becoming mindful practitioners.

Hulsman R.et al

Patient Education and Counseling; 2009

Appraising Medical Students' Reflection in learning

§ Enhanced reflection-in learning is predictive of greater ability in diagnostic thinking and academic achievement.

Does the students' reflection in learning change as the student strives for some control of learning early on in their studies?

§ Examined the learning profile of med students who selected to participate in an 30 hour elective course (subjects) and their peers (controls) within clinical apprenticeship

Elective course actively encouraged reflection-in-learning

Participants

- 103 participants
- 95 controls
- Comparable gender
- Demographic
- Kolb's learning styles
- GPAs (3.82)

Pre-Post elective evaluation Self-appraised inventories	Authors/references
Appraisal of self-reflection in learning (10 items)	D. Sobral <i>Medical Education</i> 2000
Perceived competence in self regulated learning (11 items)	Zimmerman et al. Am Educ Res J 1992
Course valuing inventory (meaningfulness of the learning experience) 36 items	Nehari M, Bender H Higher Educ 1978
Diagnostic thinking inventory (assessing flexibility in thinking &	Bordage G, Grant J, Marsden P

Med Educ 1990

knowledge structure in memory)

Analysis

- § Chi-squared tests comparison of learners characteristics between groups
- § Correlation coefficients- measuring association between pairs of variables
- § T tests or one-way analysis of variance to assess differences between group means

Results

Participants

Small change pre-post (p=0.000) in level of reflection

81% positive direction

Correlated with higher scores of perceived competence for self regulated learning and meaningfulness of the learning experience & GPAs.

Negative change- 5x more likely if scored low self-reflection at outset

Control group- no change

Conclusion

- § Greater effort of reflection is associated with a more positive and meaningful learning experience
- § Reflection-in-learning, could induce readiness for self-regulation in learning and be conducive to enhanced diagnostic ability
- § Measuring reflection-in-learning may be a useful tool in the appraisal of medical students' learning profiles.



Alexander Spenderian: House Museum, Yerevan, Armenia 2014

Pitfalls to the successful incorporation of reflection in medical education

- Solution
 § Absence of goals- demotivates learner
- § Educational environment does not demonstrate its value (often not assessed)
- § Lack of integration into overall teaching approach (often as add on).
- § variable opportunities for learner to "notice" paucity of feedback, peer evaluation, selfmonitoring
- § Biased Evaluation

12 tips for incorporating reflection in Medical Education

L. Aronson Medical Teacher 2011;33:200-205

Decide on the Learning Goals	Define what key components are important E.g. Knowledge, Skill or Attitude
Design the exercise to ensure clear ways to integrate	1- New Knowledge with existing knowledge2- Affective with cognitive experience3-Past with present, or present with future practice
Help learner by providing specific prompts to help them notice	 1- Was there a situation where you did not have necessary knowledge or skills? 2- A situation that went well but you don't know why? 3- a complex, surprising, or clinical uncertain situation 4- A situation in which you felt personally or professionally challenged.

instructional design	In class or home Commonly reflection on action (post event), but can be linked to classroom activity. Written, oral, blogs, videos, portfolio etc. Written- promotes ownership, commitment to learn Can be reviewed from multiple perspectives Eg. Medical knowledge with preceptor Eg. Professionalism issues with mentor Map the progress of the learners critical reflection abilities, serve maintenance of recertification
Structured vs Unstructured- use of prompts	In a structured write-up prompts can be used to help the write up if unstructured, provide guided feedback on elements Process and assumptions Actions and thoughts Role of associated emotions, past experiences, solicitation of FB, review of Literature (when appropriate)

Plan in case of facing an Ethical or
Emotional Concern

Helpful to have institutional guidelines on how to handle ethical/illegal/learner health related matters.

Educator Feedback

one-on-one explore the learners needs, and if need be refer to relevant source for support.

Group- model professional handling, safety and privacy of writer, and those written about in the reflection.

Mechanism to follow up on learner

Prompts in the clerkship reviewing the impact of the learning.

CPD- double credits are accrued if shows impact on patient care.

Conducive Learning Environment

Safety



Evaluating Reflections

Evaluating & Guiding the learner's reflection

Pragmatic approach to categorizing reflective material	(Moon 2004)
Grade A	Experiences how an event has changed, or confirmed the way you respond to similar events/why & may refer to literature
Grade B	Involvement of judgment- what went well, less well & why
Grade C	Describes event, explains why it is important, knows how it affects feelings, attitudes, beliefs, behavior, questions what has been learnt in the past and compares with previous experience
Grade D	Describes the event- knows something is important but does not explain why
Grade E	Describes event- repeating details with no interpretation
Grade F	Describes event only- poorly

Stages of Professional Development

Categorizing reflection according to stages of professional development	By Neimi 1997
Committed Reflection	Discussion of what was learnt, how it affected the individual and how they feel they have changed from the experience, with some evidence to back up this change
Emotional exploration	Explores emotional impact of the experience, insight and discussions about personal beliefs, values etc.
Objective reporting	Only descriptive account, no reflection on how it has affected them
Diffuse reporting	Unfocused, disorganized, only descriptive of the experience

Educators Goals

Solution
Deeper understanding of the conceptual frameworks underpinning critical reflection

§ Plan a longitudinal curriculum which enables on-going learning and promotes reflective skills for life-long learning.

L. Aronson, Medical Teacher 2011



Additional Resources & References

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- The use of reflection in medical education: AMEE guide no. 44. Medical Teacher 2009;31:685-695
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