Reflection as a tool in Medical Education and Professional Practice

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I DO NOT have a financial interest in commercial products or services

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.”

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.”

“...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.”

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'

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 burnout-the exhaustion of idealistic ventures where there is a bottomless well of needs and our efforts always fall short.”

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

“ 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

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<tbody>
<tr>
<td>Reflective Thought</td>
<td>Tacit Dimension</td>
<td>Technical Rationality</td>
<td>Experiential Learning Theory</td>
<td>Seven Elements of Reflective Process</td>
<td>Transformative Learning</td>
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<tr>
<td>Reflection through inferences and ‘thought training’ through habit</td>
<td>Tacit knowledge ‘We know more than we can tell’</td>
<td>Reflection-in-action Reflection-on-action</td>
<td>Integrating theory with practice</td>
<td>(1) Returning to the experience (2) Attending to feelings (3) Association (4) Integration (5) Validation (6) Appropriation (7) Outcomes and Action</td>
<td>Distinguishes between non-reflector, reflector and critical reflector</td>
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Concepts Framework

Acquire
Learn
Integrate
New perspectives

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 \textit{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.

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\textsuperscript{1} Groups - Trained leaders to help medical doctors discuss psychodynamic factors in relation to patients

\textsuperscript{1}Michael Balint: The Doctor, the Patient and the Illness
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

§ Core competency & a complex task

§ 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 lifelong 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

Hulsman R.et al. Patient Education and Counseling; 2009
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.
Student A: phrase three questions about your consultation with the simulated patient.

1. Phrase your first question. Mark the time.

2. Phrase your second question. Mark the time.

3. Phrase your third question. Mark the time.
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 (goal).”
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)
<table>
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<tr>
<th>Pre-Post elective evaluation</th>
<th>Authors/references</th>
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<tr>
<td>Self-appraised inventories</td>
<td></td>
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<tr>
<td>Appraisal of self-reflection in learning (10 items)</td>
<td>D. Sobral <em>Medical Education</em> 2000</td>
</tr>
<tr>
<td>Course valuing inventory (meaningfulness of the learning experience) 36 items</td>
<td>Nehari M, Bender H <em>Higher Educ</em> 1978</td>
</tr>
<tr>
<td>Diagnostic thinking inventory (assessing flexibility in thinking &amp; knowledge structure in memory)</td>
<td>Bordage G, Grant J, Marsden P <em>Med Educ</em> 1990</td>
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</tbody>
</table>
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

- 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, self-monitoring
- 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 knowledge  
2- Affective with cognitive experience  
3- 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) |
<table>
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<tr>
<th>Plan in case of facing an <strong>Ethical or Emotional Concern</strong></th>
<th>Helpful to have institutional guidelines on how to handle ethical/illegalearner health related matters.</th>
</tr>
</thead>
</table>
|                                                           | **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

<table>
<thead>
<tr>
<th>Pragmatic approach to categorizing reflective material</th>
<th>(Moon 2004)</th>
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<tr>
<td><strong>Grade A</strong></td>
<td>Experiences how an event has changed, or confirmed the way you respond to similar events/why &amp; may refer to literature</td>
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<tr>
<td><strong>Grade B</strong></td>
<td>Involvement of judgment- what went well, less well &amp; why</td>
</tr>
<tr>
<td><strong>Grade C</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>Grade D</strong></td>
<td>Describes the event- knows something is important but does not explain why</td>
</tr>
<tr>
<td><strong>Grade E</strong></td>
<td>Describes event- repeating details with no interpretation</td>
</tr>
<tr>
<td><strong>Grade F</strong></td>
<td>Describes event only- poorly</td>
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# Stages of Professional Development

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<th>Categorizing reflection according to stages of professional development</th>
<th>By Neimi 1997</th>
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<tr>
<td><strong>Committed Reflection</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>Emotional exploration</strong></td>
<td>Explores emotional impact of the experience, insight and discussions about personal beliefs, values etc.</td>
</tr>
<tr>
<td><strong>Objective reporting</strong></td>
<td>Only descriptive account, no reflection on how it has affected them</td>
</tr>
<tr>
<td><strong>Diffuse reporting</strong></td>
<td>Unfocused, disorganized, only descriptive of the experience</td>
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Educators Goals

§ 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
Las Meninas (portrait of the Infanta Margaret Theresa and her entourage) by Diego Velazquez (17-18 Century) Prado Museum, Spain.
Additional Resources & References

- The use of reflection in medical education: AMEE guide no. 44. Medical Teacher 2009;31:685-695
- Promoting professional knowledge, experiential learning and critical thinking for medical students. Medical Education 2000;34:535-544
- Reflective teaching of medical communication skills with DiViDU; assessing the level of student reflection on recorded consultations with simulated patients. Patient Education and Counselling; 2009
- 12 tips for incorporating reflection in medical education. Medical Teacher 2011;33:200-205