Reflection in medicine

Models and application

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Reflection has been a preoccupation in higher education for many years. As early as the 1930s Dewey[1] defined *reflection* as "[a]ctive, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends." Many have since expanded on that definition[2-5] and built models of reflection[2,4,6-8] that are used today to help inform reflective programs in health education. With the move toward a competence-based curriculum[9-11] and reflection being considered an essential aspect of lifelong self-learning,[12] activities aimed at promoting reflection are becoming part of the curriculum at all levels of medical education.[12]

Reflection is often thought to be an individual, personal process; however, recent data suggest that this does not always need to be the case, as small group sessions reflecting on individual and team functioning are also valuable. It has been shown that self-reflective abilities can be nurtured into habit.[13]

Models of reflection

Many models of reflection exist.[12] Such models of reflection can provide a foundation for building learning activities that might help improve reflective abilities. (**Table 1**[1,2,4,6-8,13] shows the levels of reflection of several models.) To describe reflection, several models use a scale that goes from superficial to deeper reflection or learning, with the deeper levels seemingly harder to achieve.[12] Moon's last step implies the process of integrating learning into existing cognitive structure, which leads to changes in attitude and behaviour.[7]

Three of the models describe reflection as an iterative process (**Table 1**[1,2,4,6-8,13]): models from Kolb[13] and Schön,[6] who are widely known in education, and Boud and colleagues.[2] These 3 models share the "surprise" concept or the idea that new experiences are triggers for reflection.

These different models can be used in various settings to teach ourselves, students, peers, and health care teams to be reflective practitioners and reflective teams. The aim of reflective activities should be to move learners from the lower levels of reflection to the higher levels and then to application. If a cycle model is used, then the next step should start from this application to trigger a new reflective cycle. All these models are descriptions of the same phenomenon. The practitioner, facilitator, or teacher could choose 1 model, become familiar with it, and then use it to build reflective activities.

Table 1. Models that describe levels of reflection, by reflective activity (ie, scale and iterative process)

MODELS	LEVELS OF REFLECTION
Scales	
• Dewey[1]	1. Content or process 2. Premise or critical reflection
• Boud et al[2]	1. Association 2. Integration 3. Validation 4. Appropriation
• Mezirow[4]	1. Habitual action 2. Thoughtful action or understanding 3. Reflection 4. Critical reflection
• Hatton and Smith[8]	1. Description 2. Descriptive reflection 3. Dialogic reflection 4. Critical reflection
• Moon[7]	1. Noticing 2. Making sense 3. Making meaning 4. Working with meaning 5. Transformative learning
Iterative process	
• Schön[6]	1. Knowing-in-action 2. Surprise 3. Reflection-in-action 4. Experimentation 5. Reflection-on-action
• Kolb[13]	1. Experience 2. Reflection 3. Conceptualizing 4. Action
• Boud et al[2]	1. Returning to experience 2. Attending to feelings 3. Reevaluation of experience 4. Outcome or resolution

Table 2 lists examples of questions that can be used in a variety of settings to move learners along the reflection continuum. *Noticing* questions are useful in the clinical setting, after observing a learner with a patient or after a case discussion. *Processing* questions might require stepping back, a little like "reflection-on-action,"[6] and might be more useful in grand rounds, group case discussions, or Balint groups.[14] *Future action* questions are used during

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Table 2. Questions that trigger reflection

TYPES OF QUESTIONS	QUESTIONS THAT TRIGGER REFLECTION
Noticing	• What just happened? • What were you thinking when ...? • Did you notice that ...? • What surprised us in that case? • How does it make you feel?
Processing	• Are we doing this the right way? • Are there alternatives? • Is this applicable in our setting? • What does this mean? • Why does it make you feel this way? • What are the consequences of you feeling like this? • Are we the right people to address this?
Future action	• What do we need (eg, resources, knowledge, skills) to resolve that problem? • What will we do differently next time? • What are the barriers to ...? • What can facilitate ...?

end-of-case discussions or encounters between educational supervisors and their pupils as they plan the next clinical activities and inform future learning. In morbidity and mortality committees, processing and future action questions are useful to help move reflection beyond simple discussions of cases and blame.

There are many activities that can foster reflection (**Table 3**). Although there are the obvious ones such as keeping learning portfolios or writing reflective essays, other opportunities do exist, and not all reflective activities need to be completed individually. For example, we sometimes use reflective log sheets to record daily reflection with our more advanced learners instead of the usual daily-assessment sheets that clinical supervisors use. Recording daily reflection can help residents learn to self-assess. The contents of reflective log sheets are discussed with clinical supervisors, providing further opportunity for reflection. Residents can make reflective log sheets a part of their portfolios, and they can later refer to them to feed their reflection and their discussions with their educational supervisors, as well use them to build their learning plans. Another reflective activity we use in our setting is the practice-based small group learning program of the Foundation for Medical Practice Education.[15] This program is designed to facilitate reflection through case-based discussions of residents' cases and log sheets. These log sheets, which include commitment-to-change practice statements, are completed at the end of each module and are revisited at a later period to discuss whether the planned changes were made and what the facilitators and barriers to implementing those changes were. All of these activities are even more effective if the facilitator in a group, or

Table 3. Activities that foster reflection

CONTEXT	ACTIVITIES
Individual	• Continuing professional development plans • Assessment of reflective essays • Assessment of learning portfolio
Group	• Quality improvement • Morbidity and mortality committees • Multiprofessional and interprofessional reunions • Case-based discussions • Journal clubs • Assessment of reflective group discussions

the educational supervisor in an individual encounter, uses judicious questions to help learners move along the reflection continuum, through the steps of noticing and processing, in order to inform future actions.[5] The scales can also be used to build tools to assess the level of reflection in written work or during group discussions.

A real tool

What we reflect on, how we reflect, and what happens after reflection can vary. Reflection can occur when a learner reflects on an individual, group, or organizational aspect of clinical practice, education, policy, or research. It can also occur when a team reflects on how it functions as a group. As such, using simple tools such as questionnaires or reflective essays to assess the process of reflection might only capture part of the process, and the process should not be abandoned for the perceived lack of a robust measurement.

Reflection is not an abstract concept. It is an important tool in the practice of medicine, as Epstein and Hundert explain in their article on professional competence: *Professional competence* is "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individuals and communities being served."[16] This statement gives us a reason to continue to reflect on our actions and teach our trainees to reflect.

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Competing interests
None declared

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TEACHING TIPS

- With the move toward a competence-based curriculum and reflection being considered an essential aspect of lifelong self-learning, reflective activities are becoming part of the curriculum at all levels of medical education.
- Models of reflection can provide a foundation for building learning activities that might help improve reflective abilities.
- It is important to incorporate activities that foster reflection. Although learning portfolios or reflective essays are the obvious activities to consider, there are other options available (eg, reflective log sheets, case-based discussions).

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