

Reflection: A Tool for Learning and Assessment in Competency-Based Curriculum

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ABSTRACT

Reflection helps us learn from experiences, build good doctor-patient relationships and a professional identity. It also holds an important place in the competency-based curriculum as a tool for assessment, especially for competencies that cannot be assessed by conventional means. To embed reflection in the curriculum, we need to explicitly teach how to reflect, make it a habit by integrating it into the various curricular activities, assess reflections formatively, and provide an environment that allows guided reflections, taking care of ethical and emotional aspects. In the Indian scenario, reflection is taught in faculty development programs and as a part of short-term implementation projects. A more robust and nuanced effort is required to make reflection an inseparable component of the curriculum that will empower the graduates to be competent in the true sense.

Keywords: Assessment, Competence, Critical thinking, Professional identity formation

INTRODUCTION

“What is this life if full of care, we have no time to stand and stare!” The famous poet William Henry Davies wrote this in the context of adding meaning to life by taking some time off from busy materialistic pursuits to enjoy nature. However, if we look at it from the medical practice perspective, imagine what would happen if doctors kept practicing (*full of care*) without pausing to review their experiences (*stand and stare*) and learn from them.

With no set formulae and lots of complexity, medical practice requires individualized clinical judgment and practical wisdom to solve clinical problems. One needs to learn about diseases and their treatment, the art and science of problem solving, critical thinking, decision making, communicating correctly, managing emotions, and showing empathy. The cliché goes, ‘You don’t find these things in books; you learn by experience!’ However, it is worth emphasizing that we don’t learn just from experience; we learn by reflecting on experience.

Reflection is *“a metacognitive process that occurs before, during, and after situations to develop a greater understanding of both the self and the situation, so that future encounters with the situation are informed by previous encounters [1].”* It is like taking a pause and reviewing an experience to make sense of it and to derive insights to be used in the future, thereby creating new experiences and insights. It is an iterative process, following which, one becomes a reflective practitioner, capable of reflecting in action, on action [2], and even before taking action [3]. With guided practice, reflections become deeper and more meaningful. **Box 1** depicts a complete understanding of reflections.

Importance

One needs more practice to excel in any kind of activity. Di Stefano et al [4] showed that when given a choice between more practice and reflection, people chose the former. However, in a series of experiments involving mathematics puzzles, they found that after a certain amount of experience (adequate to reflect upon), it was reflecting on experience that led to better performance as compared to more practice.

Reflecting means taking responsibility for your own learning in different contexts. First, it helps in diagnosing one's learning needs, i.e. what more knowledge or skill would help to deal with a similar situation in the future in a better way.

Second, it is about learning about one's own beliefs and values and understanding those of the patients. This helps in cultivating empathy and managing one's emotions [5]. For example, a student who reflects on a poor case presentation may realize that she got overwhelmed and confused because the parents didn't get their child vaccinated due to religious beliefs. She may then want to learn how to counsel such parents without offending their religious beliefs. We are all the time in action, many a time not consciously aware of why we do what we do [6]. There might be implicit patterns of thinking or responding that we operate in. We become aware of our own mental processes when we reflect. This awareness has the potential to bring about a positive change in attitude and behavior towards patients, thereby strengthening the doctor-patient relationship. For example, a student who is rude and dismissive towards a mother who had twins but was breastfeeding only the male baby, on reflection, may realize the need to be more respectful and non-judgmental, as the situation may be because of the mother's sociocultural beliefs on gender discrimination.

In medical education, there are three broad intentions behind using reflection: learning, developing a good doctor-patient relationship, and establishing a professional identity [1]. When a student continues to reflect on key experiences, reflections become a common thread on which learning continues and form a sense of professional identity for the student that continues to evolve.

Reflection in the Competency-Based Curriculum

Epstein and Hundert define professional competence as "the habitual and judicious use of communication, knowledge, technical skills, values, and reflection in daily practice for the benefit of the individual and community being served [7]." One who is not reflective habitually in daily practice, by definition, may not be competent in the true sense.

The vision of the competency-based medical education (CBME) curriculum is to have an Indian Medical Graduate (IMG) competent in performing five roles: clinician, communicator, leader and member of the health care team, professional and lifelong learner. Two more roles of a critical thinker and a researcher have been added recently [8]. Being reflective is the *sine qua non* for good performance in each of these roles and for the development of critical thinking involving the ability to analyze, infer, and evaluate [9].

Several curricular changes have also been made, which will fail to achieve their full potential if reflection is not an integral component in their implementation. Reflections are the very essence of innovations such as early clinical exposure, the Attitude, Ethics, and Communication module (AETCOM), the student-doctor method of training, self-directed learning experiences, electives, and logbooks and

portfolios [10,11]. Reflection will not only add to experiential learning in this context but will also help in the assessment of competencies not assessable by conventional means.

Reflection holds a crucial place in the new Indian Medical Curriculum, but there are no explicit guidelines for training and execution in this regard. Therefore, it becomes the responsibility of individual institutes and faculty to ensure that the teaching and assessment of reflection are embedded in the curriculum.

Embedding Reflection in the Curriculum

Several models have been described to incorporate reflections into the curriculum. For example, CONTeMPLATE includes steps such as cultivating the Competencies required to practice reflection, Organizing the time and place to reflect, Narrowing the focus of reflection, Teaching explicitly how to reflect, deciding a specific Method of reflecting, giving Prompt questions to reflect upon, Longitudinal Assessment, Tailored Feedback and providing right Environment such that the culture of reflective practice develops and thrives [12].

A bio-psycho-social course has also been described to foster students' reflective capacity [13]. It involves teaching about diseases with lectures including experience sharing by patients, and opportunities for students to interview the patients in groups, followed by their reflections. If reflecting was a stand-alone event, the purpose would likely be lost, and students would finish this as a task. Hence, reflection needs to be intricately woven into all the curricular activities of teaching, learning, assessment, and beyond. We suggest the following steps to tap into the potential of reflection in the curriculum:

(i) *Teaching the art of reflection*: Students who enter medical school vary in their capacity to reflect. In one of the authors' experiences, when she asked undergraduate students to reflect after a history presentation of a patient suffering from depression, they could only come up with a diagnosis and management plan, but were at a loss for questions like "What did you learn from this patient?" or "What did this patient make you think or feel?" as they were not familiar with this line of questioning (and thereby thinking). The author shared some of her reflections (thinking aloud), which helped the students come up with their own reflections during subsequent sessions.

Reflection does not come naturally to everyone. It is important to acquaint the students with the concept, demonstrate the process, guide them, and give constructive feedback as they reflect. Any disturbing experience—perturbing, creating turmoil, raising questions, or arousing strong emotions—is an experience to reflect on. One must reflect on something that went wrong, for example, a missed diagnosis or a dissatisfied patient, as well as on something that went well, for example, an interesting seminar or a difficult but well performed procedure [14]. This would help in consolidating learning and shaping progress in the desired direction.

It may be a good idea to follow certain models or templates to begin with. The simplest format of reflection involves three questions: What happened (the experience), So what (the implications), and What next (the action plan) [15]. It involves paying attention to an experience at a deeper level, analyzing the associated thoughts, feelings, and perceptions, and deriving insights to be applied in the future should they encounter a similar situation. A few other useful models are listed in **Box 2**.

When students reflect meaningfully, they identify and explore key experiences to make future learning plans and implement them with the help of mentors, leading to long-term learning and the formation of professional identity. These have been described in **Web Table I** as a few hypothetical examples. Some other examples of student reflections can be found in the use of logbooks and portfolios in the curriculum [10].

(ii) *Making reflection a habit and culture*: Reflection-oriented discussion should be a part of regular curricular activities, as a general aspect. The teachers provide structure for all the students. The teaching-learning and assessment activities must be designed to stimulate thinking and reflection rather than merely providing facts, knowledge and skills. Another aspect can be encouraging written reflection on specific experiences as a more individual aspect, in which students must take the initiative to reflect on personal experiences with various learning resources and carve their own learning pathways.

Table I describes various quick and low-stake strategies that serve as an opportunity within the curriculum for the students to reflect, making it a habit and culture and not just an event.

Oral versus written reflections: Students may reflect alone or in a group, orally or by way of writing (note/blog, journal or e-mail) [32]. Oral reflections in a group setting have the advantage of spontaneity, holistic and collaborative learning, and understanding of multiple perspectives [27]. Individual written reflections have their own unique advantages. Writing helps to consolidate the thought process and render clearer insights. Additionally, it creates a record that can be reviewed, revisited, and re-analyzed for further reflection and reinforcement. It also allows us to follow the learning trajectories of students over time.

(iii) *Assessing reflection*: The assessment of reflection is challenging as it is perceived to be difficult and laborious with the overwhelming volume of reflections generated, students' vulnerability in sharing their innermost thoughts, and concerns about the originality and authenticity of the written reflections. Medical content-related questions in examinations have standard correct answers, but reflections in response to the same experience are unique for each student. When the teacher looks at a reflection, he or she needs to ascertain if it is a superficial description or whether the thoughts and feelings have been explored, assumptions have been challenged, and new insights and action plans have been formulated.

There are several models that help gauge the depth of reflection and assess its quality. One of them is the REFLECT rubric, The Reflection Evaluation for Learner's Enhanced Competencies Tool [33]. It describes levels of reflection such as habitual action, thoughtful action or introspection, reflection, and critical reflection. Another such tool is BEGAN, the Brown Educational Guide to Analysis of Narrative [34]. It includes steps such as understanding the context of the situation, reading and re-reading the narrative, crafting the feedback, and critiquing it before sharing it with the student.

An assessment in OSCE (Objective Structured Clinical Examination) format has been described in which a 15-minute reflective dialogue follows the clinical interview station. Raters use a structured set of questions to rate the reflective capacity of the examinees while they conduct the interview [35]. A reflection

station can be placed following a history-taking station while conducting OSCEs. Portfolios can also help in assessing students' reflective skills, provided appropriate coaching, structure, and assessment procedures are delineated. Driessen et al have recommended the use of qualitative research criteria for such assessments [36].

Such models or formats of assessment may be more relevant while assessing reflections for summative purposes. For formative purposes, another pertinent question is whether the teachers should assess reflections at all. Reflecting is an individual activity that promotes self-assessment and growth and may involve deep personal thoughts that the student may not be comfortable sharing with others. We also know that what is not assessed is not learned and may not be taken seriously by the students. The capacity to reflect habitually and judiciously is an expected competency to be acquired in the CBME curriculum that must be assessed. At the same time, the assessment should not be too stringent, lest the students be tempted to copy-paste or smartly come up with what the teachers expect them to write.

To address this dilemma, we suggest that not all reflections be assessed. The primary purpose is to get the students into a reflective mode for learning and not to dissect every reflection for assessment. The intended use of reflection in CBME is for learning rather than assessment. To further simplify the task, the number of reflections initially can be limited to 3-5 per subject per year, and these should be used to initiate a discussion and provide input for better learning rather than for awarding grades. Teachers can help students select learning experiences on which to reflect. Electronic submissions with a plagiarism detector will be useful to prevent copy-pasting.

This approach will help in creating a genuine, trusting teacher-student relationship in which a non-threatening formative assessment of reflections takes place. This may be done in an individual setting with peers, in a small or large group. Discussion of reflections in a group can be a very enriching learning experience. Assessment rubrics to suit the course requirements can be designed, which can be used for self and peer assessment [37]. Eventually, the onus lies on the teachers that reflection gets inculcated as competency rather than a mere fulfillment of certain requirements. With the consent of the concerned students, good reflections can even be made public—anonously or otherwise—for others to read and emulate.

(iv) *Providing a conducive educational environment*: The whole idea of incorporating reflection in the medical curriculum will succeed only if there is an environment that provides guidance and support for reflection. Teachers should not only serve as effective role models for the students but also actively mentor them. The institute must provide ample resources and learning opportunities to support the students' future learning plans. The following two aspects need particular attention.

- a) *Making guided reflection possible*: Even after teaching the students how to reflect, to ensure that they master the skill and internalize it well, there should be a skillful mix of challenge and support. There is no point in reflecting if it does not bring about a desirable change, in terms of learning, therapeutic relationships or professional practice. Often, the experiences that need reflection and change are the ones that evoke strong emotions that may be blocked from awareness or unknowingly denied. When confronted, the learner may avoid or resist any conversation related to that. That is the time when another

person—either a mentor, teacher, or trusted peer is required to point it out, challenge optimally, and then support the process of reflection and change [1].

- b) Addressing ethical and emotional concerns: Reflections may contain personal and sensitive thoughts, emotions, and experiences that can make one feel vulnerable while sharing them. Confidentiality must be maintained, especially when reflections are shared within a group. At times, the students may have expressed severe distress over incidents such as adverse events or the death of a patient. They may require psychological help. If there are confessions regarding inappropriate behavior, the dilemma of whether to consider it only a learning issue or a disciplinary one arises. Reflections may sometimes include certain complaints against other people in the institute, requiring action. The institute is responsible for providing a safe place for the students to reflect and learn, and there must be a system or committee in place to look into these ethical and emotional concerns [1].

Indian Context: Progress so far and What Next

Faculty development programs in India—the Basic and the Advance Course in Medical Education—do have a component of reflection. The concept is introduced in the former training and the latter mandates all participants to reflect on contact sessions as well as the online intersession topics. However, more focused and nuanced faculty development efforts to develop expertise in teaching and assessing reflection are required.

At present, the students reflect on a few components of the new curriculum, such as the Foundation Course and various activities related to AETCOM [38]. There are reports of the implementation of reflection as isolated short-term projects and reflection-related perceptions of students [39]. A system should be created to embed it as an inseparable component of the curriculum. Students should be sensitized during the Foundation Course and groomed and supported throughout the curriculum.

The pre-requisite to achieve this would be to follow the 5C Framework for reflection [40]. Reflections should be woven into the curriculum rather than a one-off exercise (Continuous), we should ask questions that challenge the students' pre-existing knowledge and beliefs (Challenging), coach them while they reflect (Coaching), help them connect classroom learning with experiential learning (Connected) and match the level of the students with the reflection expected of them (Contextualized).

As we progress in this direction, the focus should always be on meaningful learning by way of reflecting and not on the cumulative number of reflections, lest we become victims of the McNamara Fallacy—running after numbers at the cost of losing the real meaning.

CONCLUSION

Experience is meaningless if we do not reflect on it and learn from it. Indeed, reflection is like salt that brings out the true flavor of the rich clinical experiences during the learning journey. With the advent of CBME in India, we must instill the habit of reflecting in students and assess it to provide formative feedback. This will require faculty development, the sensitization of students, and creating a culture of reflection in the institutes. Once it is in place, a detailed program evaluation will give us further insights to improve practice so that IMGs become reflective practitioners and competent in the true sense.

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REFERENCES

- 1) Sandars J. The use of reflection in medical education: AMEE Guide No. 44. *Med Teach*. 2009;31:685-95.
- 2) Schon DA. *The Reflective Practitioner: How Professionals Think in Action*. Basic Books; 1983.
- 3) Plack M, Santasier A. Reflective practice: A model to enhance professional behaviors, integration, and critical thinking within a case studies classroom experience. *J Physic Ther Edu*. 2004;18:4-12.
- 4) Di Stefano G, Gino F, Pisano GP, Staats BR. Learning by thinking: how reflection can spur progress along the learning curve [Internet]. Feb 6, 2023 Harvard Business School NOM Unit Working Paper No. 14-093, Kenan Institute of Private Enterprise Research Paper No. 2414478. Accessed on June 27, 2024. Available from: <http://dx.doi.org/10.2139/ssrn.2414478>
- 5) Imperato A, Strano-Paul L. Impact of reflection on empathy and emotional intelligence in third-year medical students. *Acad Psychiatry*. 2021;45:350-3.
- 6) Schei E, Fuks A, Boudreau JD. Reflection in medical education: Intellectual humility, discovery, and know-how. *Med Health Care Philos*. 2019;22:167-78.
- 7) Epstein RM, Hundert EM. Defining and assessing professional competence. *JAMA*. 2002;287:226-35.
- 8) National Medical Commission (Undergraduate Medical Education Board). Guidelines under Graduate Medical Education Regulation 2023. Accessed June 26, 2024. Available from: https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/GMER2023_compressed.pdf
- 9) Khoshgoftar Z, Barkhordari-Sharifabad M. Medical students' reflective capacity and its role in their critical thinking disposition. *BMC Med Educ*. 2023;23:198.
- 10) Shah N, Singh T. The promising role of the logbook and portfolio in the new competency-driven medical curriculum in India. *South-East Asian J Medical Edu*. 2021;15:18-25.
- 11) Salam A, Zainol J. Students' elective in undergraduate medical education and reflective writing as method of assessment. *International Journal of Human and Health Sciences*. 2022;6:351-4.
- 12) Cheung L. CONTeMPLATE- A mnemonic to help medical educators infuse reflection into their residency curriculum. *Perspect Med Educ*. 2018;7:58-61.
- 13) Hung H, Kueh LL, Roan JN, et al. Fostering 2nd-year medical students' reflective capacity: A biopsychosocial model course. *Ci Ji Yi Xue Za Zhi*. 2019;32:291-7.
- 14) Koshy K, Limb C, Gundogan B, et al. Reflective practice in health care and how to reflect effectively. *Int J Surg Oncol (N Y)*. 2017;2:e20.
- 15) Rolfe G, Freshwater D, Jasper M. *Critical Reflection for Nursing and the Helping Professions: A User's Guide*. 1st ed. Basingstoke: Palgrave MacMillan; 2001.

- 16) Gibbs G. Learning by Doing: A Guide to Teaching and Learning Methods. Thousand Oaks: FEU;1988.
- 17) Greenaway R. Reviewing by doing. J Advent Edu Outdoor Leadership. 1992;9:21-5.
- 18) Bain JD, Ballantyne R, Mills C, Lester NC. Reflecting on Practice: Student Teachers' Perspectives. Flaxton QIId: Post Pressed; 2002.
- 19) Korthagen FAJ. In search of the essence of a good teacher: Towards a more holistic approach in teacher education. Teach Teach Educ. 2004;20:77–97.
- 20) Ash S, Clayton P. Generating, deepening, and documenting learning: the power of critical reflection in applied learning. J Appl Learn High Educ. 2009;1:25–48.
- 21) University of Honolulu, Hawaii. How do I promote student reflection and critical thinking. Accessed Feb 23, 2024. Available from: <https://www.hawaii.edu/intlrel/pols382/Reflective%20Thinking%20-%20UH/reflection.html>
- 22) Sahoo BK, Tayawade M. One minute paper: The reflective way to teach and learn in medical education. Indian J Forens Com Med. 2021;8:58–62.
- 23) Guenther AR, Abbott CM. Think-pair-share: Promoting equitable participation and in-depth discussion. PRiMER. 2024;8:7.
- 24) Miller A. Treating Reflections as a Habit, not a Routine. Accessed Feb 23, 2024. Available from: <https://www.edutopia.org/article/treating-reflection-habit-not-event/>
- 25) Joshi A, Paralikar S, Kataria S, Kalra J, Harkunni S, Singh T. Poetry in medicine: A pedagogical tool to foster empathy among medical students and health care professionals. Journal of Poetry Therapy. 2022;35:85-97.
- 26) Pilcher J. A modified Delphi study to define Ah Ha moments in education settings. Educational Research Quarterly. 2015;38:51-67.
- 27) Phua GLG, Owyong JLJ, Leong ITY, et al. A systematic scoping review of group reflection in medical education. BMC Med Educ. 2024;10:398.
- 28) Sandars J, Murray C, Pellow A. Twelve tips for using digital storytelling to promote reflective learning by medical students. Med Teach. 2008;30:774-7.
- 29) Seymour P, Watt M. The Professional Competencies Toolkit: teaching reflection with flash cards. Med Educ. 2015;49:518.
- 30) Hardavella G, Aamli-Gagnat A, Saad N, et al. How to give and receive feedback effectively. Breathe (Sheff). 2017;13:327-33.
- 31) Armstrong GW, Wald HS. Fostering reflective capacity with interactive reflective writing in medical education: Using formal analytic frameworks to guide formative feedback to students' reflective writing. Med Teach. 2013;35:258.
- 32) Gordon, Karen Lowry. Student Assessments - Reflections. Kent State University Center for Teaching and Learning, 2018. Accessed Feb 23, 2024. Available from: <https://www-s3-live.kent.edu/s3fs-root/s3fs-public/file/Teaching%20Tools%20in%20A%20Flash%20-%20Reflections%20-%20Final.pdf?VersionId=o9GrmKKRTGNy7PtAUXQkSbdZibSSrqzz>

- 33) Wald HS, Borkan JM, Taylor JS, et al. Fostering and evaluating reflective capacity in medical education: developing the REFLECT rubric for assessing reflective writing. *Acad Med.* 2012;87:41-50.
- 34) Reis SP, Wald HS, Monroe AD, Borkan JM. Begin the BEGAN (The Brown Educational Guide to the Analysis of Narrative) - A framework for enhancing educational impact of faculty feedback to students' reflective writing. *Patient Educ Couns.* 2010;80:253-9.
- 35) Bogo M, Regehr C, Katz E, et al. Developing a tool for assessing students' reflections on their practice. *Social Work Education.* 2011;30:186-94.
- 36) Driessen E, van der Vleuten C, Schuwirth L, et al. The use of qualitative research criteria for portfolio assessment as an alternative to reliability evaluation: a case study. *Med Educ.* 2005;39:214-20.
- 37) Tsingos C, Bosnic-Anticevich S, Lonie JM, et al. A model for assessing reflective practices in pharmacy education. *American J Pharmaceutic Edu.* 2015;79:124.
- 38) Ohri A, Kaur J, Alam S, Khan S. Reflective writing by medical students on the newly implemented foundation course in MBBS curriculum: An in-depth analysis. *MGM Journal of Medical Sciences.* 2024;11:132-8.
- 39) Mandal A, Kundu TS, Chattopadhyay S. Reflective writing as a learning tool for Phase II MBBS students in India. *National Journal of Physiology Pharmacy Pharmacology.* 2023;13:504-8.
- 40) Eyler J, Giles Jr DE. *Where's the Learning in Service-Learning?* Jossey-Bass Higher and Adult Education Series. Jossey-Bass Inc; 1999.

Box 1. Essence of Reflection

Reflection is a/an	Reflection is not a
<ul style="list-style-type: none"> • Deep, personal evaluation of an experience • Account of the thoughts and emotions associated with the experience • First person account written in active voice • Manifestation of the state of mind of the writer in all honesty • Evidence of learning and future action plan 	<ul style="list-style-type: none"> • Summary of the experience describing various factual details • List of the obvious learning points from the experience • General interpretation/feedback on behalf of an entire group or team • Fictional or literary piece of art to describe the experience • Record/documentation of a task performed/ experience attained • Fictional or literary piece of art to describe the experience

Box 2. Some Models to Write Reflection

Model	Broad headings under which reflection should be written
Gibb's Reflective Cycle [16]	Description (of the event), Feelings (and thoughts about the experience), Evaluation of the experience (both good and bad), Analysis (to make sense of the situation), Conclusion (about what was learned and what could have been done differently) and Action Plan (how would one deal with similar situations in future).
The 4F Model [17]	Facts, Feelings, Findings, Future
The 5R Model [18]	Reporting, Responding, Relating, Reasoning and Reconstructing
The Onion Model [19]	Several layers on which one needs to reflect- from outside to inside- environment, behavior, competencies, beliefs, identity, and mission. The outer layers may influence the inner layers and vice versa.
DEAL Model [20]	Description, Evaluation, Articulation of Learning. The description should involve attention to all five senses. A good description lays the foundation for critical reflection.

Table I Creating Opportunities for the Students to Reflect

Setting	Opportunity	Explanation/Example
Classroom	Asking reflective questions seeking reason and evidence, providing enough thinking time after asking a question, and being supportive enough to allow the students to reconsider their answers [21]	How is pediatric history-taking different from adult history-taking?
	One-minute papers [22] Used during or after the class for students to reflect upon their learning	What did you learn from the session? What was the muddy point that requires further clarification?
	Think-Pair-Share [23] Allows reflection and exchange of ideas, helps in icebreaking	How did you deal with your experience of breaking bad news to the parents of your child for the first time?
	Providing quiet 'think-time' [24]	Just allowing the students to revisit and process the ideas discussed so far in a session
	Use of various prompts such as movie clips, literary pieces, case history, actual patient, patient log, lived experience, narrative, essay, poetry etc. [1,25]	Showing a movie clip depicting a disorder to introduce the topic; using patient logs to reflect on what went well in the management and what could have been done better
	Reflective questions at the end of teaching-learning [24]	What did you accomplish today? What was the most important thing that you learned? What would you want to learn more about? Which learning got reinforced? What do you appreciate the most? What emotions do you need to be aware of the next time?
	Formats such as 'I used to believe...., but now I think....' [24]	After a session on the science of addiction, the student may report- 'I used to believe addiction was immoral, but now I think the patients are not really at fault!'
	Asking about the 'aha' moment [26] It is a moment of deep realization, new insight or discovery	Sharing of real-life experiences of patients in the classroom by the teacher, getting a long-standing confusion related to diagnostics clarified in a small group discussion
Clinics	Reflective small group discussions on challenging aspects of selected cases facilitated by the teacher in addition to the clinical round [27]	In the case of a poor child with refractory epilepsy- reflecting on psychosocial aspects, a family dealing with stigma, how to choose the medicines based on effectiveness, cost and side-effects, pros and cons of surgery, etc.
	Digital storytelling [28] As students are tech savvy, using this medium for them to present their ideas. The process of creating the digital story makes them engage in deep reflection	Asking the student to present an experience to the group using digital media- for example my first home visit for a child with asthma
	Flash Cards [29] Flash cards used as prompts	The flash card 'Invisible Patient' could be shown to the students as a prompt to actively look out for neglected needs of caregivers and bring back a story to the group for discussion and reflection
Formative feedback	Using models like Pendleton's [30] Asking the students to reflect on their performance- what went well and what did not- and what needs to be done, before the teacher gives his/her inputs.	After a long case presentation, the student reflects that his history organization was good, but she fumbled in the clinical examination and could not answer some questions well. The teacher may add that the clinical reasoning was done well but the student needed to understand better the aspects related to management, and together they may decide future learning plan
Individual experiences	Encouraging students to write reflections on 3-5 key individual experiences per subject per year, reviewed for formative feedback by the teacher. Maybe in the form of interactive reflective writing [31]	The student may choose to reflect on the experience of her first paper presentation in a scientific forum, and the teacher may give inputs regarding the same making a plan to continue research and self-directed learning

Web Table I Examples of Reflective Writing and its Impact on the Learner

<i>Scenario (What happened)</i>	<i>Reflection (So what)</i>	<i>Action taken (What next)</i>	<i>Long term gain (Learning outcome)</i>	<i>Which role gets strengthened primarily (Identity formation)</i>
I observed the case of a 13-year-old girl brought by her parents. After failing in her exams, she had been behaving abnormally. She would suddenly go blank, make some swallowing movements, laugh out loud and throw things around. When confronted, she would deny having done anything like that. Her blood investigations, EEG and MRI were normal. She had no complaints in between the episodes. After a careful detailed history, my teacher diagnosed complex partial seizure, and carbamazepine was prescribed on which the patient gradually improved.	What seemed like a behavioral tantrum was actually epilepsy. Although teen-age is associated with erratic behavior, and a stressful event had indeed happened, it would have been terrible to pass it off as insignificant. I used to be impressed with the power of investigations in clinching a diagnosis, but this case taught me that nothing can replace a meticulous history-taking. It will always remain the gold-standard.	I discussed the case with my teacher who explained to me about aura, automatisms, partial awareness and amnesia in this case. I could co-relate theory with practice. I read about different types of epilepsy in children, how to clinically differentiate between them and the role of various investigations including Video EEG. I spent my spare time in the epilepsy clinic to learn about the diverse clinical presentations.	I am confident about clinically diagnosing all kinds of epilepsy. I use investigations judiciously.	Clinician: I am competent in dealing with children with epilepsy. Communicator: Adds value to my role as communicator as I learnt how to reassure anxious parents and take a meticulous history.
In the pediatrics OPD I had to present a history of a child throwing tantrums and her mother who was angry, frustrated and helpless. The mother kept on complaining how the child was so spoilt and ill-behaved; and the child would just not talk to me. I couldn't arrive at any diagnosis. In fact, I felt that the mother was probably right about her child! I didn't do my presentation well.	I didn't know how to take history in such cases. I had taken history of children with cough, fever and diarrhea earlier, but this one was completely different. I need to learn appropriate history taking in this context.	I read about behavioral disturbances in children and how to take history. I talked to some resident doctors who allowed me to observe such cases while they took history.	I realized that in case of behavioral disturbances, the context was very important. Knowing situation whether the tantrum happened with only mother but no other caregiver, only when exhausted, when a wish was not granted, etc. would lead me to the correct diagnosis. I also learnt play techniques and other ways to make children express and talk to me.	Communicator: I am now an expert in eliciting relevant history from a child and parent. Clinician: Adds value to my role as clinician as it helps me make the right diagnosis.
During my posting in the postpartum ward, I was a 'student-doctor' to several patients. I noticed the	What I observed was quite incongruent to the ideal practice that I had learnt about. The right advice, it	I talked to my guide regarding what I observed and he encouraged me to take up a project to	I am happy and satisfied that I could get everyone together to work towards such an important health	Leader and member of health-care team: I bring about a change in the system as and when needed and I am

difficulties that new mothers faced in breastfeeding the new-born babies soon after birth. They were either not aware of the correct techniques, or were too exhausted, or the relatives hurried to give culturally accepted top-feed to the baby.	was not completely followed by families. It was unfortunate and something needed to be done. I could not do it alone and I needed to elicit the support and co-operation of others and get everyone aligned to work towards this.	increase awareness and improve practices in this regard. With his help, we educated students, nursing staff, attendants, family members and new mothers. We prepared charts for wards and pamphlets to be distributed in antenatal OPD.	issue. Together, we could create a system in which breastfeeding was promoted, supported and made possible and easy.	good at leading a team. Clinician: Adds value to my role as clinician as I learnt giving the right advice, teaching the correct technique. Communicator: I learnt how to explain the advantages of breastfeeding and to dispelled myths.
I saw a 16-year-old at the adolescent clinic, who was brought in for counseling by his parents for his deteriorating academic performance. It was his third visit when he confided to the doctor that he had been bunking his coaching class and consuming drugs with his friends during that time. He requested not to tell his parents, but agreed to work on quitting it.	I was shaken with this. Impressed, that the doctor could create such rapport that the boy had faith in him to confide; shocked that he was doing such a thing behind his parents; and slightly puzzled that the doctor actually did not inform his parents! What if the parents found out and confronted the doctor later on? What if the boy developed some complication of drug use? If the doctor would tell his parents - is it possible that he would find other ways to keep taking drugs and never come back to the doctor for treatment? These were all unanswered questions and I need to know more about confidentiality and if, when and how it can be breached.	I read about confidentiality, especially related to adolescents. I talked to senior teachers how they dealt with such situations. With their further guidance, I also learnt about techniques to interview adolescents. I kept track of the follow-up visits of that boy and found out that he was successful in quitting drug use and had started doing well academically. His parents never came to know about his drug use problem.	I developed special interest in ethical dilemmas in clinical practice and pursued a course related to the topic. I am confident that I can justify my decision in case of an ethical dilemma related to confidentiality. I make an informed and thoughtful choice. I can interview and deal with adolescents with interest and ease.	Professionalism: I am aware of principles of ethics and can resolve clinical ethical dilemmas confidently. Clinician: Adds value to my role as clinician with a correct ethical stance enabling honest history sharing leading to correct diagnosis. Communicator: Correct ethical stance helping create better rapport and better communication with patients.
During my internship, a COVID-19 positive mother, running high fever visited me with a query whether she could breastfeed her one-year-old son, or she should isolate herself and have the baby stay with his father who had tested negative. The child had not yet been tested for COVID-19. I didn't know the	I was overwhelmed by her condition and her question. How would she take care of her child, being so ill herself? Would the child not be traumatized due to abrupt separation from mother and stoppage of breastfeeding? Would it be correct to assume that the child would be COVID positive	During my further COVID-19 duty, I continued to read about the latest guidelines and the rationale behind them. On my mentor's suggestion, I started journaling, in order to process and manage my emotions better. I find it quite helpful.	I am confident and prepared to deal with new situations in my COVID-19 consultations, I am well-read and confident regarding the use of various drugs, protocols and guidelines. I have better control over my emotions and I don't feel burnt out easily. I also published an article narrating some of the	Life-long learner: I continue to learn as needed, both subject related content and personal skills such as managing my emotions in crisis. Clinician: This also adds more value to my role as a clinician with more knowledge about COVID-19. Communicator: Able to give the right advice Professionalism:

answer; I asked my senior who said that the child must be tested first. The mother was reluctant to have a probe inserted into her son's nose. Finally, we asked our consultant who told us that the guideline said that breastfeeding could be continued.	only, owing to proximity with mother? What was the risk of transmission by breastmilk? How would the risk-benefit ratio weigh in this case? On looking back, I realized that I could neither answer my patient's queries nor could I comfort her. I realized the need of keeping myself abreast with the guidelines. Also, I failed to show any empathy as I was overwhelmed and confused. I still need to master the skill of managing my own emotions under stressful and challenging circumstances.		experiences I had recorded in my journal.	Expressing empathy
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**These are hypothetical examples of reflections created by the authors.*