

The Role of Feedback and Reflection in Medical Education

Adkoli B.V.

Centre for Health Professions
Education (CHPE),
Deanery of Allied Health
Sciences,
Sri Balaji Vidyapeeth,
Puducherry-607402,

For Correspondence

Dr. Adkoli B.V.,

Email: bvadkoli@gmail.com

balachandrasa@mgmcri.ac.in

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ABSTRACT

Feedback and Reflection are two potential tools that can make or mar the quality of any human activity, especially education of students and the teachers. Unfortunately, the academia in India is neither aware of their potential benefits, nor realize the dangers of their lacking in the system of education.

The purpose of this article is to sensitize the students, teachers and the administrators to appreciate the need for promoting a 'feedback culture' and provide some practical tips to 'give feedback' and 'receive feedback' effectively.

There are various models of giving feedback including Sandwich model, Pendleton Rules, and Learning Conversation. Research done in this area shows that feedback combined with reflection can significantly contribute to self-directed learning and reflective practice.

Faculty development has to play a major role in preparing teachers to provide high quality feedback. Further research is needed to identify the attributes of effective feedback, and strategies for encouraging reflective practice.

Keywords:

Feedback, Reflection, Reflective Practice, Undergraduate Medical Education, Self-Directed Learning

Feedback and reflection are perhaps oldest tools known to mankind to improve communication and enhance quality of process as well as outcome. Applied to education, feedback and reflection play a major role in learning. Even well accepted definition of competency includes reflection as a core element in addition to knowledge, skills and attitudes, values and communication.¹ Receiving a positive feedback from a teacher is every student's dream! On the other hand, receiving negative feedback from students is a nightmare for every teacher. Unfortunately, neither the teachers, nor the students are formally trained to give or receive feedback. The literature in this field has started coming up.²⁻⁵

The purpose of this article is to deliberate upon issues such as: Why feedback and reflection are important? How to give and receive feedback in an effective manner? What are the research

trends and gaps in this field and the way forward?

The terms feedback and reflection go together. Feedback is generally associated with interaction between two persons, mostly teacher and student, student and peer, doctor and patient etc. Reflection is a process in which the individual teacher or student, soon after an episode, thinks loud about (or rather meditates upon) what exactly happened, why did it happen that way, and what could have been done better. If you check the synonyms used for feedback, you will get a long list – criticism, advice, pointer, reaction, comment, response, opinion and view! Though feedback may take all these 'avatars' what is central to the concept of feedback is that it is an honest opinion about the 'act' and not a 'person' given in a palatable manner to improve his/her performance. A feedback is generally followed by reflection by the giver, recipient or both. The word

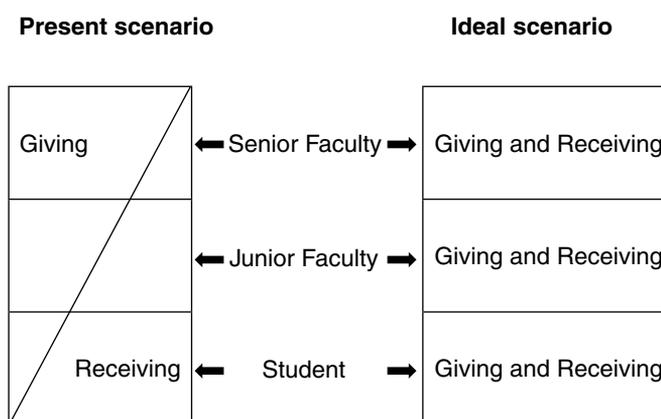
reflection originates from the Latin word “reflectere” which means ‘to bend’ or ‘to turn back’⁶. Reflection is a ‘meta cognitive’ activity in that it is ‘thinking about an action or thinking about thinking itself’.

Though feedback is considered as a potential instrument for revamping the system of education, the scenario in the country is sadly different. Let’s consider the journey of a medical professional starting as a medical student, and then occupying position of a faculty member and ultimately securing top position as a Head of the Department or Institute. Looking at the current scenario, the medical student is a passive ‘recipient’ of feedback. When he/she occupies a position as a teacher, he/she functions as a ‘giver’ as well as a ‘recipient’ of feedback to/from students and higher ups. When the same person occupies top leadership position, he/she mainly turns out to be mainly ‘giver’ of feedback to the junior faculty and students, rather than a ‘recipient’. (Figure 1).

The challenge before the academic community is therefore, to de-construct this phenomenon and to create an ideal situation in which everyone at any level has an equal opportunity to give and receive feedback freely and frankly. This requires creation of a *culture of feedback*.

The term feedback is often misunderstood as an exercise to criticize or judge a person. It is never meant to be so. The main purpose of feedback is to help a person to correct his/her mistakes so as to improve his/

Figure 1: The Quantum of Feedback vs. Seniority.



[Note: As the medical student grows in the hierarchy, he/she gives more and more feedback and receives less and less feedback. Ideally everyone should give and receive equal amount of feedback at all levels]

her competence. The meaning and scope of feedback have been explained (Table 1)

What is reflection? Reflection means to pause and look back at the event and to learn lesson from the event. One can reflect on one’s self-experience or experience of others. What is important is to ‘put oneself in the shoes of others’ in order to verify its appropriateness or learn lessons from the experience. There is no evidence to say that reflective ability is in-borne, or learned or both. Reflective persons are more balanced, non-judgmental, calm and composed.

Table 1: The meaning and scope of Feedback to the learner

What feedback is about?	What feedback is not about?
Guiding the learner to correct his/her mistakes	Finding fault with the learner
Listening and directing what is right and what is wrong	Telling and judging who is right or who is wrong
Monitoring the progress of the learner	Sitting on the judgment about learner’s competence
Encouraging and motivating the learner	De - motivating or threatening the learner with the probable consequences
Briefly specifying the strength and limitations	Making an elaborate list of deficiencies
Informing the learner’s strengths and weaknesses privately	Exposing the learner’s weakness to the whole class
Telling the points immediately	Lodging a complaint later
Planning a future strategy	Digging about the past

Table 2: Golden Rules for Giving and Receiving Feedback

Giving Feedback
Feedback is a two-way process. Always involve the recipient. Assess his/her inclination, level of understanding and attitude to receive feedback. Don't attempt to give any feedback when the recipient is not ready or prepared to accept your feedback.
Be truthful and honest in your comment. If the truth is bitter, make it palatable like 'sweet coated pills'.
Be specific in giving your comments. 'You did very well' is not a useful feedback; Tell what you found good about it.
Be non-judgmental; 'You were very strict person' has no meaning. Instead, say 'I was scared by the attendance registers which you enforced recently'.
Make your feedback short and sweet; Be brief and tell only few points at a time. Too many points will be forgotten and lost.
Give feedback in a non-threatening environment; Positive feedback may be given in public but negative feedback should be given privately in an ethical manner.
Give feedback immediately after the episode; 'Justice delayed is justice denied'.
Feedback should be constructive; Suggest a plan of action alongwith the deficiencies; Otherwise, feedback has no meaning.
Do not give solution to the problem. Help the student to come out with his/her own solution.
Show a genuine passion and concern for the improvement of the learner while giving feedback; Feedback should be comforting and soothing. Make it palatable to the receiver
Receiving Feedback
Be attentive and keen to listen to all feedback (even if you think it is 'rubbish') with rapt attention and interest; Acknowledge all feedback with thanks. Try to probe but do not interrupt.
Do not react to any feedback; Do not be defensive; If you have solicited feedback from someone, ignoring it means disrespect to the giver.
You may not accept all feedback, but 'keep it in your pocket'; Reflect later and imbibe selectively.
Be alert to feedback from multiple sources, over a period of time before taking major decisions.
Isolated episode of extreme positive or negative feedback needs to be checked by taking a second opinion. Too much of humility shows cunningness!
You need to consider the credibility of the person who gave feedback, his motive and conflict of interest if any, and the context in which the feedback was given, while determining the value of feedback.
Reflect continuously on your journey of feedback, share your experience with your mentor or peer to make your journey safe and enjoyable.

Why feedback and reflection are important?

1. Feedback and reflection are perhaps most important principles of learning as they emphasize learners' autonomy, self-directed learning and lifelong learning on a 24×7 basis.
2. While feedback is essential means to motivate and monitor learning, reflection is a means as well as the end of learning.
3. Feedback works at all stages of learning. Before starting instruction, feedback about previous knowledge helps in better planning. Feedback during instruction helps in monitoring the progress of learning. After the instruction, feedback is a must to assess the learning outcome.
4. The competency based approach to learning, which is the current trend in education relies heavily on the collection of multi-source feedback as well as reflective practice by the learner maintaining a portfolio or e-portfolio.
5. With the body of knowledge of medicine expanding by leaps and bounds, there is a need to evolve new coping strategies such as flipped class rooms, e-learning, virtual class rooms and blended learning which attribute major role for feedback and reflection.
6. The new millennial medicos (those borne after the 2000 A.D.) are drastically different from earlier generation of learners. They are tech-savvy, multi-tasking, peer-dependent and like to create their

Table 3: Few models of giving feedback

	Instructor's Role	Learners Role
1. Sandwich Model	Appreciates what was done well	Listens to comments
	Points out deficiencies	Listens to comments
	Reinforces strength again	Listens to comments
2. Pendleton Rules		
Positive aspects or Strengths	Listens	Describes what he/she did well
	Amplifies and adds to what learner confessed	
Negative aspects or Deficiencies		Describes what did not go well
	Amplifies and adds to what learner confessed	
Final Summary		Summarizes major highlights
3. Learning Conversation		
Instructor initiates conversation with a learner looking back his/her performance in a particular event individually or in class		
The learner describes his/her experience strengths and weaknesses which he/she felt		
The learner identifies the key issues		
The instructor explores these issues with the whole class and receives inputs		
A plan of action is decided and informed to learner to try next time		
The learner tries out the action plan in his/her routine practice		
The learner reports his/her experience this time... the conversation continues...		

own space for learning. This assumes a lot of activity of gathering feedback and self-reflection to move forward in the learning process.

- With the system of education becoming more cost intensive and accountable, educators need to design new ways of cutting the cost and making the system more efficient. Delegating the learning process more to learners may be the only cost-effective and feasible solution. Teachers' role may shift from direct instruction to facilitation of learning beyond the boundary of classrooms.

The golden rules for effective method of giving and receiving feedback have been listed in Table 2. They are only suggestive and not exhaustive.

MODELS OF GIVING FEEDBACK

The literature on feedback includes several models of giving feedback² including Sandwich model, Pendleton Rules and Learning Conversation which are useful for a

day to day interaction between learner and instructor. (Table 3)

RESEARCH ON FEEDBACK AND REFLECTION

Feedback and reflection are supported by theories and principles of learning. Malcolm Knowles, who introduced the term "andragogy" emphasized self-directed learning. He derived seven principles of learning which deal with, i) establishing a safe and enjoyable learning environment, ii) involving the students in the planning process, iii) involving them in diagnosing their own learning needs, so that they become deeply interested, iv) helping them establish their own learning goals, v) making them to design their own strategies of learning, vi) extending support to the learners in their journey and vii) making them evaluate their own learning by process of reflection⁷. On similar lines, Brookfield lists six principles that underline autonomy of learner, mutual respect for teachers and learners, effective collaboration between teacher and learners and amongst learners, action along-with reflection, critical reflection to bring about alternate

Table 4 Summary of works done by various investigators and their key findings

Research workers	Issues addressed	Key findings
Epstein and Hundert ¹	Defined professional competence in medical education including reflection	Reflective ability is a core competency as defined in the Competency Based Medical Education (CBME)
Devi <i>et al</i> ¹¹	Studied the role of structured feedback on the examination performance combined with the opportunities for self-reflection in the form of 'reflection in learning'.	The students' perceptions were highly positive in favour of feedback, which helped them in improving their examination performance.
Wen <i>et al</i> ¹²	Explored characteristics of feedback in the reflective dialogue group given to medical students in a clinical clerkship	Structured narrative reflective writing when combined with group discussions with a tutor and peers facilitates much deeper reflection.
Dekker <i>et al</i> ¹³	Explored the characteristics of written feedback that are perceived as effective for stimulating students' reflection behavior.	Feedback comments should be formulated as a question, in positive tone, and tailored to students' reflective level to make a better impact.
Pelgrim <i>et al</i> ¹⁴	Studied 485 mini-CEX forms using variables, viz., the quantity of narrative comments, self-reflection by the trainees, action plans drawn by the trainees and trainer and specificity of the feedback.	They found a wide variation in the frequency of self-reflection and the action plans drawn. They concluded that it is not the instrument 'per se' which decides the effectiveness, but the attributes of the users that really matter.
Gonzalo <i>et al</i> ¹⁵	Qualitative analysis of interview scripts of bedside clinicians (N=34), to explore the timing and manner in which bedside clinicians gave feedback	The clinicians gave positive feedback during the clinical encounter. They gave positive team-based feedback immediately following the encounter. They gave individualized constructive feedback on one-on-one setting following the rounds.
Ananthakrishnan <i>et al</i> ¹⁶	Described SBV Model of Competency Based Learning and Training (COBALT) for Post Graduate Education.	The maintenance of portfolio or e-portfolio by the student followed by interaction with the mentor is an effective method for promoting competency based post-graduate medical education.
Castleberry <i>et al</i> ¹⁷	Conducted qualitative analysis of the reflective essays written by the participants of a teaching certificate program.	The participants demonstrated a high level of critical reflection in promoting professional development.
Koole <i>et al</i> ¹⁸	Demonstrated the use of interactive video cases to trigger reflection among undergraduate medical students.	It is possible to develop a validated a practical tool StARS [®] for assessing reflective ability
Wittich <i>et al</i> ¹⁹	Developed and validated instrument for generating behavior specific feedback from participants of a CME program in internal medicine.	It is possible to assess quality of feedback through structured tools.
Broquet and Punwani ²⁰	Investigated the challenges posed by the International Medical Graduates studying in the U.S., who are trained in a hierarchical system, where feedback given publicly is associated with shame and embarrassment.	One cannot ignore the influence of cultural factors in providing or eliciting feedback and reflection. The problem can be mitigated by appropriate training in adapting to a different culture
Wald and Reis ²¹	Opportunities and challenges involved in developing curricula for reflective writing (RW) in order to promote reflective capacity (RC)	Reflective writing (RW) can be used to promote reflective capacity (RC)
Karkabi, Wald and Castel ²²	Demonstrated the use of abstract paintings and narratives to foster reflective capacity among medical educators.	It is possible to develop reflective capacity through paintings

perspectives and nurturing self-directed learning. Kolb's theory of Experiential Learning suggests that all learning can be described as a cycle of four stages: Concrete experience (Doing), Reflective Observation (Feeling), Abstract Conceptualization (Thinking) and Active Experimentation (Watching).⁸ Gibbs reflective cycle deals with six questions: What happened (Description)? What were you feeling (Feeling)? What was good and bad about it (Evaluation)? What sense can you make out this incidence (Analysis)? What else could you have done (Conclusion)? What can be done next time if you face similar situation (Action Plan)?⁹

Donald Schon, in his work on 'zones of mastery' made a distinction between 'reflection in learning' (reflecting as you learn) and 'reflection on learning' (reflecting after the event is over).¹⁰ A third element 'reflection for learning' has also been discussed in the literature⁶.

A brief summary of the work done by various investigators and their key findings are given in the Table 4.

Though some amount of research information is available, further work is needed on the characteristics of written or verbal feedback that can really stimulate students' reflective competence. Other issues to be resolved are the how to prepare the learners for accepting the feedback and working on it continuously so as to cultivate a habit of lifelong learning. Other challenges involved are creating an institutional culture in which feedback is valued at all levels by everyone.

How to develop reflective competency among students is a fertile soil for further research. Assessment strategies including Objective Structured Clinical Examination (OSCE), Mini-Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedural Skills (DOPS), writing narratives, listening to audio recordings, digital storytelling, informal chat with friendly critiques, have been suggested to stimulate reflective competence. The Attitude and Communication (AT-COM) Modules introduced by the MCI is a welcome step. The study of medical humanities which is receiving more and more attention in medical education is another initiative.²³ Can reflective ability be acquired by virtual methods? Or, does it require 'immersing' oneself in a real life situation, with a deep sense of introspection and soul-searching? Can ancient techniques like Yoga, meditation, prayer, chanting, music listening and self-less service (*Sewa*) be helpful? These are the some of the promising areas for research.

In the end, the role of faculty development should be highlighted more than anything else to support feedback and reflection. Faculty Development Programs have generated a lot of interest among medical teachers. These programs have started using feedback and talking about feedback, including the need to obtain Multi-Source Feedback (MSF) which is a healthy development. The task of promoting a culture of feedback and reflective practice is a long drawn agenda which need to be addressed collectively by all stakeholders.

On a spiritual note, one of the earliest quotes on how to give feedback comes from the following verse of Manu Smriti – "*Sathyam bruuyaat, priyam bruuyaat, na bruuyaat, sathyamapriyam*" (Manu Smriti 4-138), which means "Speak truth, speak in a pleasant manner, do not speak truth in an unpleasant manner".

CONFLICTS OF INTEREST

None.

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New hope: New Cancer Vaccine eliminates 97% of Mice Tumors.

A new cancer vaccine that activates T cells in tumors was effective in mice, completely eliminating tumors in 97% of the mice tested as per Stanford University School of Medicine. When researchers injected tiny amounts of two immune-stimulating agents into physical tumors, all traces of cancer, "including distant, untreated metastases," were totally eliminated in 87 of the 90 mice tested. The approach uses a one-time application of very small amounts of two agents to stimulate the immune cells only within the tumor itself.

The current clinical trial is expected to recruit about 15 patients with low-grade lymphoma. The future is clinicians injecting the two agents into solid tumors in humans prior to surgical removal of the cancer as a way to prevent recurrence due to unidentified metastases or lingering cancer cells, or even to head off the development of future tumors that arise due to genetic mutations like BRCA1 and 2. [News Wire]

Source: Science Translational Medicine 2018;10 ; eaan4488