

“5 Minute Insight” As Method Of Reflective Learning And Student Assessment Technique: A Quasi Experimental Study

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Abstract: Background: Competency based medical education aims in higher order learning Critical thinking in medical education. Cognitive skills are needed to rise above recall based to conceptualization, interpretation, analysis, synthesis and evaluation for skilled judgment in medical students. Thus consolidation of learning is necessary for improvements in student's academic performance. Not only teacher directed learning but also students self directed and controlled learning are identified need for time. For students to be successful in self-directed learning, they must be able to engage in reflection and self-evaluation of their learning goals and progress in a unit of study. Objective: To evaluate the effectiveness of “5 Minute Insight” (5MI) as formative Classroom assessment technique of medical students. Material And Methods: A Quasi experimental descriptive study undertaken in 70 voluntary participating 1st phase MBBS students in department of physiology. After 45 minute traditional interactive lecture session the students had “5 Minute Insight” as reflection of learning and classroom assessment. 5MI formative classroom assessment technique was designed to create an insight statement. The 5MI was based on understanding of lecture session by student based on statements on competency to achieve, What he knew, now he knows, whether he knows all, why not and why does. Quantification of learning was scored using application based 10 single response multiple choice questions on physiology topic, before and after 5MI formative assessment. Correct response was scored one for each question. Data was analyzed using for difference in proportion or correct responses using Chi square test and paired difference in mean score by Wilcoxon Sign Rank test. Result: Correct responses before 5 MI for Q1 to Q10 were within 7.1% to 85.7% which after the 5MI were within 35.7% to 92.9% range. Improvement in correct responses after 5MI was found for Q1 to Q3, Q5 to Q7 and Q10 was statistically significant ($p < 0.05$). Mean 38.9% students had correct responses before the 5MI which increase to 61.6% and was statistically significant ($p = 0.012$). Mean total score before 5MI was 3.9 which increased to 6.2 with mean improvement of 2.3 ($p < 0.001$). Conclusion: ‘5 Minute Insight’ formative assessments caused improvement of correct response in students thus indicating better learning. ‘5 Minute Insight’ type of formative assessment technique is as if learning by self-assessment by students. [Patil P A Natl J Integr Res Med, 2020; 11(3):49-53]

Key Words: Critical thinking skill, self assessment, self evaluation

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Introduction: Classroom based assessment provides regular feedback on student's conceptual learning and allows teachers and students to reflect on progress and thus adjust instruction and learning accordingly¹. Student-involved assessment approaches positively influence motivation and learning². Consolidation of learning cause significant improvement in the student's academic performance after implementation of formative assessments^{3,4,5}.

To support students self-evaluation process the subsequent assessment is used to gather information about the possible gaps in students' current knowledge and skills and those described by the learning goals. It guides in development of belief and directs in necessary action to be taken. Classroom assessment techniques are designed to help the students and instructor to cooperatively improve learning. They can work as systematic formative evaluation technique as

well as they play role in active learning in student opening doors for self directed learning in the curriculum⁵. Formative assessment by students is found to develop student autonomy⁶.

Practice of medicine demands self regulation and commitment to lifelong learning. Medical students are expected to undertake their learning self-directed study form and not just by didactic teaching which causes passive learning. For self directed learning the student need to be aware of their own learning experience and have self regulation through ‘Insight’ for effective knowledge and performance^{7,8}. Insight is synonyms to intuition, perception, awareness, understanding, comprehension.

Insight is an ability of understanding clearly about cause and effect relationship. By developing and noting insights a clear idea of new points gained is acquired by practitioner. Compared to

conventional classroom random questioning technique 5 minute insight formative assessment had caused better learning⁹. There are various techniques students can use with or without instructor facilitation, having high, medium and low utility depending on students performances for personal development^{10,11}.

So present assessment technique of “5 minute Insight” was designed not only on what students are learning but also as how they perceive and react to the classroom experience and how they assess their own learning. Study conducted with objective to sensitize the students and find out effectiveness of “5 minute insight” as formative Classroom assessment technique.

Material & Methods: The study was conducted during December to January 2019 in 1st phase MBBS students of Shri Bhausaheb Hire Government Medical College, Dhule. The Quasi experimental single group pretest posttest design was planned for students attending physiology competency based curriculum (Year 2019-2020 batch) in classroom setting for large group teaching assessment by “5 Minute Insight”. Voluntarily participating students with informed consent were included in the study. Those absent for classroom teaching or assessment session were excluded. Total of 70 students included in the study. The study was approved by institutional ethical committee.

As per MCI curriculum, students were instructed to achieve competency in physiology topic of cardiovascular system (Volume pressure changes in Cardiac cycle) as lecture-based pedagogy by traditional interactive lectures (using multimedia or audiovisual aids). This classroom instructional activity was conducted for 45 minutes duration. Then the student underwent 5 minute insight training based on following form:

After the lecture session student paused for self insight and awareness of the teaching session and learn to develop an insight over the learning experience. They answer and prepare an Insight statement based on the points-1) competency to achieve 2) what I knew 3) what I know now 4) do I know all (yes/no) 5) why not 6) why do I

In competency to achieve, was starting purpose of the session, does he knows learning objective of the session. From statement on ‘what I knew-before’ the student identifies his previous belief

and knowledge of the session. The statement on ‘What new do now he knows’ gives idea about new learning. The student reflects that was he able to note down all that he had learned / understood of the session in answering to do “I know all”. - Yes / No. If students perceive that he had not learned he tries to answer ‘why he was am not able to note’. If student perceives that he was able to recall all that learned than he tries to reflect on reason. Thus the insight Statement is built on answer to reflection of the points.

Learner’s answer to points 1 and 2 i.e. Previous knowledge and point 4 are of objective type in few sentences. Points 3, 5, and 6 need recall and insight in statement for 8 point. During that “5 Minute Insight” calmness learner prepare the insight statement of the learning experience constructed. The methodology is part of the study published elsewhere⁹. The learner / teacher / facilitator gets informed by the ‘5 Minute Insight’ statement that what students are learning in the classroom, how well and able to guide learner on the remedial measures for improved learning. The technique is innovative in formative assessment. The learner self assess his learning experience by reflecting at the end of learning session.

Knowledge was assessed by pre-validated 10 application based single response multiple choice question on the specified topic before & after the ‘5 minute insight’ session. Correct response was evaluated. Instructor’s feedback was taken for the effectiveness of ‘5 minute insight’ technique by personal interview.

Data Analysis: Data collected was presented in frequency and percentage distribution. Data was analyzed using SPSS Version 16 statistical package. The effect of the 5MI Classroom formative assessment technique for correct responses for each question was analyzed using Chi-square test. Score of one was given for correct response in calculating total score. Comparison of total score was done before and after ‘5MI’ using Wilcoxon Sing Rank test. The p value ≤ 0.05 was considered statistically significant.

Results: Before ‘5 Minute Insight’ assessment technique seven questions (Q1-Q5, Q7 & Q10) had less than 50% correct response. Correct response was maximally noted for Q 6 (78.6%), Q8 (85.7%), and Q 9 (57.1%) before the

assessment technique. After '5 Minute Insight' technique, Q6, Q8 and Q10 were correctly responded by 92.9% students each while five questions (Q1, Q3, Q6, Q8, Q9) were correctly responded by more than 50% students. Improvement of correct response was noted for Q1 to Q10 except for Q9. The improvement of increase in correct responses for Q1 to Q3, Q5 to

Q7 and Q10 was statistically significant ($p < 0.05$). There was statistically no significant ($p > 0.05$) difference of Q4, Q8 and Q9 correct responses after 5MI assessment technique. In students correct responses before '5MI' was within 7.1% to 85.7% which after the '5 MI' was within 35.7% to 92.9% range. (Table1)

Table 1: Question Wise Correct Response Comparison Before And After '5 Minute Insight' Assessment Technique (N=70)

Question	Correct Response		Improvement	Chi Square Value	P value
	Before	After			
Q1	8(11.4%)	40(57.1%)	32(45.7%)	32.46	<0.001
Q2	5(7.1%)	25(35.7%)	20(28.6%)	16.97	<0.001
Q3	27(38.6%)	55(78.6%)	28(40%)	23.08	<0.001
Q4	20(28.6%)	25(35.7%)	5(7.1%)	0.818	0.365
Q5	10(14.3%)	30(42.9%)	20(28.6%)	14.0	<0.001
Q6	55(78.6%)	65(92.9%)	10(14.3%)	5.833	0.007
Q7	20(28.6%)	31(44.3%)	11(15.7%)	3.732	0.026
Q8	60(85.7%)	65(92.9%)	5(7.1%)	1.867	0.086
Q9	40(57.1%)	31(42.9%)	-9(-12.9%)	2.315	0.064
Q10	27(38.6%)	65(92.9%)	38(54.3%)	45.78	<0.001

Table 2: Total Score Based On MCQ Before And After 5 MI Formative Assessment (N=70).

Total Score	Before 5 Minute Insight	After 5 Minute Insight
2	0%	0%
3	30(42.9%)	0%
4	22(31.4%)	3(4.3%)
5	14(20%)	11(15.7%)
6	4(5.7%)	34(48.6%)
7	0%	15(21.4%)
8	0%	7(10%)
9	0%	0%

score of 4. After '5 minute insight' assessment technique maximum students i.e. 48.6% had 6 total score and 21.4% had 7 total score while 10% had 8 score.

Total score before '5 Minute Insight' techniques ranged within 3 to 6 that increased to 4 to 8 after the technique. The mean total score before 5MI was 3.9 which improved to mean of 6.2 after 5MI. There was statistically very highly significant ($p < 0.001$) improvement of 2.3 mean increase of total score after 5MI in students. (Table 3)

Table 3: Comparison Of Mean Total Score (N=70)

	Total Score Before 5 MI	Total Score After 5 MI
Minimum	3	4
Maximum	6	8
Mean	3.9	6.2
Std. Deviation	0.9	1.0
Mean Difference	2.3	
Z	7.088	
p value	<0.001	

It was noted that there was marked increase in total score of students having lower initial score while no improvement was noted of total score with higher score due to 5 minute insight assessment technique.

Mean 38.9% students had correct responses before the '5 minute Insight' which increase to 61.6% after. There was statistically significant ($p = 0.012$) increase in correct responses after '5 minute insight' formative assessment technique in the study. Instructors feedback on benefits of '5 MI' pointed to some important facts as:

As shown in Table 2, total score in students before 5 MI was less than 6. Maximum students i.e. 42.9% had 3 total score while 31.4% had total

1. Keeps the listener alert as he/she needs to respond at appropriate times.

2. Makes the listener think and respond accordingly.
3. Simultaneous involvement of all students including shy and those fearing to orally participate.
4. Involving all students in class simultaneously ensuring equal participation of each and every class member, including anyone who may be too shy or fearful to participate orally.
5. Writing-to-learn assignment that promotes greater reflection and deeper thinking in the classroom.
6. Encourage active learning by students as well as provide effective feedback to teachers.
7. Students are more involved in their own learning.
8. Increased meta-cognition and improved ability to monitor own progress.

Instructors feedback on Disadvantages of ‘5 MI’ was as follows.

1. Can’t assess the extent of learning.
2. Classroom time used and interruption.
3. Requires active participation: they might feel forced to get involved.

Discussion: The effect of “5 Minute Insight: assessment technique was assessed in 70 phase I MBBS medical students in physiology after instructional lecture session. Correct response rate increased after the 5 minute insight assessment technique in the study. Better learning gain after implementation of classroom formative assessments was noted in our study. There was marked improvement in correct responses in low scorers as compared to high scores in the assessment.

It is known that effective assessment techniques improves an instructor's understanding of student needs and enhance learning process. Literature suggest the possibility of Classroom FAs exerting more influence on teaching practices (e.g., creating a positive learning environment) than on learning. It is found to help students learn how to be better learners¹.

Supporting evidences documented by Paul Black and Dylan William also found that students who are taught by teachers practicing classroom formative assessments, achieve in six/seven months what otherwise would take a year².

There is no best formative assessment classroom technique or collection of FACTs that can improve teaching; rather, it is a choice essentially on the basis of established curricular goals and is targeted towards improving instruction¹.

There is increased motivation resulting from ownership of assessment providing conditions for creativity, improving student participation in formative assessment related activities⁶.

As other formative assessment techniques which are used by teachers to evaluate and get students learning feedback¹¹, similarly the ‘5 minute insight’ assessment technique also helps to improve the students learning outcomes.

The insight in learning facilitates self regulated learning among students. The students are prepared for better management of the complicated problems⁷.

The instructor had positive feedback of ‘5 minute insight’ technique, it being helpful in self-assessment for students and probable improved learning. But the drawback in ‘5 Minute Insight’ assessment was of incentive problem: how does one ensure that students will turn in serious responses? And “often takes longer than planned, because questions lead to further questions.” was limitation of the ‘5 minute Insight’ technique.

5 minute insight adds the role of formative assessment in medical education in developing long-term competencies³ as well as assessments works as an opportunity to reinforce and enhance learning⁴.

It is proved that formative evaluation was significantly associated with better learning outcomes^{5, 10}. There are different learning styles of the students hence ‘5 Minute insight’ assessment was applicable to all those diverse learning styles student thus helping students become intentional learners. Prompts students to monitor their own understanding and progress and motivate them. Teachers were able to collect questions even from the shy students. Students were found to become more motivated and hence put in greater effort to learn, thus helping in a process of conceptual reorganization. It can be recommended that ‘5 Minute insight’ assessment can be learned by medical students

for self assessment after every learning session for improved learning outcomes.

Conclusion: Focusing on insight learning as a process by which internal representations are formed and revised is an important message to be taken away from the current study. If one conceives of insight as a specific problem solving process that accompanies solutions. "5 Minute Insight" type of formative assessment technique is learning in self assessment by students.

Limitation: "5 minute Insight" technique needs to be validated for its effect and compared to the other formative assessment techniques.

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