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Reflection: Impact of group reflective activity on learning and students' perceptions towards reflection

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Abstract

Background: Study was conducted at Melaka-Manipal Medical College amongst the final year medical students to find out effectiveness of reflection in learning outcomes and student's understanding on reflection. From 2015, college curriculum was shifted from logbook maintainance to portfolio writing in major clinical branches including family medicine. Reflection being an important component in portfolio writing, we decided to conduct this study to find out the impact of reflective practice on learning outcomes and their understanding on reflection. **The Methods and Material :** All the 77 students posted in family medicine department from 10 February 2017 to 7 April 2017 were tested for academic performance. Initially, students were asked to answer questions on anaemia followed by collaborative reflection and post-test. Cut off marks for passing was taken at 50%. For knowledge and understanding on reflection, we asked students to fill in an informative feedback form. Sixty-three students posted in the department from 10 February to 21 April 2017 were included. **Result:** We found significant improvement in learning outcomes after collaborative reflection. Pass percentage increased from 25% to 75% ($p < 0.01$) after reflection. Students who failed in pre-test showed significant improvement after reflection. Seventy-eight percent students were aware of concepts of reflection, 38% were aware of meaning of meta-cognition; 81% could write the benefits of reflection; 61% had understanding of collaborative reflection and impact of reflection on self-development and improvement in classroom performance. **Conclusion:** Reflective practice helps in enhancing students' understanding on subject and classroom performance. Twenty-two percent students did not know what reflection is and its benefits.

Keywords: Collaborative learning, metacognition, portfolio, reflection

Key Messages

When students interact and discuss with each other, it acts as a stimulus for self-reflection. The students may recollect and remember their earlier learning experiences, think, analyze and make appropriate judgement. Their knowledge and understanding of the subject matter improve. Hence, students should be encouraged to reflective thinking and practice.

Introduction

Increased academic workload restricts a students' mind to urgent analytic inquiry and often they take decisions without thinking about implications. Nevertheless, it may be worth to focus on problems or issues that students face and reflect upon or self-

contemplate in peaceful, relaxed state of mind to get the best results.¹ Reflection is a response of an individual to his/her experience; it means looking back at one-self, the true nature of oneself- i.e., our own thoughts generated from our own experiences in various situations or events.² Reflective practice may be applied to any area of medical practice or daily activities or the problems of life. An enlightened person advice his/her disciples to reflect upon one's own thoughts; reflect upon action and reflect upon nature of cause and effect in order to prevent unskilful and unwholesome action.

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In medicine, patient care includes medical care and psychological support. Appearance of newer diseases, variation in presentation of diseases and advancing technologies in medical sciences, demand skilful actions from treating physicians for positive outcomes. Hence, lifelong learning is advocated for doctors. Learning can be - deliberate or intentional; goal oriented or definitive; experiential or experimental and classroom. To improve learning, various methodologies; such as problem based learning, collaborative learning, task based learning, project based learning, portfolio writing, etc. are being used. Feedback and reflection are also being incorporated in learning. Reflective practice includes recollection of prior knowledge, newly acquired knowledge, skills and experience, critical analysis, synthesis, interpretation, re-setting of concepts and its application in day-to-day patient care.³ Reflection improves understanding, enhances knowledge and skill and wisdom. It develops systematic approach towards work, improves interpersonal skills, builds confidence and brings about professionalism in individual.⁴ Reflection can be self-reflection or collaborative. In the former, the focus is on individual cognition i.e., observation of one's own thoughts and experiences; whereas in the latter, reflection is on one's own experiences as well as others' experiences. There has to be cooperation, communication and participation of the members of group in collaborative learning.⁵ Reflective activities in collaborative learning improve individual and collective performance as students interact, discuss and share their knowledge and experience with each other on given topic.⁶ This is one of the good ways of learning from peers.

Thoughts are generated constantly in mind. To have a focused and concentrated mind, there is need to control and channelize thought processes. Unless we think about our own thoughts and find the truth, we may falter in taking right decisions. This critical analysis of one's own thoughts is metacognition. It includes insight and self-reflection.^{7, 8} Reflective practices have to be a continuous process as it promotes complex learning and growth in an individual. The medical students are future doctors and may be required to take complex decisions after

they take up houseman ship. Hence, we want them to develop a habit of reflective practice.

Reflective writing is included all over the world in undergraduate and post graduate training programmes. At Melaka-Manipal Medical College Malaysia, final year MBBS students are asked to write and submit a portfolio. Reflection being an important component of portfolio writing; the college switched over from student logbook maintenance to student portfolio writing in 2015. Students of eighth and ninth semesters have end of posting assessment (EOP) based on their portfolio submission after one week. Semester ten students have portfolio defence after two weeks of posting.

In a portfolio, students write about patient details, observed and performed procedures, preventive advice, health education talk they have attended or participated, seven case write-ups and reflective writing. They need to reflect on all chronic diseases they observed and if required about other illnesses. At the end of every week, students are asked to write reflection on their experiences during posting.

We assessed few student groups after portfolio introduction. We found some students were not aware of reflection in spite of briefing about it several times. Thus, the current study was therefore proposed with the following objectives -

1. To find out the effectiveness of self/collaborative reflection on learning outputs
2. To assess students' understanding on reflection and its benefits.

Research Hypothesis:

1. Reflection increases performance output
2. Reflective practice improves understanding of students
3. All students know about reflection.

Material and Methods

All the students posted in family medicine department from 10 February 2017 to 7 April 2017 were included in this study. Seventy-seven students were tested on learning outcomes after reflective practice and feedback from 63 students, posted up to 21 April 2017 were taken on their views on reflection.

In Melaka-Manipal medical college MBBS course is of five-year duration. There was a shift in teaching, learning and assessment programme. The final professional examination which used to take place after completion of 10th semester was shifted to 9th semester. After passing out students are placed as pre-houseman for practical / clinical training in clinics / hospitals in 10th semester. These students are called as shadow housemen. In the family medicine health centres, they are posted for two weeks from 8 AM to 5 PM. They work under guidance and supervision of Family Medicine Specialist (FMS). Since this training is preparation for houseman ship, students are expected to observe and learn, do procedures, see patients, understand disease process and discuss on management with FMS. It is a self-learning process under guidance and supervision of senior doctors.

Eighth semester MBBS students are informed on portfolio writing, reflective writing and portfolio maintenance during their orientation programme. While being posted in primary health centres, students are advised to collect portfolio book from academic section. On day one, they are again explained on portfolio writing, maintenance and reflective writing. They are asked to carry portfolio book every day to clinic / hospital and enter in it; the procedures done, patients seen or any other activity carried out at clinic / hospital. Students of semester eight and nine are posted in clinic / hospital for one week from 8 AM to 12 noon. They are advised to read certain texts in chapters from the booklist given in their portfolio book to understand reflection and reflective writing. It is mandatory for them to write two case sheets and reflection daily on patients they see. On the last working day, they have defence on portfolio.

Students of tenth semester are posted for two weeks in polyclinics from 8 AM to 5 PM. They have to punch their attendance card on entering and leaving the hospital /clinic premises. These are shadow housemen, expected to learn actual management of patients, provide referral services, follow up patients, do procedures, give health education talk and perform various other activities expected of a medical officer. They have to do all these under guidance and supervision of family medicine specialist and

maintain a record of their daily activities. These students have to write on 3-4 cases per week. Apart from this they have to write reflection on cases they see / examine, all chronic case write-ups and weekly reflection on experience during posting. They have to present all case write ups along with portfolio for weekly portfolio defence on last working day of a week. On completion of full posting with minimum 90% attendance, students have end of the posting assessment and have to defend portfolio. Reflection carries 10% marks in portfolio and remaining 90% are on case write ups, day-to-day patient care, peer assessment, staff and faculty assessment and procedures they perform.

For the conduct of present study, students were informed that they will be having assessment on reflection. The passing marks shall be 50% and marks they get shall be entered in the portfolio. The test shall be given for 10 minutes followed by a break of 15 -20 minutes for reflection and thereafter post-intervention-test on the same topic. To check the performance output, a standard questionnaire was prepared on anaemia. The purpose of choosing this topic was that all the students of final year are aware of this topic as it is being taught in physiology, pathology and all clinical branches. Moreover, they had clinical exposure in hospital. The post intervention test questionnaire was also on anaemia with similar questions but modified.

To assess the understanding on reflection, separate informative feedback form was prepared which included questions on meaning of reflection, collaborative reflection and metacognition, on what one can reflect upon, benefits/advantages of reflection in self-development, patient care and classroom performance. The students were informed that on completion of post-intervention test they will be filling in feedback form.

After taking verbal consent from 77 students, pre-test was given. It was a fill-in-the-blank question paper having 10 structured questions with two blank spaces to fill in. Each question carried one mark and time allotted was 10 minutes. On completion of pre-test, answer sheets were collected; then students were advised to reflect upon anaemia, what they

have learnt in physiology, pathology, and clinical medicine, in clinics, in hospital, lectures or any life situation in which they came across with patient in family or neighbourhood and discuss with peer group. They were permitted to take opinion of colleagues or discuss if required but internet use or referring to book was not permitted. The time allotted for reflection was 20 minutes. When students were ready for post intervention test, they were given another set of questions, which included 10 similar questions with two blank spaces in each question with time allotment of 10 minutes. These questions were same as pre-test but with modification. Once they finished writing, answer sheets were collected.

For assessing knowledge and understanding on reflection 63 students were included. We gave structured format to fill in after conclusion of post-test. The questions included were on reflection, metacognition, on what one can reflect on? advantages of reflection, etc. There was no time limit for feedback writing.

Statistical analysis

Frequencies of students’ knowledge and understanding are reported in percentages. McNemar’s and Chi Square tests were applied to find out the test of significance.

Results and Analysis

We have 77 students for assessment of performance output after self-reflection /collaborative reflection and 63 students for assessment of their knowledge, understanding and thoughts on reflection.

On analysis, we found students getting 1.5/10 (15%) to 6.5/10 (65%) in pre-test and 2.5/10 (25%) to 8.5/10 (85%) marks in post-test. Regarding knowledge and understanding 77% of students had clear understanding on reflection.

From table 1, we observe that out of 77 students 56 (73%) failed and 21 (27%) passed in pre-test, whereas 19 (25%) students failed and 58 (75%) passed after reflection and is statistically significant. We also observed 70% pass rate after reflection amongst pre-test-failed-students, showing that collaborative reflection improves performance. Thus, our first

hypothesis that ‘Reflective practice improves performance’ is proved.

Table 1: Number (n) of students passed after and before reflection

	Passed n (%)	Failed n (%)	Total n (%)
After reflection	58 (75%)	19 (25%)	77 (100%)
Before reflection	21 (27%)	56 (73%)	77 (100%)

The chi-square statistic is 35.5824. p value is less than 0.001 at df 1. This result is statistically significant at p < 0.001

We thought that 10 semester students will do better compared to semester 8 and 9, but we did not find any statistical difference in pre-test. The percentage of passing rate was 28.7% for semester 10 and 28% for semester 9 (table 2).

Table 2: Pass percentages before reflection between semester 8 & 9 (students posted for 1 week) and semester 10 (students posted for 2 weeks)

	Passed n (%)	Failed n (%)	Total
Semester 8&9	14 (28%)	36 (74%)	50
Semester 10	8 (28.7%)	19 (71.3%)	27
	22	55	77

The chi-square statistic is 0.0228. The p-value is 0.87 This result is not significant at p < .05

As stated above, we expected better performance or at least equal performance from semester 10 students, but in post-test only 63% of them could pass compared to 84% of semester 8 and 9 and difference is statistically significant (table 3).

Table 3: Differences in performance after reflection of students of semester 8/9 and 10

	Passed n (%)	Failed n (%)	Total
Semester 8&9	42 (84%)	8 (16%)	50
Semester 10	17 (63%)	10 (37%)	27
	57	18	77

The chi-square statistic is 4.3318. The p-value is 0.03. This result is significant at p < .05

Attrition due to various reasons, we could take informative feedback from 63 students on their understanding on reflection (table 4). This included 26 students from semester 10 and 37 from semester 8 and 9. Of these 63 students, 49 (78%) were aware of what reflection is. This is true about both semester 10 and 8 and 9. Thus, disproving our hypothesis that all final year students writing reflection in portfolio

know about reflection. After going through the students' feedback writing, we found, one student mentioning reflection as a waste of time, two students thought that too much reflection has no benefits. However, majority of students expressed positive impact of reflection such as clarity of thoughts, improved performance in examination, developing professionalism, ethics and empathy towards patients.

Table 4: Students' knowledge on reflection and understanding on reflection n (%)

Serial No	Reflection: meaning, applications, benefits	Knows n (%)	Don't know n (%)	Total
1	Meaning of reflection	49(77.7%)	14 (22.3%)	63
2	What one can reflect on?	51(80.9%)	12 (19.1%)	63
3	Benefits of reflective writing	51(80.95%)	12(19.05%)	63
4	Clarity of thoughts & attitude change	58(92%)	5(8%)	63
5	Meaning of metacognition	28(38%)	35(62%)	63
6	Self- reflection help in professional development	48(76%)	15(24%)	63
7	Collaborative Reflection improves classroom performance	40(60.9%)	23(39.1%)	63

Discussion

Reflection is a metacognitive process that adds to greater understanding of self and situation. This helps individual to take decision appropriately in future.⁹ Students exhibit greater clarity of thought and judgement. They are less confused. This leads to improved academic performance.¹⁰ In collaborative learning, students form small group, discuss and learn from each other, their misunderstanding, misconceptions and doubts get clarified. In the normal process, the information is stored in memory and gradually fades away. When students collaborate

and discuss with each other, their mind gets activated and helps in self-reflection.¹¹ This is one of the ways of learning in which group reflection promotes critical thinking and deep learning.¹² Farrell opined that collaboration is not essential for reflection, but greatly enhances the quality of reflection.¹³

Benjamin et al., found improved medical skills and patient's satisfaction after reflective practice in 3rd year medical students. 14 Francesca Gino, Gary Pisano, and colleagues found 23% increase in performance output after collaborative reflection for 15 minutes on work experience compared to control group.¹⁵ In our study, we found significant improvement in passing percentage after collaborative reflection (i.e. increase in passing rate from 25% to 75%). However, five of 77 students (6.4%) did not show any improvement after reflection even though they passed in pre-test and six out of 77 students (8%) got less marks after reflection compared to pre-test. We assume that this could be due to their lack of interest or they may not have taken pains to reflect upon or collaborate with other fellow students. Reflection can be on theories, values, belief, effectiveness of the action, weaknesses and strengths, important issues, constraints and limitations, insights, and on follow-up actions.¹⁶ Our students expressed similar views and also feel that one can reflect on self, classroom discussion with teacher, patients and their management.

Megan et al.,¹⁷ found that 84 % readers benefited from reading reflective articles, 79% felt more connected to colleagues and 83% felt more empathetic and patient centred. Seventy-three percent of reflective writers felt proud and happy and 72% developed clarity of thoughts on patients' perspective. In our study, 92% of students opined that reflective thinking and writing improves clarity of thoughts and change in attitude; 76% felt benefits of reflection in understanding patients' management. Chan et al.¹⁸ study found positive changes in knowledge, attitude and competence after 18 hours training programme on reflective learning in dealing with psychiatric patients. In our study, 76% students felt that reflection helps them in having better approach and conduct with patients; while 4% opined that reflection is a waste of time.

The poor performance by students of 10th semester compared to students of semester eight and nine (table 3) could be due to their inherent qualities, poor baseline knowledge, lack of interest and motivation, and lack of reflective practice. Apart from what is stated in foregoing part of discussion, reflection has positive impact on individual and professional growth.⁸ Hence, we expect all students to know and practice it regularly in their day to day academic and clinical work.

After going through contents of students' writing in feedback form, (though interpretation or articulation may vary) majority 49/63 (77%) of students have defined reflection as self-contemplation or introspection into one's own thought, belief, action, behaviour and experience. Reflection also helps in analysing to find out truth or differentiate between right and wrong, so as to take right decision, perform well and bring about desirable changes.

Reflective writing promotes professionalism. Maintenance of portfolio and reflective writing is evidence of records of learning. It helps students to assess their own progress, channelizes thought process. It is an evidence of thinking and performance of students.¹⁹ Based on our students' feedback, we agree that reflective thinking and writing promotes professionalism and ethics; communication; knowledge and understanding.

Limitations of study

By the time we took decision to include knowledge, attitude and approach part in this study some of the students had already finished their posting and hence could get responses only from 63 students as against 77. Further, large sample size could have given better results, but we refrained from recruiting newer batch in this study as it might have affected study outcomes adversely.

Our teachers are not directly involved in patient care and hence unable to teach reflective learning in the clinics.

Active teaching such as tutorials, seminars and common programmes are not provided to pre-housemen students. Moreover, percentage of marks allotted for reflection are very less and hence students may not have taken active part in this study.

We assumed that students will read on reflection from the books. So, no specific talk was given on reflection. Since every student is not inclined to read of his/ her own volition, this may have affected their knowledge, attitude and approach towards reflection and consequently could limit the study outcome.

Intimation of study was given just before the end of posting-examination and duration of reflective practice was just 15 to 20 minutes, which could have limited study outcome.

After using various websites, we got limited data on knowledge, understanding and approach towards reflection. Hence, we were handicapped in giving sufficient data for comparison. We expect more studies in this area in near future.

Conclusion

Reflection is very good tool of learning. We found improved performance output after reflective practice. Nevertheless, 20-25% students were not aware of reflection and its benefits.

We, therefore, suggest to constantly impress upon students on the importance of reflection during their posting. List of reference books need to be provided to 10th semester students. Teacher must act as a facilitator to promote reflective practice in classroom and in clinic. He/ she must activate students to think, analyse and make judgement.

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