

Original Research Article

Application of Microteaching Principles to Improve Teaching Skills of Postgraduate Students in Department of Pharmacology

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Received: 19/11/2015

Revised: 11/12/2015

Accepted: 14/12/2015

ABSTRACT

Introduction: Postgraduate (PG) students are often delegated the responsibility of undergraduate (UG) tutorial classes without proper training as a tutor. This study evaluates the application of microteaching principles for improving tutorials skills of PG students.

Material and Methods: Four second year PG students engaged in UG tutorial classes in the presence of faculty (Session I). Feedback given immediately after focused on tips for improving their teaching skills. They then had an opportunity to engage two tutorials on the same topic for different batches. Topic specific inputs were provided between these sessions (II & III).

Results: Repeated observation and feedback from the faculty resulted in improvement in presenting skills in all PGs. There was a statistically significant improvement in the third session when compared with the first session using paired t- test.

Conclusion: Application of Microteaching principles (immediate feedback with constructive suggestions and opportunity to practice) not only helped the PGs develop necessary skills as tutors, but also fostered development of a positive attitude necessary to accept constructive feedback.

Key words: Postgraduate training, Presentation skills, Feedback.

INTRODUCTION

Medical residents in all disciplines serve as teachers and role models for UG students. They work closely with medical students and have considerable opportunities to teach and influence them. Since the early 1970s, literature on the residents' teaching role has emphasized the need to train residents as teachers as well as to evaluate the content and outcomes of instructional programs. ^[1,2]

The concept of medical education has now changed significantly. The focus is on active learning and development of learning skills, rather than on passive acquisition of information ^[3] Teaching is the best way of learning. To help

consolidate their learning, the postgraduate (PG) students in our department are asked to take active part in the teaching learning activities of undergraduate (UG) students, particularly tutorials and practicals. There was a perceived need to improve their teaching skills to make these teaching learning sessions more meaningful for the undergraduate students.

Microteaching is a well-recognized tool for improvement of teaching skills. It scales down the complexities of real teaching, as immediate feedback can be sought after each practice session ^[4,5] It helps in eliminating errors and builds stronger teaching skills for the beginners ^[6] Teaching is a performing art, which

needs, apart from sound content knowledge, skills required for stage presentation. Microteaching also enables development of these skills. [7] Thus, Knowledge acquisition, skill acquisition and transfer, all three aspects are addressed by microteaching. [8,9] We believe that microteaching would improve the communication and presentation skills of PG students and thereby increase their confidence in actual tutorials, practicals and seminars. [10]

This study was therefore undertaken to assess the usefulness of applying principles of Microteaching (immediate feedback with constructive suggestions and opportunity to practice) to improve the skills of PG students as tutors.

MATERIALS AND METHODS

All four second year Postgraduate (PG) students from Department of Pharmacology of our Medical College were included in the present study. These students were given the participant information sheet about the project before taking written consent.

UG students come to the department for tutorial classes in two batches of 75 students each. Topics taught in previous two lecture classes are covered again in the tutorials for both these batches on two different days. Each batch of 75 is further divided into 4 batches of 18 students each for the small group tutorial activity with the respective batch teachers.

Microteaching concept is widely used for improving the teaching skills as applicable to a lecture format. The structured feedback formats commonly used for these sessions therefore focus on intricacies of a lecture format. Tutorials differ in being small group teaching sessions with more active participation expected from students. The tutor's role is even more so of a facilitator than a conventional teacher, requiring skills to facilitate the small group interaction in the right direction reaching meaningful

conclusions. This involves switching between the roles of a group facilitator and a teacher. The tutor needs to start as an effective group facilitator with good questioning skills, ensuring participation of all the students. Towards the end he needs to convert to the role of a knowledgeable teacher able to clarify doubts and ensure understanding. The observer check list / feedback format was therefore designed to assess these skills needed for engaging effective tutorials ([Annexure 1](#)).

To begin with, each PG student was asked to prepare a topic for tutorial lesson and engage one of the four batches of II MBBS students (session I). The faculty member allocated to that batch was present during the tutorial session and assessed the performance of the PG tutor and gave immediate feedback to the PG student. The feedback focused on appreciating the good points and giving tips for improvement of group facilitation skills and teaching skills. The PG students then engaged another tutorial class on different topics (session II). During the feedback after the second session, along with useful tips for further improving their group facilitation and teaching skills, they were given topic specific tips as they would be taking the third tutorial on the same topics for a different batch of students (session III). This was also assessed by the same faculty member. They got three days between sessions to work on their content knowledge as well as teaching skills.

Performance of each PG student in each of the 3 tutorial sessions was also scored objectively with the help of the structured feedback format (Annexure I referred above). Results of this performance assessment of all four PG students were shown to and discussed with them immediately after each session during the feedback. Each of the 16 items in the checklist had a score of 0 to 3, 0 denoting 'Not Applicable' to 3 denoting

‘Excellent’. Maximum possible total score from the 16 point check list was 48.

After each session, before giving feedback to the PG students, they were asked to give their own analysis of their performance verbally and in the open ended “self-evaluation forms” ([Annexure 2](#)), focusing on what they thought was done well and what they could have done better.

RESULTS

Table 1 shows the scores of the 4 PG students for the consecutive 3 tutorial sessions.

Table 1 Post graduate students’ performance scores for three tutorial sessions

Student No.	Session I	Session II	Session III
1	24/48	33/48	40/48
2	23/48	36/48	37/48
3	29/48	29/48	38/48
4	21/48	29/48	32/48
Mean±SD	24.25±3.40	31.75±3.40	36.75±3.40
P-value		0.070508	0.004017*

*p<0.05 using paired t- test

The score steadily increased from session 1 to 3 for all four students. The improvement in scores was statistically significant at the third session.

The open ended feedback taken from PG students also reflected their appreciation of the entire activity. The constructive feedback before engaging the tutorial classes was perceived as a valuable tool to help them to develop presenting and communication skills and improve their confidence levels.

DISCUSSION

Microteaching, a teacher training technique currently practiced worldwide is a useful tool to sharpen the teaching skills of a teacher. It has a pivotal role in all medical education training programs and contributes to a great extent to the better understanding of teaching process and its complexities. With the proven success amongst the novice as well as seniors, microteaching helps to improve the real time teaching experiences. ^[6,8]

Microteaching works on the basic principles of mini practice sessions in nonthreatening environment amongst peers, opportunity of self-reflection and immediate feedback from peers giving constructive suggestions. It also gives opportunity to implement these suggestions in subsequent practice sessions to sharpen the teaching skills.

Conventionally, microteaching is utilized to improve the skills of teachers engaging large group didactic lectures. The structured self and peer assessment formats are designed accordingly. The present study applied the microteaching principles to train PG students for taking tutorials.

Tutorials are small group teaching learning sessions with greater participation from students, to ensure clarity of understanding concepts and application of knowledge. Since the format and purpose of tutorial classes is completely different from the didactic lectures, the skills required for effective tutorial classes are also different. The tutor, apart from being knowledgeable about the topics to be discussed, also needs to possess the skills of a group facilitator, guiding the students in content coverage as well as ensuring participation of each student in the group. The conventional observer checklists for the constructive feedback of microteaching sessions of a didactic lecture were therefore modified. Our checklists included appropriate points to assess the different skills required of a tutor. The format was prevalidated by peer review and pilot testing. Results based on this structured feedback demonstrate that this inputs regarding the specific teaching and group facilitator skills before & after tutorials certainly improved the skills of all four PG students as tutors.

Microteaching involves acquisition of knowledge and teaching skills to facilitate transfer in terms of real life large group teaching. A microteaching exercise before presentation is a valuable tool to

help students develop communication, critical-thinking, and problem-solving skills. [11,12]

Medical field is a dynamic field evolving at an enormous pace. Becoming a lifelong learner is therefore now perceived as an important skill in any medical professional. Participating in the microteaching session fosters this ability of reflection on own performance as well that of other's and articulating the analysis in precise words. This skill of self-reflection, reflecting 'in action' and 'on action' helps development of the participants as students "thinking on their feet", an attribute of even more paramount importance in patient care. Another important attitudinal facet fostered by participation in microteaching is the ability to accept constructive feedback with an open mind. This an essential attribute for working as an effective member of any health care team.

Thus implementing the microteaching technique for the budding doctors will also be a step towards achieving the defined MCI Objectives of bringing out doctors who fulfill the roles of a 'lifelong learner committed to continuous improvement of skills and knowledge, a good communicator with all concerned and effective team worker. [13]

We thought of using the principles of microteaching for training of PG students with a dual purpose, learning and presenting. The students teaching skill score improved with each feedback and practice. The improvement in scores was statistically significant for the third session. This difference in the magnitude of score improvement can be explained by 2 factors. Firstly, they had by then got one to one feedback two times. Secondly, the third session was a tutorial on the same topics that they had taken in session 2, but for different batch of students. It had been possible to get topic specific feedback as well and a chance to implement the suggestions with a gap of 3 days for

further study and practice. This proves the age old saying 'practice makes man perfect', specially guided practice with tips for correcting mistakes and improvement. This significant improvement in their presentation skills is comparable with a case study combining the elements of Japanese lesson study and microteaching technique. This study reported that the pre-and post-lesson plans had successfully demonstrated growth in teachers' knowledge on teaching. [14] The "teach, critique, re-teach" model in a dental education program also identified microteaching as a technique for personality development and confidence-building of health professionals. [15]

Microteaching has the ability to enhance the teaching skills and improve learning by realistic application. [16] The role of health educators can thus be effectively satisfied by practicing microteaching technique. [13,17] Feedback was also taken from PG students about their experience of this exercise. All of them reported it as a great overall experience. The constructive feedback before engaging the tutorial classes was a valuable tool to help them develop presenting and communication skills. [18] All of them felt that it helped to significantly improve their confidence levels in terms of content knowledge as well as for engaging a class.

This improvement in the PGs also convinced the faculty in our department of the advantages of microteaching and almost all willingly agreed to participate in the activities to be continued for subsequent PG batches.

Our activity applied the microteaching principles in a different setting, which gives both advantages as well as disadvantages.

The sessions observed were actual tutorial sessions being conducted for the UG students, instead of micro sessions covering a small component of the teaching content at hand. This ensured the

content mastery of the PGs. This also allowed observation of the teaching and group facilitation skills as evidenced in the real life setting of actual UG classes, instead of dummy sessions, with constructive suggestions for improvement and a chance to implement, again under a constructive supervision. The observer teachers also pitched in unobtrusively to keep the session on track, instead of being in an examiner mode.

Same point could be looked upon as a limitation, as the PGs had to actually face the UG students. Incorporating actual microteaching sessions with only other colleagues and teachers as audience, as is the concept of 'microteaching', would have made the experience more non-threatening and feedback could have been obtained from many experienced faculty members. In our case feedback was obtained from only one faculty member who attended the class.

Another limitation of the present study was the small sample size (only 4 PG students). Continuing the activity for subsequent batches of PG students will help gather more data.

CONCLUSION

Application of Microteaching principles (plan, teach/practice under observation, get immediate feedback and constructive suggestions, re-teach after a chance to practice and implement the suggestions) helped the postgraduate residents develop necessary attitude and skills to take active part in the teaching learning activities. It also helped to foster development of the important attribute of reflection and an open mind to ask for and receive constructive feedback.

Future Plan: The acceptance of the activity by the post graduate residents and the evident benefit in terms of their improved teaching skills has prompted our department to continue this activity for all PG students with incorporation of actual microteaching sessions. The activity will

now become a regular feature of our PG curriculum for second & third year students before they engage UG tutorial batches. It will also help year one PGs to improve their seminar presentation skills. Thus we plan to introduce microteaching for all PG students before they engage practicals & tutorials for UG students and present seminars in the department.

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ANNEXURE I

Checklist for assessing Tutorial

Name (Teacher):	Name of PG Student:
Class:	
Topic :	Date :

Sr. No		Excellent	Good/ Satisfactory	Needs improvement	Not applicable
The Tutorial					
1	Covered entire topic methodically				
2	Anchored to topic as covered in lecture				
3	Clarified doubts				
4	Used blackboard appropriately for explanation				
5	Covered clinical relevance of the topic				
6	Discussed ideal answers to questions in question bank				
7	Summarized important points at the end				
8	Demonstrated own clarity of concepts/ Understanding of the topic				
The Tutor					
9	Communicated confidently				
10	Ensured participation of every student				
11	Could ask leading questions				
12	Encouraged answers				
13	Appreciated good answers/efforts				
14	Made the topic easy and interesting				
15	Provided clues to remember				
16	Effectiveness of the tutorial as a whole				

ANNEXURE II

Self-evaluation
 Student Name
 Topic of lesson
 Date

Self-evaluation of the microteaching session What went well? _____ _____ _____ _____ What would I improve next time? How? _____ _____ _____ _____

How to cite this article: Suryawanshi SP, Sahsrabudhe RA, Pandit VA et al. Application of microteaching principles to improve teaching skills of postgraduate students in department of pharmacology. *Int J Health Sci Res.* 2016; 6(1):195-200.
