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A cross-sectional study to evaluate teaching skills of postgraduate medical students using component skill approach in microteaching

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Abstract:

BACKGROUND: Microteaching is a teacher training technique where a teachers get a constructive feedback from peer or faculty in order to improve their teaching skills. Microteaching is conducted at the departmental level. By evaluating the components of microteaching, better teaching skills can be developed in postgraduate (PG) students.

OBJECTIVES: The objectives of this study were to determine the pattern of teaching skills and to evaluate the components of teaching skills of microteaching in PG students.

MATERIALS AND METHODS: It was a retrospective record-based study done over a period of 1 month. Microteaching assessment records of 34 PG students of the department of community medicine were analyzed.

RESULTS: Teaching skills including setting induction during the class, lesson planning, presentation, and use of audio-visual aids were found to be satisfactory. Students lacked the skills of interaction and summarization of the topic.

CONCLUSION: PG students' performance with many components was satisfactory, but still, there is a scope for improvement. Internalization of microteaching skills can make doctors a better teacher, a better learner, and a better health educator.

Keywords:

Medical education, microteaching, pedagogy, teacher training

Introduction

Microteaching is an old practice in medical education. Historically, microteaching was designed to provide a supportive environment for teachers to practice teaching skills. Developed in the early 1960s at Stanford University, microteaching has evolved as an on-campus clinical experience method in 91% of teacher education programs.^[1]

Microteaching technique is a widely used tool for training a teacher. It is a training technique where teachers get a constructive

feedback from peer or faculty in order to improve their teaching skills. Feedback can be in the form of video recording of their performance or comments on paper. Feedback is a crucial step of microteaching cycle [Figure 1].

Lesson planning includes selection of topic and logical sequencing of subtopics. Teaching is a demonstration of teaching skills while teaching the topic to a small peer group of about 10–15 people for a short duration of time, about 10–15 min. Feedback, as discussed above, are comments obtained from peers. After getting feedback, trainee re-plans the topic

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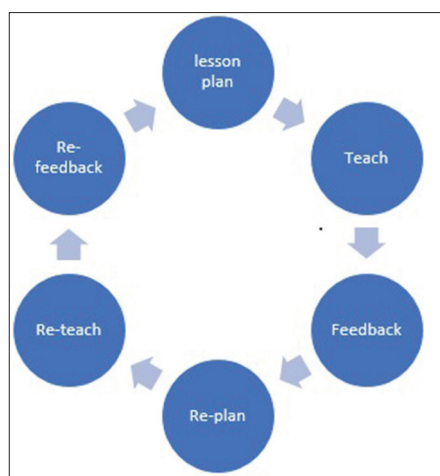


Figure 1: Microteaching cycle

to overcome shortcomings, re-teaches, and obtains a re-feedback.

Microteaching is evaluated by component skill approach where activity of teaching is broken down for learning purpose into individual components and subcomponents, and each subcomponent is evaluated separately.^[2]

Microteaching at departmental level

Postgraduate (PG) curriculum of MD community medicine students is 3 years, out of which the 2nd and 3rd years are considered as teaching posts. The department conducts microteaching sessions every year in the month of December to February for all PG students from the 2nd year onward. These microteaching sessions are conducted as a routine activity in the department as per the university guidelines of PG curriculum and are compulsory for all PG students.

Microteaching sessions are conducted weekly. Three to four trainee teachers perform in one session where they are expected to take up a small topic for teaching and demonstrate teaching skills in front of peer group and faculty. Evaluation of each teacher is done separately by each faculty and peer group member, and feedback is given on paper (microteaching assessment form). Feedback helps teachers to improve their shortcomings. Those who could not perform well in the first session can re-plan, re-teach, and get a re-feedback in the next session.

PG students are budding teachers. It is important that they should be able to teach their students effectively. Furthermore, the art of imparting knowledge to others is the mainstay of effective health education and behavioral change communication to the patients and community. Evaluating the components of microteaching helps in developing better teaching skills in PG medical students.

The present study aims to determine the pattern of teaching skills in PG students and to evaluate the components and subcomponents of microteaching.

Materials and Methods

It was a cross-sectional, retrospective, record-based, descriptive study done in the department of community medicine in a medical college of a metropolitan city, over a period of 1 month. There is an intake of 17 PG students every year in the department of community medicine. Records of 2 batches were studied, and hence, the sample size for this study was 34.

Institutional ethics committee approval was obtained on October 11, 2019 (EC/OA-110/2019). The microteaching assessment forms of 34 PG students (previous two batches – years 2016 and 2017) were studied. Assessment forms of the first performance were included. Forms of repeat performance were excluded to avoid bias.

Microteaching assessment form consists of components and subcomponents of various teaching skills, as shown in Table 1. It allows giving feedback of all subcomponent skills at three levels, namely yes, to some extent, and no. Furthermore, there is a provision to comment on overall performance of the teacher.^[3]

The data were entered and analyzed using Microsoft Excel. Assessment forms where feedback was given by faculty members (two to five faculties for each trainee teacher) were considered for analysis. The final response of each component was taken on a majority basis. If there was a tie between the responses, then better response was taken as final.

Results

The teaching skills demonstrated by PG students were marked as one out of three responses, namely yes, to some extent, and no. Among which, yes response was the desired one. If the response was to some extent or no, then they were expected to improve on those components in repeat attempts. The present study analyses the records of the first attempt of microteaching of PG students.

The pattern of teaching skills in this study shows that 52.9% of students could arouse interest in the beginning, 58.8% organized material in logical sequence, 76.5% used relevant content matter, 61.8% were fluent in language, 64.7% used nonverbal cues, 67.6% allowed and 73.5% asked questions, 82.4% used proper audio-visual (AV) aids, but 52.9% used them effectively. Skills of interaction and summarization of topic were lacking [Table 1].

Apart from the feedback comments regarding the above components, students also received other suggestions

Table 1: Distribution of components of microteaching skills among postgraduate medical students (n=34)

Components	Subcomponents	Yes (%)	To some extent (%)	No (%)
Set induction	Aroused interest in the beginning	18 (52.9)	15 (44.1)	1 (2.9)
	Specified objectives of presentation	14 (41.2)	13 (38.2)	7 (20.6)
Planning	Organized material in a logical sequence	20 (58.8)	13 (38.2)	1 (2.9)
	Used relevant content matter	26 (76.5)	8 (23.5)	0
Presentation	Fluency in language	21 (61.8)	13 (38.2)	0
	Used nonverbal cues, eye contact, etc.	22 (64.7)	12 (35.3)	0
	Speed of presentation varied with the emphasis	16 (47.1)	15 (44.1)	3 (8.8)
Interaction	Allowed questions from students	23 (67.6)	7 (20.6)	4 (11.8)
	Asked questions	25 (73.5)	5 (14.7)	4 (11.8)
	Rewarded pupil efforts	11 (32.4)	12 (35.3)	11 (32.6)
	Clarified doubts	8 (23.5)	20 (58.8)	6 (17.6)
	The speaker used humor to lighten the mood	5 (14.7)	9 (26.5)	20 (58.8)
Use of AV aid	Used proper AV aids	28 (82.4)	5 (14.7)	1 (2.9)
	Used the aid effectively	18 (52.9)	12 (35.3)	4 (11.8)
Summarization	Summarized the important topics at the end	16 (47.0)	14 (41.2)	4 (11.8)
	Checked that all the students understood the points	6 (17.6)	15 (44.1)	13 (38.2)
	Lesson on the whole was effective	13 (38.2)	19 (55.9)	2 (5.9)
	The speaker suggested additional sources of reading	15 (44.1)	5 (14.7)	14 (41.2)

AV=Audio-visual

too. These suggestions provided by faculties to the students in order to improve their overall performance in the class included, practicing tone modulation to avoid monotony in the class, proper lesson planning, time management, speaking with ease while presentation, and learn to control the class.

Discussion

Teaching objective of microteaching is to develop teaching skills in a trainee teacher and to enable them to build their confidence as a teacher. Learning objective of microteaching is that the students should be able to comprehend the subject and be able to practice the skills to impart knowledge. Mere knowledge of pedagogy does not ensure the acquisition of teaching skills. Practice of these skills is required to form the base of trainee teachers before they face the real audience. Conducting microteaching at the departmental level provides a platform to acquire and practice variety of teaching skills in front of peer group.

Setting induction by giving some introduction of the topic, explaining briefly its significance, starting the class with an activity, narrating historical or others anecdotes or showing relevant photographs, etc., should be used to arouse interest. Specifying objectives at the beginning of the class makes the contents of the topic clear. With this, both teachers and students do not deviate from the topic throughout the class. Awang suggests that the effectiveness of setting induction depends on teachers' creativity and pedagogical knowledge content.^[4]

Lesson planning is the most integral part of teaching. It includes organizing material in logical sequence and

adding relevant content matter to it. It is important to plan the topic according to the type of audience and their knowledge level, moving from known to unknown and from basic to advanced concepts while teaching. Time management is a part of good lesson planning. There are topics about which a lot of information is available, and it is planning skill of teachers which makes it possible to take a session with the most suitable information for his or her audience in the specified time. Ismail found microteaching helpful in lesson planning and preparation.^[5]

Presentation of a teacher in a class starts from appearance and includes language, fluency, eye contact, tone of speaking, voice modulation, emphasizing important points, and nonverbal cues such as body language and facial expression. A good presentation and fluency holds the attention of the audience throughout the class and makes the class memorable. Izzatin and Widyawati reported that students lacked skills of presentation variation in teaching style including sound, voice, expression, and motion while being skilled at opening-closing the class, material for presentation, delivering material in order, mastering learning material, time management, and spoken language. These findings are similar to our findings.^[6] Studies have reported microteaching effective in improving fluency as well as confidence, speaking ability, and increasing vocabulary of different languages.^[5,6]

Interaction with students makes class more interesting and relieves boredom from the topic. Asking question helps to develop problem-solving ability in the students. The questions asked should be both factual and conceptual which test their recall and understanding, respectively.

Allowing questions in the class and clarifying their doubts make the session lively. Rewarding the students motivates them for more participatory learning and builds their confidence. Adding humor of right kind breaks the monotony of the class, lightens the mood, and removes the hesitation of students to interact with the teacher. On the other hand, asking too many questions or indecent humor in the class will disturb the decorum of the class. Widiyatmoko and Nurmasitah in their study focused on interaction which builds the classroom climate during teaching and found that interaction activities were lacking and most of the microteaching was cross-content, i.e., asking question and lecturing.^[7] Izzatin and Widyawati reported findings consistent with our studies as the participants were found to be less skilled in interaction activities such as problem-solving, involving students in the classroom, written language, and rewarding students.^[6]

AV aid used during our microteaching sessions was mostly chalk and board. Teachers were allowed to use other aids for demonstration such as charts, models, vaccine vials, and instruments. Effective use of AV aid is writing on the board in a legible handwriting, writing important points distinctively, and summarizing the contents, which enables the students to grasp the take-home message from the class. This is particularly done to keep the important points in the visual memory of students. Our students were able to use proper AV aid and use it effectively. Logaraj found a low mean score of interaction and learner participation skills in his study while higher scores for skills of lesson planning and using AV aids. This is in accordance with our study.^[2]

Summarizing the topic in the end provides a proper closure to the class and enables the teacher to check if the students have understood the topic. It also provides an immediate feedback to teachers from students. Suggesting additional sources of reading at the end of the class helps students to gain more knowledge about the topic. The most essential part of a teaching session is whether the lesson as a whole was effective. Although PG students could perform well, in the end, only a few lessons as a whole were found to be effective. Anxiety, lack of confidence, poor time management, fear of public speaking, and incomplete preparation are other associated factors which influenced the overall performance. A review article suggests that microteaching helps to practice essential teaching skills safely and effectively.^[8]

Teaching is an art. Every teacher can develop his or her own style of teaching. Thorough knowledge of subject matter builds up confidence, and repeated practice of teaching skills helps in efficient teaching. Developing uniform teaching skills in every teacher is sometimes

perceived as making them robots. However, it has to be realized that having basic skills of pedagogy will help doctors to become better educators. Doctors are teachers for medical students and health educators for the community. Acquiring teaching skills during their postgraduation makes them a competent health educator as well. Gupta *et al.* in their pilot study reported that microteaching was useful in imparting skills of patient care in the health-care workers.^[9]

Microteaching activity demands the involvement of peers and thorough knowledge of subject, due to which it makes the teacher a better learner. It will not only help them to be better teaching faculty in medical schools but also build their confidence to communicate their ideas across effectively in continuing medical education (CME). Muthukrishnan and Mehta in a pilot study reported that not only microteaching is effective in improving teaching skills of resident doctors but also helpful in improving their performance in their own examinations.^[10] Praharaj in his study demonstrated that microteaching can be used in training of PG students as it provided a deeper understanding of the subject.^[11] Imran Mahmud and Rawshon reported in their study that microteaching was effective for both teachers and students for better understanding of subject.^[12] Popovich and Katz found microteaching helpful in developing communication, critical thinking, and problem-solving abilities in students.^[13]

To achieve the desirable teaching skills by the trainee teacher, microteaching has proved to be the most useful method. As it is a long and time-consuming process, it is best practiced at the departmental level for students. A study conducted by Dayanindhi and Hegde found microteaching useful in improvement of teaching behavior of in-service teachers but was reported as time-consuming.^[14]

This study provides the baseline information on basic teaching skill profile of PG students for introspection. Teaching is a complex skill which is learned by learning all the small component skills and coordinating these skills appropriately to create an impact. Our study shows that a group of residents could exhibit certain skills effectively while some were lacking uniformly. Furthermore, in the era of skill-based teaching, teachers should know the teaching techniques well so that they can utilize various methods for teaching different topics.

Although the assessment of teaching skills by peer group may be considered subjective, our study emphasizes the need for systematic learning and acquiring teaching skills in medical science by analyzing each component skill. The small sample size may be considered as a limitation in this study.

Conclusion

Second-year PG students are budding teachers. Their performance with many components was satisfactory, but still, there is a scope for improvement. Internalization of teaching skills will make them a better teacher, a better learner, and a better health educator. Practicing these skills in actual teaching, health education sessions, seminars, CMEs, and conferences will enhance these skills further. Long-term effect of microteaching on teaching behavior of teachers needs further evaluation.

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Conflicts of interest

There are no conflicts of interest.

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