

## A case study exemplifying implementation of the “Socratic method” of teaching in medical education

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### Introduction

Education in any subject means imparting information. However, the exchange of information must be accompanied by understanding and analysis. In today's modern era of globalization and technology, information can be procured by a student with a click of a mouse, however, critical appraisal and application of that information needs assistance by a teacher. Teaching methods need to evolve from lecture-based classes to problem-based scenarios as understanding and application of clinical concepts can form a strong foundation for a future clinician.

The great philosopher Socrates did not believe in a lecture type of teaching but believed in putting up questions to gain better insight into the subject being studied. The basic idea of the Socratic method of teaching was to encourage the participants of a learning group (of pupils, students, or practitioners) to work on a conceptual, ethical, or psychological problem through their own collective intellectual effort, without a textual basis and without substantial help from the teacher whose part it is mainly to enforce the rigid procedural rules designed to ensure a fruitful, diversified, open and consensus-oriented thought process (Birnbache, 1999). In this article, we critically analyze use of the Socratic method of teaching for final year MBBS students in the North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS).

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Our objective was to evaluate the Socratic method of teaching in Medical Education and to increase awareness about of such critical thinking amongst teachers and students in medical education.

### Methodology

The final-year MBBS students of NEIGRIHMS are required to be taught about “Postdated Pregnancy” in a class on obstetrics. A case scenario on postdated pregnancy was given, followed by questions such as how will you confirm the gestational age, what complications can occur to mother and fetus, and how will you monitor and manage this patient. These questions were given 6 days prior to the scheduled class. All students were allowed to consult the books and discuss them among themselves. They were then asked to prepare answers in 2-3 slides in a PowerPoint presentation for presenting in the class.

On the designated day of the class, the teacher randomly asked 4 students to read from these slides. All students gave different answers some correct, some partly correct or not correct. The teacher showed them where they were deficient in their knowledge and helped to improve their understanding and insight into the subject.

Following the class, students were asked to fill out a standardized questionnaire to evaluate the teaching-learning methodology and were evaluated by an independent teacher.

### Results

Student feedback was collected on a proforma with six questions. Four questions collected information regarding the gains made following participation in the class, on a scale of 6 (No



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gain; A little gain; Moderate gain; Good gain; Great gain; Not applicable). Questions 5 and 6 were open-ended inquiry. Almost all students (25/26) responded. Results

obtained on the basis of the answers given by students have been summarized in Table 1. Compilation of remarks for the open-ended questions is given in Table 2.

**Table 1: Analysis of Student Response**

Question	Maximum response	Second most maximum response
1. Connecting key ideas with other knowledge	Moderate gain (56%)	A little gain (24%)
2. Applying what they learned in this class in other situations	Good gain (44%)	A little gain 28 %
3. Using systemic reasoning in their approach to problem	Good gain (40%)	Moderate gain (28%)
4. Using critical approach to information and arguments that they encounter in daily life	A little gain (36%)	Moderate gain (32%)

**Table 4: Compilation of Remarks for Open-Ended Questions**

Question	Compilation of remarks made by students
What will you carry into other classes or other aspects of their life	Practical knowledge, more understanding, active learning through interaction with peers, reasoning, communication skills, teamwork, and interaction between student and teacher and among the students.
Comment on how this class has changed your attitude towards this subject	A real case scenario has made the subject more practical and interesting, subject has become more wholesome

## Discussion

Learning through different ways other than traditional didactic lectures has always been a topic of discussion. Critical thinking, while highly valued as an ability of health care providers, is not encouraged in lecture based teaching. Numerous definitions of critical thinking have been described (Oderda et al., 2010) but the concept is understood to have originated through the teachings of the classic Athenian philosopher Socrates (469-399 BCE). Often regarded as a founder of Western philosophy, Socrates observed that his students often lost their ability to justify their own preconceived thoughts and beliefs after a series of specific, targeted questions. Conversely, through appropriate and repeated questioning, Socrates observed that these same students eventually developed self-generated knowledge and the ability to regulate their own thoughts (Paul et al., 1997). Thus, the Socratic method relies on getting answers from the students rather than telling them the

answers directly (Khan, 2021). This can enable a student to have more clarity in concepts, making them better clinicians. This method of teaching needs to be encouraged in the Asian context where teaching is dominated by a teacher-centric method where concepts such as flexibility, problem-solving, critical thinking, and independent learning are less recognized (Zhenhui, 2001).

In our study, after a class based on the Socratic method of teaching, 26 students were given the proforma among which 25 students responded. Based on the questionnaires given to students it was found, 56% of students reported a moderate gain on connecting key ideas with other knowledge, 44% of students reported a good gain on applying what they learned in the class in other situations. On using systematic reasoning in their approach to problems, the maximum number of students (40%) responded with good gains. Overall, students preferred this method of teaching as it was interactive and engaging. Additionally, this method of teaching

improved systematic reasoning skills in the majority of students. The feedback received as per the questionnaire given to the students was very encouraging to the teacher to include “Socratic method of teaching” in future classes.

In a 2011 study by Zou *et al.*, radiology students were evaluated regarding their teaching preference via a 90-minute radiology conference where the leader interchangeably taught using both didactic and Socratic methods. After completion of the conference, the students were given a survey the results of which showed the vast majority indicated they preferred to learn using the Socratic method as opposed to the didactic approach (93.3 vs 6.7%,  $p < 0.001$ ) (Zou *et al.*, 2011).

Similarly, Muneer *et al.*, (2021), conducted a study at two educational public and private sector institutes in Karachi to provide laboratory biosafety and biosecurity-related education by implementing the Socratic method and evaluating knowledge gain in students. Important concepts were delivered in an interactive engagement format to ensure substantive understanding. Pre- and post-training scores were computed, and a paired t-test was used to assess knowledge gain. The participants lacked a baseline knowledge of laboratory biosafety. A statistically significant increase (14% to 84%) in knowledge was reported among students, with a p-value of  $< 0.001$ . Scores improved in the post-test assessment, where 87% were high performers, and only 1% were low-performing students. The difference between the pre-and post-test mean scores was indicative of a substantial 70% improvement in education. A high level of satisfaction with the Socratic method of teaching style was noted.

A quasi-experimental study was conducted on 40 nursing students where the course content was divided into three sections and each section was taught using a different method (traditional lecture, Socratic method, and student lecture). The mean exam score of the students was 12.62 for traditional lectures, 14.80 for Socratic Method, and 15.10 for the students' lectures. The student's learning satisfaction was higher at the end of the

Socratic Method; however, traditional lectures induced the least anxiety while the Socratic Method induced the most. The study concluded that the Socratic Method and students' lectures were more preferred by the students. It also stated that the level of the student's anxiety can be diminished through more preparation (Adib-Hajbaghery *et al.*, 2011)

As the effectiveness of traditional teaching methods such as slides and textbooks is challenged, the Socratic Method is an engaging method of teaching where clarity in thought is encouraged. Although posing a series of questions may at first seem easier than preparing a didactic lecture, in reality, the Socratic method of teaching requires much more preparation. The teacher must make an analytical yet simple set of questions to direct the students to the desired sense of closure and resolution at the end of the educational experience (Schoeman, 1997). Such targeted and directed questioning may pose more challenges to the educator than the student. It is also important to give the students a comfortable environment for the Socratic method of teaching where the learner can say that the answer is not known without fear of consequences.

## Conclusion

Our study appraises the Socratic method of teaching as it enhances insight and understanding of a student on a particular subject. Critical analysis of given information is necessary to prime the foundation of a future clinician which is encouraged by this form of teaching. Publicly speaking on the questions asked can also help a student overcome the fear of public oration. The Socratic method of teaching must be encouraged in medical education, especially in the Asian context where didactic lectures still form a major method of teaching.

**Conflicts of Interest:** None

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