



## Evaluation of Socrates Method of Teaching in Medical Education- A case Study Exemplifying Implementation Amongst Medical Students at Tertiary Care Teaching Institute in the Northeastern Region of India

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### Abstract

**Background:** Socrates method relies on getting the answers from the students rather than telling them the answers directly. This method of teaching needs to be encouraged in 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.

**Method:** Final year MBBS students of NEIGRIHMS were given a case scenario on a topic of obstetrics 5 days before scheduled lecture. Following Socrates method of teaching, on the designated day of lecture, students were randomly asked questions and mistakes in understanding were identified and solved by the teacher. After the lecture, students were given a questionnaire to analyse their understanding on the subject and their satisfaction regarding the new method of teaching. Overall, students preferred Socrates method of teaching as it was interactive and engaging.

**Conclusion:** Our study appraises Socrates method of teaching as it enhances insight and understanding of a student. Critical analysis of given information is necessary to prime the foundation of a future clinician which is encouraged by this form of teaching. Also, public speaking on the questions asked can help a student to overcome fear of public oration.

Socrates method of teaching must be encouraged in medical education especially in Asian context where didactic lectures still form a major method of teaching.

**Keywords:** Medical Education; Critical Analysis; Socrates Method; Teaching Method; Learning Satisfaction

## Introduction

Education in any subject means imparting information. However, this 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 to be assisted 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 under Socrates 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 by 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 [1]. In this article, we thereby critically analyze Socrates method of teaching used for final year MBBS students in institute of North Eastern Indira Gandhi Regional institute of health and medical sciences (NEIGRIHMS), so that there is an increased awareness about such critical thinking amongst teachers and students in medical education.

## Objective

To evaluate the Socrates method of teaching in Medical Education

## Methodology

The final year students of MBBS of NEIGRIHMS were supposed to be taught about "Postdated pregnancy" in a class of obstetrics. A case scenario on postdated pregnancy was given, followed by questions as how will you confirm the gestational age, what complications can occur to mother and fetus, 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 among themselves. They were then asked to prepare answers in 2-3 slides in a power-point presentation for presenting in the class.

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

Following the class, students were asked to fill a standardized questionnaire for evaluating the teaching learning methodology.

The proforma (Table 1) included the following questions.

As a result of your work in this class, What GAINS did you make in integrating the following?	No gain	A little gain	Moderate gain	Good gain	Great gain	Not applicable
Connecting key class ideas with other knowledge						
Applying What I learned in this class in other situations						
Using systematic reasoning in my approach to problems						
Using critical approach to information and arguments that I encounter in daily life						
What will you CARRY WITH YOU into other classes or other aspects of your life						
Please comment on how this class has CHANGED YOUR ATTITUDE towards this subject						

Table 1

**Results**

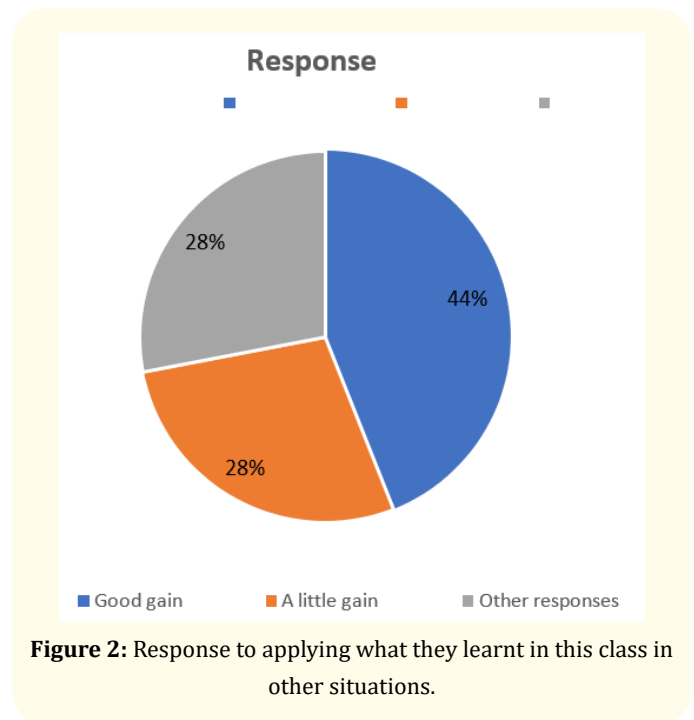
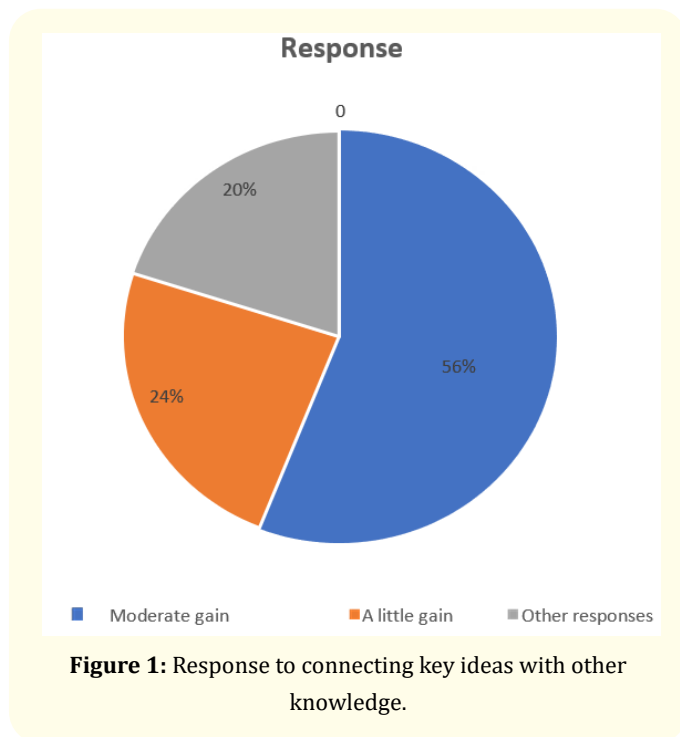
Results obtained on the basis of the answers given by students have been summarized in the tables and charts below.

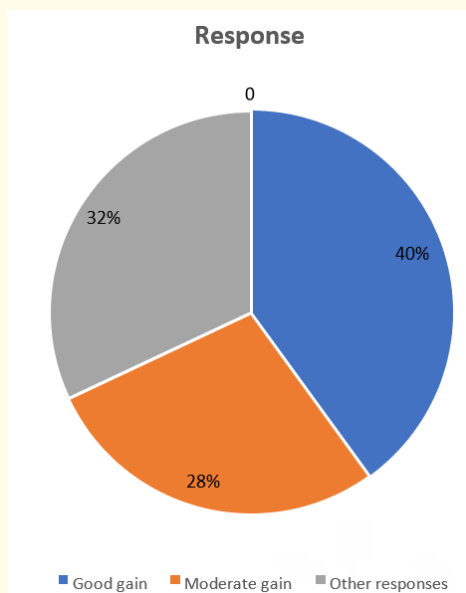
Topic- post-dated pregnancy	
Number of the students who were given the proforma	26
Number of students who responded	25

**Table 2:** Participation.

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

**Table 3:** Analysis of each question.

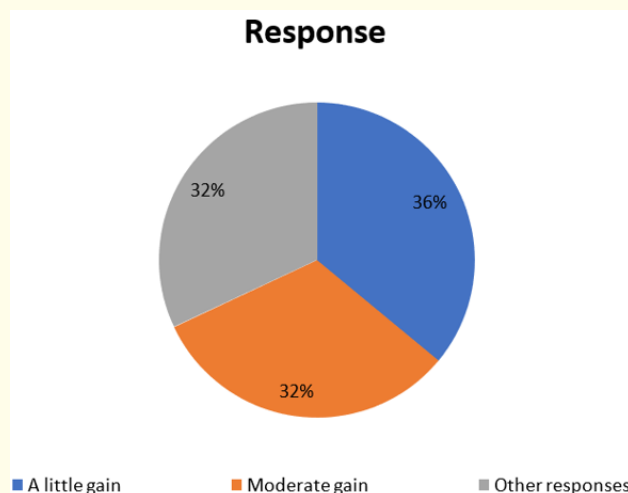




**Figure 3:** Response to using systematic reasoning in their approach to a problem.

### Discussion

Learning through different ways other than traditional didactic lecture has always been a topic of discussion. Critical thinking, while highly valued as an ability of health care providers, is not encouraged in lecture form of teaching. Numerous definitions of critical thinking have been described [2] 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 [3]. Thus, Socratic method relies on getting the answers from the students rather than telling them the answers directly [4]. This can enable a student to have more clarity in concepts, making them better clinicians. This method of teaching needs to be encouraged in 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 [5].



**Figure 4:** Response to using critical approach to information and arguments that they encounter in daily life.

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

**Table 4:** Compilation of remarks for open ended questions discussion.

In our study, after a class based on Socrates 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% students got moderate gain on connecting key ideas with other knowledge, 44% students got good gain on applying what they learned in the class in other situations. On using systematic reasoning in their approach to problems, maximum students (40%) responded with good gain. Overall, students preferred this method of teaching as it was interactive and engaging. Also, this method of teaching improved systematic reasoning skills in majority of students.

In a 2011 study by Zou., *et al*, radiology students were evaluated regarding their teaching preference via a 90 min 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%,  $p < 0.001$ ) [6].

Similarly, Muneer., *et al* in 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. High level of satisfaction with the Socratic method of teaching style was noted [7].

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

The study concluded that Socratic Method and students' lectures are more preferred by the students. It also stated that level of the students' anxiety can be diminished through more preparations [8].

As the effectiveness of traditional teaching methods such as slides and textbook is challenged, Socratic method is an engaging method of teaching where clarity in thoughts is encouraged. Although posing a series of questions may at first seem easier than preparing a didactic lecture, but in reality, Socrates method of teaching requires much more preparation. The teacher must make analytical yet simple set of questions to direct the students to the desired sense of closure and resolution at the end of educational experience [9]. Such targeted and directed questioning may

pose more challenge to the educator than the student. Also, it is important to give the students a comfortable environment for Socrates method of teaching where the learner can say that the answer is not known without fear of consequences.

## Conclusion

Our study appraises Socrates 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. Also, publicly speaking on the questions asked can help a student to overcome fear of public oration. Socrates method of teaching must be encouraged in medical education especially in Asian context where didactic lectures still form a major method of teaching.

## Conflict of Interest

None.

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