On Techniques of Making Class Room Teaching in Science Effective.

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Abstract

In this research paper we have tried to give some useful teaching tips for new Science teachers. Teaching Science at Graduate and Post Graduate is a challenging job. In this article, we have considered any conventional Science college in India and problems that Science teachers face. Also NAAC accreditation is a must for every conventional college for their survival, in India. According to NAAC guidelines there is a great importance to Teaching and Learning activity. We have tried to encompass all the aspects that a new Science teacher should consider.

These are some famous quotes about ‘Teacher’ and very precious job that he does ‘Teaching’.

- A teacher is one who makes himself progressively unnecessary…Thomas Carruthers
- Teaching should be full of ideas instead of stuffed with facts…Author Unknown
- The task of the excellent teacher is to stimulate "apparently ordinary" people to unusual effort. The tough problem is not in identifying winners: it is in making winners out of ordinary people…K. Patricia Cross
- The best teachers teach from the heart, not from the book….Author Unknown

So everyone, who has accepted a job of teaching must try to be the best teacher. Obviously ‘Teaching’ is an art and it cannot be mastered in totality but definitely every teacher can try to become the best teacher. We discuss some points which will help every teacher to develop in that direction.

We will start from how the teacher should enter in the class. This is very important. The teacher should be confident, pleasant and acceptable to the students while entering in the class.
You should be confident while entering in the class. Generally the number of students in first year classes is about 100 or sometimes more. At the time of entry in the class if you are not found confident enough by the students then your impression comes down. You should be pleasant and acceptable.

What should be the dress code of a teacher? We will say the dress that the teacher has must be moderate and acceptable.

You are going to stand in front of a class as a teacher and you are roll model to many students. So you must be aware of your dress code. You should take care that it should be moderate and acceptable.

Lecture must be fully prepared. Any questions, if asked by students, teacher must be able to answer. And suppose we are not able to answer instantly, then that also we should accept honestly and assure the student that you will go through the available material and answer next time. But at this point teacher should go through the references and answer the student when he enters the class again. This shows the sincerity of a teacher. Students always appreciate sincere teachers.

Very important point that we will like to discuss is about Student Teacher Relations.

Due to craze, lot of students after their HSC go to engineering and medical courses, or other professional courses. There are very less number of students thinking of Basic Sciences or in general core subjects. The stuff that we get at graduation level now a days consists of students having marks between the range 40 % to 80%. In this group, the number of students having marks more than 75% at HSC level is very small. In many colleges there is problem of surplus teachers because of very poor admissions. With this scenario, every teacher should try to maintain the number of students. One way to achieve it is by keeping healthy relations with students. Every teacher must note one thing that our educational system is student centered. We must give at most importance to students and their well being. Following points should be noted.

1. Students are our friends.
2. Do not trouble students: Generally students do not trouble teachers. But when they find teacher’s behavior abnormal then they try to trouble.
3. The students respect the teacher when their feelings are respected by the teacher.
4. Teachers are idols of students so teacher’s behavior must be proper.
5. Keep a required distance: Teachers should be able to find golden ratio of this distance. Students should not feel any burden to contact the teacher and at the same time they must keep the required distance.

Importance of Discipline can not be ignored. It is at most important factor.

Discipline in the classroom is very very important for proper delivery of lecture. We will suggest following points.

1. After teacher enters in the classroom, no one will enter. Sometimes some genuine difficulty makes it impossible for students to come in time. At this moment we should allow. We can sense student’s nature and sincerity.
2. Attendance in the class must be made compulsory. Science subjects vertically
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grow. If a particular student is not present for first few lectures then he/she will be unable to understand the topics. This point must be emphasized by the teacher.

3. Students must stand up in the class while answering. This also adds value in the students about respecting elders.

4. All the class must welcome the teacher by standing. This is a healthy practice. When students stand and greet the teacher, it means students are respecting the teacher.

Develop good relations with students and parents. When parents are called then we must also tell them what is good in that student. It is only to make aware of present status of the student. Some parents are unaware of progress status of a student. We should make it a point to let the progress status reach the parents.

Now coming to main point and it is how to teach in the class. There are many things that a new teacher can do to make his/her lecture effective.

a. Reference to previous lecture (At least five minutes). It creates link for the current lecture. Teacher must spend at least five minutes explaining the students, what was discussed in the previous lecture. The students who were absent at the time of previous lecture get benefitted by this method. Ideally students should come prepared with whatever was discussed in previous lecture but rarely this happens. When the topic that was discussed previously is discussed, then all such students get advantage.

Don't assume that just because you said it, they got it. And don't assume that just because you said it five minutes ago, they remember it now.

In other words, don't be afraid to be redundant. That doesn't mean repeating the same material over and over... but it often takes between 3 to 5 repeated exposures to something before the brain will remember it, so take the extra time to reinforce earlier topics in the context of the new things you're talking about.

b. Teach slowly: Explain every topic properly. Audience in front of us is heterogeneous and we are there for every student. We are not teaching only good students. If we continue the lecture after getting responses of one or two good students then it is never proper. Teacher must make it a point that he/she gets positive response from most of the students in the class. I will say when 80% students in the class understand what you are teaching then it is good teaching. When you teach slowly then all the students understand what you are teaching.

c. Stand and teach: It shows your interest. Generally Science subjects can not be taught by sitting on the chair. But still I have found some teachers doing that. This is totally a wrong way.

d. Move in the class room: It helps to keep students alert. Generally in big classes, back benchers are not involved in lectures and they play some mischief. This type of behavior disturbs the teacher. When we move in the
class while delivering the lecture then all these things can be kept in control.

e. Your voice must be adjustable to strength of the class. Some teachers speak unnecessarily loudly. Your voice should be according to the number of students in the class.

f. Black board writing is most crucial thing. Develop it by practice. Good and presentable handwriting is essential. Divide blackboard into two parts vertically and use it. Take care that you are not hiding blackboard while writing. Do not erase the things immediately. Take care that every student gets what you have written.

Teachers must make sure that what they write on the board is legible to students, that written words and numbers are large enough and high enough on the board for students in the back of the classroom to read. All of these factors tie into a teacher's blackboard writing skills and can impact the students' interest in the material being presented. If students are unable to read the teacher's handwriting or cannot see the information because it is not large or clear enough, students may become frustrated and lose interest and motivation. Excellent black board writing adds to your popularity as a teacher.

g. Quality of lecture should be adjusted according to audience present.

The contents of your lecture as well as the presentation of the lecture should be according to the IQ level of students. We are not there to show how much knowledge you have, how fluently English you can speak. We are there to teach our students. So simple English, if required regional language, simple real life examples will make the lecture interesting.

h. Lecture should be paced properly. You should be able to pace your lecture according to the time available. This can be achieved by asking questions, giving more examples etc.

i. Keep students alert by asking questions on the topics covered.

j. To get to know the understanding of the concept you taught, home work should be given to students .and evaluation should be done on very next day so that proper steps can be taken.

k. Lecture should contain something that will attract students. Give some additional information about the topic that you are going to teach. This is every essential. Students appreciate when you give relevant information outside text. It also speaks about your knowledge about the topic you are teaching. In this regard it will be a good practice if we give them references of websites where they will be able to find references.

l. Large derivations( involved in Science and Mathematics) should be explained again and again. In the first go, all the students in the class do not understand all the things. It is always better to explain the whole thing again. It also allows to pace your lecture.

m. Use of OHP or LCD and pointer will increase grace of the lecture. Using audio visual aids is always appreciable. If we prepare power point shows of some of our lectures then more grace can be imparted to your lectures.
n. Teacher should play the role of motivator. Teacher should always encourage the students, motivate the students. There are different ways in which teacher can motivate the students. We suggest following ways in which this motivation can be given.

Praise Students in Ways Big and Small
Recognize work in class, display good work in the classroom and send positive notes home to parents, hold weekly awards in your classroom, organize academic pep rallies to honor the honor roll, and even sponsor a Teacher Shoutout section in the student newspaper to acknowledge student's hard work.

Expect Excellence
Set high, yet realistic expectations. Make sure to voice those expectations. Set short terms goals and celebrate when they are achieved.

Spread Excitement Like a Virus
Show your enthusiasm in the subject & use appropriate, concrete and understandable examples to help students grasp it. For example, I love alliteration. Before I explain the concept to students, we “improv” subjects they're interested in. After learning about alliteration, they brainstorm alliterative titles for their chosen subjects.

Mix It Up
It’s a classic concept and the basis for differentiated instruction, but it needs to be said: using a variety of teaching methods caters to all types of learners. By doing this in an orderly way, you can also maintain order in your classroom. In a generic example for daily instruction, journal for 10 minutes to open class; introduce the concept for 15 minutes; discuss/group work for 15 minutes; Q&A or guided work time to finish the class. This way, students know what to expect everyday and have less opportunity to act up.

Reward Positive Behavior Outside the Classroom
Tie service opportunities, cultural experiences, extracurricular activities into the curriculum for extra credit or as alternative options on assignments. Have students doing Habitat for Humanity calculate the angle of the freshly cut board, count the nails in each stair and multiply the number of stairs to find the total number of nails; write an essay about their experience volunteering or their how they felt during basketball tryouts; or any other creative option they can come up with.

Use of Internet Technology must be done in teaching. EBooks, Power point shows, Video lectures are available on Internet and these resources must be deliberately used in teaching. Teacher should promote the lot of on line free courses offered by various Universities all over the world. We can quote one Website coursera.org which offers hundreds of free online courses of short duration in distinct subjects. Due to such courses students will get excellent exposure to outside world
and it will be a value addition to their knowledge.

o. Keep students as your center point, and always give importance to how many students follow what you teach. This can be immediately seen on students’ faces. It can be confirmed by asking some questions. Good teacher always comes to know whether whatever is taught is followed or not because when the things are understood then it is immediately reflected on their faces.

Leave your ego at the door. Your learners do NOT care about how much you know, how smart you are, or what you've done, how many research papers are published by you etc. Aside from a baseline level of credibility, it’s far more important that you care about how smart THEY are, what THEY know (and will know, thanks to this learning experience) and what THEY have done.

p. Provide proper notes up to undergraduate level. At PG level students should be encouraged for self study, preparing their own notes etc. Those who are teaching both UG and PG they must take cognizance of this fact. At the last year of undergraduate or at post graduate level we can develop habit of “Thinking” among students. Every teacher should do deliberate efforts in this direction.

q. Any definition or concept when you explain, immediately support it with proper examples. The teacher must be equipped with proper examples and counter examples of the concept that is being taught. It makes students understand the basic idea. I have found that students always appreciate real life examples. Such examples make their ideas clear. A good teacher should make a list of such examples and can use those while teaching.

r. If you make any mistake while teaching and if students point out it then it should not be a problem. Accept your error. Thank the student. Improve your error. At the same time appreciate the student.

Good things from the students must be appreciated and they should be encouraged. It improves our image among students. If you are noticing improper things from students and want to scold them then at the same time appreciate good qualities of the students. Students Birthdays may be celebrated to create homely atmosphere in the class, that will definitely boost student-teacher relationship. Habit of writing GOOD THOUGHTS on the board may be encouraged to inculcate values among students. Giving a topic from their syllabus for a group discussion can be a good idea. By this way teacher can check their understanding level. Obviously if the number of students is not much then such exercises can be thought of. Make some timely jokes in your lecture to make it interesting and that also energize your Students. Reference of some historical facts, information about scientist, background about the concept, you are teaching may be given to the students to make it interesting.

We are confident that if a new science teacher gives a thought to above mentioned points then his/her lecture will be very successful. And we are sure that when a lecture becomes successful then the teacher enjoys his/her job. Teacher can think of some innovative ideas when he/she is accepted by the students. Knowledge is surely one
criteria by which students judge their teacher but along with that, all the above mentioned points will help the teacher to improve his/her performance.

References:

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