

Teaching Physics, Innovative Methods and Futuristic Thinking



Physics

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ABSTRACT

Present scenario shows that students are diverting from Physics choosing it as their principle subject in Universities, Study of Physics are necessary because it is not only the fundamental science subject but also the base of all subjects. While thinking about innovative methods in teaching Physics, Present drawbacks of teaching system are taken to be in account. Thus we should mould our strategies in appropriate orientations. Evaluation and assessment methods should be reconsidered. In addition to develop some practical aspects in terms of infrastructure, teaching should be made creative, style of presentation should be unique with free of discrimination on the basis of locality, sex and students are to be motivated to think originally and act innovatively. This article gives some suggestions regarding the new trends to be taken into account so as to get the knowledge transparent and stimulating students in their study

Introduction:

Common observation of enrolments of students at T. Y. B. Sc Physics at Colleges, M. Sc Physics at affiliated Colleges as well as in University Departments even for M. Phil Degree at Universities shows declining strength of students for the choice of subject Physics as compared to other subjects. It is observed that students are interested to give priority to professional, technological and I. T. courses even after getting graduation in Physics. Very few students offers subject Physics for their Post graduation degree but they have some fear in insecurity with respect to placement, due to which they will not be confident about their future, this results in securing low grades in examination. In such situation they can regain the confidence in themselves and to get some creative work in Physics with well defined aims and objectives (1).

While thinking about innovations in Physics teaching we have to concentrate on three aspects,

1. Present scenario
2. Necessity of innovations
3. Proposed innovations
4. Media involve (e-learning) interactive learning
5. Educational leadership

Present Scenario :

At present, most of the students who take admission in colleges located in city province are seeking for part time job or side business to earn some money or engaged in some part time courses while studying. They believe that they can get appropriate success in examination by studying from notes and digests. Second fact is that where to get the admission (viz. course, faculty, etc.) is decided by either their parents or mostly they take admission where their friends are admitted or sometimes they are misguided by some persons even in teaching fields. While considering the scenario in the last decade, Report of Bhide committee for Indian Academy of Science said clearly that "Unless this downward trend in science education is removed immediately, the country will head for disaster"(2).

Necessity of Innovations:

In order to enhance the habit of reading books and reference books amongst the students. dictations of notes should be stopped at U.G. level, this habit gives digested study material to the students along with plenty of time to do the anti-educational activities

Nature of question paper as well as evaluation method is stereotype, thus students select some model questions, cramp them down and get the success in examination but loose the joy of education and creativity. This affects regularity in attendance in class.

The interaction between teacher and students in very less. There is very small emphasis on practical work in some Universities, students are neither careful about their laboratory Journals nor the examiners paying much more attention about experiment performed in examination at the time of assessment of practical examination. Therefore intuitions should cultivate social values along with scientific and academic temper (3).

In the era of communication, students have abundant communication devices like mobile phones, internet and so on, they feel crazy to use these devices rather important than study

In some institutions, the educational environment is so dismal that it neither cultivates social values nor it helps to develop scientific and academic temper. in such institutions everything seems to be disorder, even teachers in such institutions do not thinking about productivity and cultivation of knowledge in students.

C. Proposed Innovations:

Our teaching method should be flexible enough to accommodate aspirations for all concerning groups interested in learning physics, because impression of Physics in community and students is that it is boar, dry, difficult and mathematical based subject having abstract phenomena (4). Phobia of mathematics creates fear about Physics in minds of students.

In practical work, there should be compulsory part of project, which imparts history of science and bibliography of scientists (5). Whenever possible the demonstrations are to be given by teacher while teaching theoretical aspects.

To check the knowledge of students, some M. C. Qs and short answer questions are to be drawn in question paper. One more observation indicates that Semester pattern is more beneficial for students as compared to annual pattern so as to get good and creative success(6).

General atmosphere of the Physics department should be learner centered, inspiring and stimulating for creativity and encourages the spirit of innovations (7).Because if concepts in Physics develops, total science faculty will develop as Physics is the basis of all sciences.

To develop such atmosphere, we have to pay absolute attention in developing infrastructure, Search the students by operating some careful observations to nurture the scientific curiosity, creative talent amongst students. Board of Studies of each University has to develop curricula in improved manner of modern development (8) giving scope to innovations in teaching.

Some of the teachers feel that the students from urban area are

more aware than rural students but observed fact is that locality as well as sex do not play significant role in developing scientific creative ability among students. Thus equal concentration should be given to rural, urban, male and female students. Teaching must be creative in classroom; style of presentation along with demonstrations would be unique (9).

While considering this background, there should be environment in educational campus like Science Park, Energy Park or Exploratory where students can observe, check and operate fundamentals of Physics and become a part of such environment (10). Such aware students are then exposed to some seminars, educational films and group discussions (11) and some eminent personalities in the field of Physics.

The students following in above manner are then motivated for thinking (12) and then encourage preparing working models, charts, projects etc., So as to check their knowledge, curiosity and innovativeness.

By this way students introduced the way to reveal the secrets of Physics. These activities trains the students not only to observe keenly and carefully, excites their curiosity, communicates sense of excitement on doing study of Physics, but also nurtures and nourishes their innovativeness and makes learning joyous(13). The demonstration orientated teaching is important because the concept and mathematical building can be seen on blackboard, while physical building and results through watching the demo results in absolute understanding. This type of Physics commune will nourishes the grass roots of sensible thinking.

Thus in order to achieve innovative approach we have to develop scientific culture and have to adopt it in practical life. This will not only result in giving opportunity to talent, creativity and innovativeness. But also gives a joy of advancement in Physics.

Media involve (e-learning) interactive learning:

Results shows that, it is very excellent decision to involve electronic media, aids and devices in teaching learning environment and it is not hypotheses. This is proved by several experiments, which are published in several reputed research journals, magazines and books related to education. Media involved interactive learning often named as "e-learning" system. This system is useful not only to the professors, lecturers and instructors but also equally useful for 3-D graphics, animation, sounds, speeches and virtual reality like high quality sources to give close understanding of students with the subject. Especially for the subject which is somewhat difficult to understand like Physics and Biology. To

deliver talks and lectures simultaneously along with blackboard getting help with computers and power point presentations is "student friendly" teaching approach and this must be adopted so as to make Physics teaching popular and interesting in the point of view of students.

Educational leadership:

One of the most important tool to motivate the students to select subject Physics as career option is educational leadership. The basic motto of educational leadership is to develop educational leaders in all disciplines. The educational leaders who will think with seriousness in strategic planning and decision making to execute their concern subjects and forecast for its further development only become successful education leaders. Hence we all must have to develop these personal traits within ourselves to protect and improve our subjects with innovative ideas and strategic planning. These initiatives motivate us to motivate students to select appropriate subject as career option which is best fitted to the students.

Conclusion:

It is determined after present education system analysis that maximum pitfalls exist because of our side, and we need to improve ourselves to modify current education system up to desired benchmark point. We have to take initiative to create awareness, opportunities in subject Physics to develop student interest in it, which generate when they are self motivated to choose subject Physics. This could be accomplished by using media involve interactive teaching - learning student friendly environment using educational leadership.

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