PERCEPTION OF SCIENCE AND ENGINEERING COLLEGE STUDENTS OF THE TEACHING EFFECTIVENESS OF THEIR TEACHERS AS INFERRED FROM THEIR TEACHERS' CLASSROOM PROCEDURES

Vasundhara Padmanabhan

University of Mumbai, India

INTRODUCTION

Globalization, liberalization & privatization are driving higher education to undergo vast changes in respect of objectives, contents and methods. The world is entering into an Information Age and developments in communication, information and technology are opening up new and cost-effective approaches to teaching learning process.

India has already decided to launch "Operation Knowledge" as a part of the Information Technology Action Plan. This will mean not only continuous expansion and improvement of the facilities of modern equipment but also a gigantic task to redesign teaching-learning materials in every discipline.- Indian National Commission for Cooperation with UNESCO (1998)

The University Grants Commission (1998) has appropriately stated,…. *a whole range of skills will be demanded from the graduates of humanities, social sciences, natural sciences and commerce, as well as from the various professional disciplines such as agriculture, law, management, medicine or engineering…. Rather, it requires a major investment to make human resource productive by coupling the older general disciplines of humanities, social sciences, natural sciences and commerce to their applications in the new economy and having adequate field based experience to enhance knowledge with skills and develop appropriate attitudes….The shift can occur only through a systemic approach to change as also the development of its human resource, and networking the system through information and communication technology.*

Murli Manohar Joshi (1998) stresses on overhauling the system of instruction in higher education:

….Social changes and transformation can only be brought about by people and not through technology alone which itself is a product of human endeavour……Methods of higher education also have to be appropriate to the needs of learning to learn, learning to do, learning to be and learning to become. Student-centred education and employment of dynamic methods of education will require from teachers new attitudes and new skills. Methods of teaching through lectures will have to be subordinated to the methods that will lay stress on self-study, personal consultation between teachers and pupils, and dynamic sessions of seminars and workshops.

QUALITY IMPROVEMENT

A number of measures have been taken for quality improvement of higher education.. In order to determine and maintain standards in universities, the University Grants Commission (UGC) was established in 1952 and was constituted as a statutory body under the Act of Parliament in 1956. There is also an All-India Council of Technical Education (AICTE), the major function of which is the planned and coordinated development of technical education in the country. The National Council for Teacher Education (NCTE) is designed to ensure planned and coordinated development of teacher education and determination and maintenance of its standards. The latest endeavor is the introduction of the system of accreditation of the higher education institutions by National Assessment and Accreditation Council (NAAC) and by AICTE. There is a system of National Eligibility Test/State Level Eligibility Test for selection of teachers in the system. The scheme of Academic Staff Colleges was started in 1986-87, under which 45 such colleges have been set up. These colleges conduct orientation programs for training new teachers and also refresher courses in various disciplines for in-service teachers to enable them to update their knowledge. Indira Gandhi National Open University (IGNOU) offers Post Graduate Diploma in Higher Education to equip teachers of higher education with knowledge of pedagogy, and issues and concerns of higher education.

Despite all these efforts, the teaching community at the higher education level seems to be unresponsive to the shift in emphasis from objectivism to constructivism and cooperative learning. It is heartening to note that quite a few teachers have started referring to websites and making power point presentations to enhance the effectiveness of their instruction. But we are still continuing the British legacy, governed by objectivist perspective of learning and 'chalk and talk method' of teaching. Though innovative practices are being talked about extensively, they are but slight deviations from the traditional lecture and teacher dominated methods and do not make students responsible for their own learning.

Mushrooming of coaching classes, especially for science and engineering courses, clearly indicate that teaching in higher education institutions leaves much to be desired. The researcher decided to find out by studying the opinion of the students of science and engineering colleges about the teaching effectiveness of their teachers on the basis of their class room procedures.

OBJECTIVES AND SIGNIFICANCE OF THE STUDY

Objectives of the Study

The study sought to:

Analyse the teacher behavior of science and engineering teachers in the class room with reference to curriculum transaction and evaluation,

Analyse the perceptions of the science and engineering college students of the teaching effectiveness of their teachers,

Examine the science and engineering college students' concept of an ideal teacher.

Significance of the Study

The study will throw light on the factors affecting the teaching effectiveness of the science and engineering college teachers and the expectations of the students from their teachers regarding curriculum transaction and evaluation. This will be an eye opener for all the stake holders in higher education, which, in turn, may lead to practicable solutions in the form of policies and practices.

RESEARCH DESIGN AND PROCEDURE

The study was a descriptive survey seeking to examine the perceptions of the science and engineering college students of their teachers' teaching effectiveness and the basis for such an inference.

Instrument

The tool was a rating scale-cum-check list which expected the students to rate their teachers' teaching on a five point rating scale (*Very good, Good, Average, Below Average and Poor).* If the rating was average or below average, the tool expected the students to make value judgments by checking against the causal factors like

Lack of updated subject knowledge

Not committed to the profession

No concern for students' understanding and so on.

Then the students were asked to justify their opinions by checking against a list of twenty teaching behaviors of the teachers which included both desirable and undesirable behaviors. A few examples of the statements are given below:

Just goes on lecturing.

Gives examples related to daily life.

Shows ppt slides/pictures/experiments.

Gives websites and reference books, etc.

Conducts periodical/surprise test

In the end, the students had to give their concept of an ideal teacher by completing the sentence - *According to me, an ideal teacher should……..*

Participants

Participants for the study consisted of a random, incidental, heterogeneous sample of science and engineering students who were allotted K J Somaiya College as the center for writing their terminal examination in the month of April and May 2006. The sample consisted of 278 students - 98 B.Sc (*IT*) students, 91 Engineering students (were drawn from all the four years and from different branches:21 *Electrical*, 26 *Electronics and Telecommunications*, 18 *Computer Science* and 26 *IT* students) and 89 B.Sc. (*Chemistry*) students. Each student was taught by four to five teachers.

Data Collection

The author requested the lecturers of the sister institutions to get the checklist cum rating scale filled by the students appearing for the terminal examinations on the last day of their examinations. Anonymity was assured by asking them not to write their names and the names of their teachers on the tool. In this way, the data was collected over a period of three weeks.

Percentage analysis was done to find out the students' perception of the teaching effectiveness of their teachers. Responses of the students to the open ended statement regarding the qualities of an ideal teacher were classified under different heads in order to get the profile of an ideal teacher.

Findings

The following table presents the percentage distribution of the ratings of the students of their teachers' teaching.

Students	***N*****	**Very Good**	**Good**	**Av**	**Below Av**	**Poor**
B.Sc. (IT) ***(n:98)***	*390*	28.7	37.17	19.48	8.97	5.64
B.E. ***(n:91)****(Comp,Electrx, Telecomand Mech)	*456*	32.89	44.73	16.22	3.5	2.63
B.Sc. ***(n:89)***(Science)	*443*	36.79	35.44	20.54	4.97	2.25

Table 1: Percentage Distribution of the Ratings of the students of their Teachers' Teaching

*Computer Science, Electronics & Tele communications, and Mechanical Engineering

** Each student rated on an average of 4-5 teachers teaching different subjects.

In all, about 28% to 36% of the teachers were rated *Very Good,* 35% to 44% *Good,* 16% to 21% *Average,* 3.5% to 9% *Below Average and* 2% to 6% *Poor.*

The following were the desirable behaviors as perceived by the students which made the teachers' teaching effective.

Desirable Teaching Behaviors Exhibited by the Teachers	B.Sc. (Science) N:390	B.Sc(IT) N:456	Engineering(Comp.IT,Eltx, Mech) N:443

Asks questions in between to confirm our understanding	56.12	56.04	63.27
Gives examples related do daily life	33.67	56.4	48.98
Shows ppt / CD s / pictures / slides	37.75	51.64	40.82
Gives websites / reference books	24.48	30.76	42.86
Encourages students to voice their doubts	44.89	41.75	23.47
Gives satisfactory explanation to clear doubts	45.91	52.74	26.53
Shows keen interest in knowing how much students have understood	37.76	48.35	27.55
Inspires students to attend seminars, workshops, etc.	43.87	46.15	37.76
Conducts periodical / surprise tests	38.77	40.65	38.78
Makes teaching interesting by using different methods	31.63	19.78	21.43
Inspires students to read more about the subject	35.71	25.27	28.57
Maintains continuity between the topics taught so as to give a holistic view of the topic taught	15.30	31.86	14.29
Teaches in a very loud, clear voice	42.85	50.54	46.94
Helps us to discover knowledge on our own	25.51	21.37	16.32

Table 2: Percentage of Teachers Exhibiting Desirable Teaching Behaviors

It is interesting to note that the percentage of teachers exhibiting the above desirable behaviors ranges from 14.29% to 52.74% with the exception of the first two which indicate that more than half of the teachers ask questions to confirm students' understanding and about one-third to half of the teachers illustrate with examples related to daily life. Only 16.32% to 25.51% of the teachers inspire students to learn on their own.

However, the students who rated their teachers' teaching as average, below average or poor gave the following reasons for their ineffectiveness:

Perceived Causes of Teachers' Teaching Ineffectiveness	**B.Sc***(Science)* ***N:390***	**B.Sc** *(IT)* ***N:456***	**Engineering***(Comp. IT,Eltx,Mech)* ***N:443***
Lack of updating of subject knowledge	21.50	35.71	20.87
No concern for students' understanding	31.60	34.69	39.56
Not committed to the profession	9.18	22.45	8.79
Not interested in knowing more about the subject	8.6	15.30	8.79
Takes teaching as a routine matter	33.67	30.61	38.46
Just goes on lecturing	22.44	41.75	47.96
Looks troubled may be because of personal problems	15.30	20.87	21.43
Gives the same old notes prepared years before	24.50	26.37 .	31.63
Gives the notes taken from only one book	8.36	21.97	19.39
Gets stuck up while explaining	14.28	26.37	22.45

Teaches by looking in to book / notes	15.30	34.06	27.55
Concentrates only on bright students	14.28	26.37	29.59

Table 3: Percentage of Teachers Exhibiting Undesirable Teaching Behaviors

It is disheartening to note that even now, more than one-third of the teachers take teaching as a routine matter and have no concern for students' understanding; 22% to 36% of teachers just go on lecturing; 25% to 32% give the same old notes prepared years before; about 9% to 22% give notes drawn from only one book; 15% to 25% get stuck up while explaining; 15% to 35% teach by looking into books/notes.

The students' concept of an ideal teacher was revealed from their responses towards completion of the incomplete statement given, which can be classified and listed as follows:

An ideal teacher should

- *have mastery of the subject,*
- *have good presentation skills,*
- *be capable enough to solve students' academic problems,*
- *come down to the level of students while explaining,*
- *stress on practical application of the subject matter,*
- *adopt new methods to make teaching interesting,*
- *give in-depth knowledge of the subject taught,*
- *not over load students with assignments,*
- *be regular in correcting assignments,*
- *gear the teaching methods to the needs of the students,*
- *give extra knowledge about the subject,*
- *be professional, approachable, friendly and cooperative but strict when required,*
- *understand students' problems and give more practical knowledge,*
- *involve entire class in interaction*
- *have faith in students.*
- *be professional and be patient,*
- *be lively, regular, sincere, encouraging,*
- *complete the syllabus in time,*
- *be able to control the class and*
- *have command over the language.*

Not surprisingly though, except one student who stated that a teacher should '*give basic knowledge of the subject and let the students discover the details',* all the other (277) students put the responsibility of '*making them learn and understand'* on the teachers' shoulders.

All this goes to show the amount of awareness and exposure our teachers and students have to the new trends in pedagogy such as constructivism and participatory learning. This points to the need to orient both the teachers and students to the need for developing in the students the skill of 'learning to learn' and the role of the teacher as a facilitator, guide and a motivator. Refresher courses for teachers and workshops for students, focused on this aspect, are the needs of the hour.

References

Academic Staff Colleges. Available at<*http:// www.ugc.ac.in/orgn/staffcollege.html*>. Retrieved on 21st June 2006

All India Council for Technical Education. Available at <*http:// www.**aicte**.ernet.in*>. Retrieved on 21st June 2006.

Indira Gandhi National Open University. Availbale at <*http:// www.ignou.ac.in*>. Retrieved on 24th June 2006

Joshi, Murli Manohar (1998). *Higher Education in India Vision and Action. Country Paper.* Paper presented at the *UNESCO World Conference on Higher Education in the Twenty-First Century*, Paris, 5-9 October 1998.

National Assessment and Accreditation Council. Available at <*http://www.naac-india.com*>. Retrieved on 24th June 2006

National Council of Teacher Education. Available on <*http://www.ncte-in.org*>. Retrieved on 21st June 2006

National Eligibility Test (NET) for lectureship and for award of Junior Research Fellowship (JRF) for Indian nationals. Available at <*http://www.ugc.ac.in/inside/net.html*>. Retrieved on 21st June 2006

University Grants Commission. Available at <*http://www.ugc.ac.in.*>. Retrieved on 21st June 2006.