Do Strict Teachers Produce Good Results in Engineering Colleges?

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ABSTRACT

Teachers and their strategies of teaching play a very vital role in making the student a successful engineer in this very competitive world. The article thus focuses on how teaching engineering can be done effectively by studying the classroom behavior of faculty. This new line of research will generate important findings that are of practical implications for teacher education and will examine how strict/lenient a teacher is in class and their relationship with the academic performance of the students taught by that faculty. The research finds out if strict engineering college teaches / professors teach more effectively than lenient ones. Thus, creating better faculty and better engineers in future is the primary benefit for the society from this research paper.

Keywords: Engineering education, Classroom behavior, Engineering Faculty, Academic Performance, Engineering

INTRODUCTION

Classroom behavior

Classroom Behavior is the social interaction between the teacher and student and is critical for student's cognitive and linguistic development. Psychologists have found it equally critical for personal, social and moral development. Classroom discussions and other opportunities for social interactions must therefore be an important and frequent component of classroom life. College teachers play an important and influential role in a student's personal, social and moral development.

Effective classroom management maximizes student's learning opportunities and are central to teaching and also require that teachers who have their own classroom behavior understand in more than one way the psychological and developmental levels of their students thus impacting the academic performance directly.

The variables of classroom behavior are:

1. **Leniency:** Includes adherence to rules and procedures, positive reinforcements and its usage

2. **Teaching skills:** Includes communication skills, subject knowledge, ability to teach effectively, feedback from students and Assessments techniques

3. **Classroom management:** Includes teacher's positive relationship with the class and effectively dealing with students, creating a safe learning environment

4. **Innovation:** Variety in teaching strategies

In this research we are going to concentrate on Leniency alone as we focus on seeing how strict the teacher is in class.

Bachelor of engineering

Bachelor of Engineering is an Undergraduate Academic Degree awarded for a course or program in the field of Engineering. The Bachelor of Engineering degree is one of the most pursued Degrees in the world. Bachelor of engineering degree programs generally last 3 to 5 years depending upon the country. In India, the duration of Bachelor of Engineering Degree spans over a period of 4 years. The 4 years course consists of 8 semesters of instruction and a project in final year. It is popularly known as B.E which is an abbreviated form of the Engineering Degree. Most Public and Private Universities in India offer engineering Courses. Some of the universities in India award Bachelor of Technology (B. Tech) instead of B.E for same Engineering Course. Only students from the science stream at +2 level (XI and XII) are eligible for the Bachelor of Engineering course. Age Limit is 17. Students are admitted on the basis of class XII marks or State-Common Entrance

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Test (CET) or Deemed University entrance Exam or centralized All India Engineering Entrance Examination (AIEEE). Selection to BE is based on merit, which are the marks secured in the final exams of 10+2 and through entrance exams. Most commonly students in India choose to study engineering for the following reasons

1. Studying engineering brings prestige

2. It sets you up for professional success

3. It brings financial security

4. Gets you a chance to improve the world

Some of the key findings of a study by Aspiring Minds, a New Delhi-based employability solutions company, on skills, gender, locations and institutions is a report based on a sample of more than 120,000 engineering students who graduated in 2013 from more than 520 engineering colleges across India. The key reason for poor job prospects, according to the study's report, is "inadequate preparation in the domain area, the ability to apply basic principles of say, computer engineering or mechanical engineering, to real-world problems. As many as 91.8% of computer/IT engineers and 60% of engineers from other branches fall short of the domain knowledge required for such roles. These concepts and principles are there in college curriculum, however there is a gap in teaching and learning pedagogy being followed in majority of colleges".

So, the teachers and their strategies of teaching play a very vital role in making the student a successful engineer in this very competitive world. The research thus focuses on how teaching engineering can be done effectively by studying the classroom behavior of engineering faculty.

1. This research was conducted based on survey from selected colleges in Chennai and so it is confined to this region and may not apply to those from other parts of India.

2. This research was conducted based on survey from engineering students and faculty and may not apply to those from other disciplines like medicine, arts, law, nursing, basic sciences, tourism, sports, commerce, graphics & multimedia or business studies.

In the past years, teacher education research has made significant strides in studying the complex relationships between teacher beliefs and practices. This new line of research will generate important findings that are of practical implications for teacher education and will examine multiple criteria of effective teaching in classrooms of professional colleges.

1. The findings are useful to select faculty during recruitment in engineering colleges as the study gives the connection between the classroom behavior and the performance of his/her students in the university exam for the subject handled by that faculty. Thus leniency,

teaching capacity, innovation and classroom control capacity of the faculty can all be taken into consideration during faculty recruitment.

2. The findings are useful for subject and classroom allotment during the beginning of the semester.

3. Creating better faculty and better engineers in future will be the primary benefit for the society from this research.

Objectives

1. To study classroom behavior of college faculty as rated by students.

2. To study relationship between faculty classroom behavior and academic performance of students.

3. To propose the findings as methods to improve quality of engineering college faculty through Faculty Development Programme.

Hypothesis

There is a significant relationship between faculty's classroom behavior variable leniency and students' academic performance.

METHODOLOGY

Research design

It is an evaluation Study by Ex post facto design, where independent variables, present in the participants (engineering faculty) prior to the study, affect a dependent variable. Here the independent variables are the classroom behavior dimensions of faculty as rated by the students and the dependent variable is the academic performance of their students. As the independent variable in question is something that is an innate characteristic of the faculty involved Quasi-experiment is employed as the research focuses on independent variables that cannot be randomly assigned.

Sampling

Population: There are 552 engineering colleges in Tamil Nadu as of July 2016. Out of which 130 engineering colleges are in Chennai city. Every engineering college has an average of 50 teaching faculty. Thus, there are nearly 6500 teaching faculty in engineering colleges in Chennai. Around 75000 students are studying in these colleges in various branches of engineering. This research uses a combination of random sampling and systematic sampling.

1. Sample 1 includes 200 engineering faculty from 20 different engineering colleges in Chennai who will take the MBTI test for personality testing. Here systematic sampling and random sampling is used. The 20 engineering colleges from Chennai are systematically selected based on their location in Chennai. Thus, from each college 10 faculties are then

selected by random sampling.

2. Sample 2 includes the same 200 engineering faculty who will be observed using an observatory schedule.

3. Sample 3 includes about 8000 students (those students who are taught by the above-mentioned faculty) whose academic performance details are obtained from college.

Data Source and Data Collection

Primary data sources

Classroom behavior of faculty: The responses retrieved from students through a structured questionnaire. The customized questionnaire will be given to the engineering students and they will be instructed accordingly. Questionnaire will contain questions asking for the student's personal details and questions relating to the teacher's classroom behavior including

- Leniency
- Teaching skills
- Classroom management
- Innovation

Validity of questionnaire: In order to establish the face validity, the test has been, the researcher approached two renowned psychologists in the field has sought their opinion about the test. Both the psychologists unanimously mentioned that this test certainly would measure the classroom behavior of the faculty in engineering colleges.

Reliability of questionnaire: The split-of reliability technique has been used to establish the reliability for the constructed test. The 'r' value is 0.82, which is highly significant at 0.01 level.

Secondary data source

1. **Personal Details of Faculty:**

- Name of the faculty
- Age of the faculty
- Gender of the faculty (Male / Female)
- Position of the faculty (Lecturer / Assistant Professor / Associate Professor / Professor)
- College the faculty is working for
- Department that the faculty belongs to in the workplace
- Each faculty id in assigned a unique faculty id number

2. **Academic Performance of the students:** The University Exam results of the students are received from the college database. It gives the following

details

- University Exam results – Also referred as external exam results
- No: of Good performers
- No: of Average Performers
- No: of Poor Performers

Data cleaning and analysis on collected data

Because the research is dealing with various samples, it uses inferential statistical testing techniques including Distribution and Comparison of collected data and statistical association using Chi – square test. Chi-square test is one of the important nonparametric tests that is used to compare more than two variables for a randomly selected data.

The data can be examined by using the two types of Chi-square test, which is given below:

Chi-square test for independence of two variables

It is used to check whether the variables are independent of each other or not. The Chi-square test statistic is,

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{EE_i}$$

With (r-1)(c-1) degrees of freedom.

where Oi is the observed count, r is number of rows, c is the number of columns, and Ei is the expected counts.

Findings

A chi square test was performed to test the association between the academic performance of students in the university exam and the classroom behavior variable Strict/Lenient. The result of the chi square statistic was found to be 12.0205 resulting in p value 0.002454. As p value is lesser than 0.05 and the association was found to be significant. Thus, there is an association between the academic performance of students in the university exam and the classroom behavior variable Strict/Lenient. This proves the alternate hypothesis. Thus, the null hypothesis is rejected **(Table 1)**.

CONCLUSION

There is a significant relationship between faculty's classroom behavior variable leniency and students' academic performance. Thus, lenient teachers teach more effectively and thus their students have better academic performance than students of teachers who are strict in class. So, it's better to be a lenient engineering staff than a strict one.

The present research is in line with the study Gonca [1] who research on, The Relationship Between Academic Procrastination and Technology Usage of Teachers. According to them, there is a lot of other also factors other

than innovation that affect the professional development of teachers. The present study is also in line with the study made by Kollas [2]. According to the author, there are certain results of factors that under graduates and school students find essential and important in a good teacher and also motivation is essential for the development and establishment for a professional teacher and it is believed that the process of teaching and learning go beyond the expertise of faculty. The present study is also in line with the study "Faculty do Matter: The Role of College Faculty in Student Learning and Engagement" by Umbach [3]. The authors in their study used two national data sets to explore the relationship between faculty practices and student engagement. Their findings suggested that students report higher levels of engagement and learning at institutions where faculty members use active and collaborative learning techniques, engage students in experiences, emphasize higher-order cognitive activities in the classroom, interact with students, challenge students academically, and value enriching educational experiences. The present research contradicts the study "She's Strict for a Good Reason: Highly Effective Teachers in Low-Performing Urban Schools" by Poplin [4]. The author studied the work of highly effective teachers to help better understand what really works to improve student learning and to help avoid practices that are complicated, trendy, and expensive.

Table 1. Association of Classroom Behavior of the Faculty (Leniency) with the university exam performance.

S. No.	Classroom Behavior of the Faculty	Average	Good	Poor	Chi-Square Value
1.	Strict	2535	699	1008	The chi-square statistic is 12.0205. The p-value is 0.002454. The result is significant at $p < 0.05$.
2.	Lenient	2506	844	1017	

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