

## DIAGNOSTICS OF TEACHING EXCELLENCE

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What are the fundamental dimensions which form the reference axes to assess teaching excellence in engineering institutions ?

Two to seven analytically distinct dimensions have evolved from factor analytic studies by Feldman, Mannan et al<sup>2</sup>. and Marques et al<sup>3</sup>. From their investigations the author has chosen in this treatise three vital and decisive dimensions, namely :

1. Knowledge
2. Projection
3. Rapport

The following 3 D model of teaching excellence is presented with these co-ordinate axes shown in Fig.1 and the range of variables in fig.2

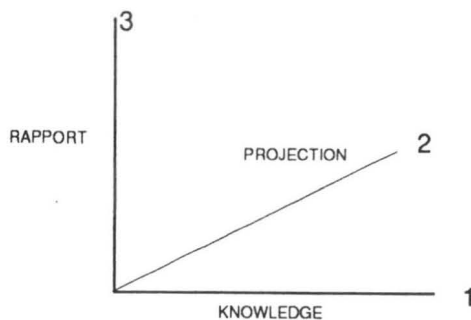


Fig. 1 CO-ORDINATE AXES

Each of the above factors is a necessary but not sufficient condition for teaching excellence. But each is decisive in its own way and leads to different teaching styles.

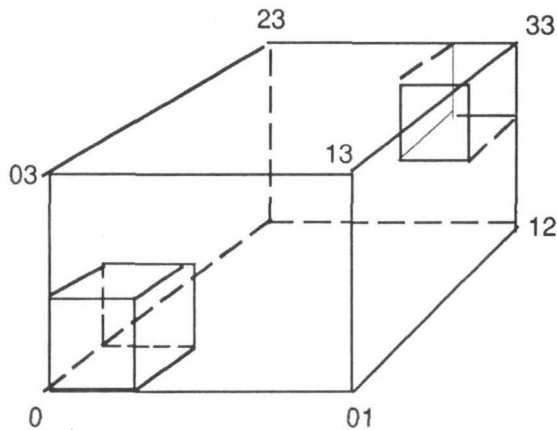
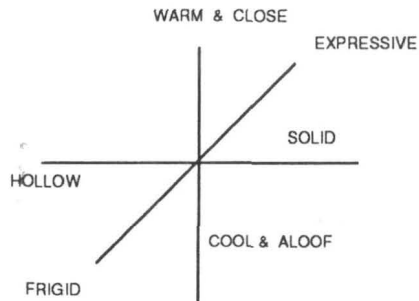


FIG . 3. THE STYLES & COMPARTMENTS

### THE STYLES

These axes give rise to the cube shown in fig.3. The two compartments shown at the extreme corners of the cube are noteworthy. The 0-25 % quarter cube near the origin contains the pseudo teachers who should be eliminated at the qualifying round itself by the Selection Committee. They must be scrupulously kept out of bounds of any academy as a pollution

control measure.

The 75 % to 100 % quarter cube at the other end contains the teachers who deserve a place in Epstein's <sup>4</sup> "Portrait of Great Teachers". They are the virtuoso performers and the avant-garde trend setters in academic excellence. They are the bumblebees who reverberate the corridors of the academy, intoxicated with their fill of honey. They are the Maestros who never accept mediocrity. The flair for teaching is in

their blood which they have augmented constantly by exercise. They are in a rarefied stratosphere of excellence. Students try to model their lives and careers after them. Prof. Hridayakumari<sup>5</sup> compares them to a rare species of birds facing extinction.

In between these quarter cubes are teachers in the 25 to 50 % annular cube who "also ran" and who can be assigned supportive roles. A majority of academicians is in the 50 to 75 % annular cube which can be considered an adequate compartment.

The cube has certain static and dynamic forces acting on it. For example researches by Keaveny and McGann<sup>6</sup> and Marques et al<sup>3</sup> have shown that students attach more importance to knowledge and projection than to rapport. They give more weight to the base of the cube. The students prefer an approachable and amiable teacher only if he is clear and sound. They do not approach the floatsam and jetsam in the academic stream just because they happen to be approachable.

There is also a radial force acting in the cube. Since most teachers have strong needs of achievement and success, they strive to excel and move forward and upward from the lower regions to the upper regions of the cube in spite of the various centripetal forces of the Indian academic scene trying to pull them down such as meagre salaries, political interference on disciplinary actions, transfers to inconvenient locations and all other disincentives.

The extreme apexes of the cube are thinly populated. There are few teachers who can be relegated to these apexes. But the apexes show the asymptotic cases of the acute and chronic specimens. eg.

01 is the Sphinx. His only qualification is that he is rich in knowledge. He thinks that

to be exciting or inspiring is demeaning. He is aloof and autocratic. He sincerely believes that recognising the personal reactions of the students is irrelevant to teaching. He is cold and distant and frequently irascible. Occasionally he is sarcastic and disdainful about student's performance. A spectrum analysis will show that he has a repellent halo. He just announces requirements and policies and is angry if the policies are questioned. Every time a doubt is raised in the class room, he is ready with a snub. He has the key to the chest of knowledge but he can't or won't open the chest.

02 He also considers rapport with students as *infra dig*. Though he disdains the audience, he is capable of showing off. He is a merry old soul like old King Cole, but students easily sport his shallowness.

03 He has neither knowledge nor the ability to project, but has in finite capacity for rapport. He is the Groucho in the campus.

12 Though he has know'edge and communication skills he has absolutely no rapport with the students. He keeps the students at bay with a snub and a snort and he gives them left handed compliments. Though he knows his lines and speaks them well like Iago, the audience dislikes him.

13 Though he is amiable and has all the knowledge, he has no capacity to project. He cannot "let go" because of inhibitions, physical defects or stage fright. He is good in the green room and the aisle but not on the stage. He is good for discussions with a small group of students or as a research guide but with a large audience he is like Daniel in a den of lions.

23 He can project and please an audience. He has all the skills in his repertoire, but he is totally hollow. He resembles Carlyle's character Sir Jabez Windbag, the political big mouth.

33 He is the Maestro, the virtuoso performer.

### THE FIRST DIMENSION- KNOWLEDGE

The first and foremost requisite of a teacher is undoubtedly knowledge. It cannot be replaced by any other factor knowledge involves understanding of facts, the capacity to analyse and synthesise them and to apply them to new situations as Bloom<sup>7</sup> put it in his taxonomy of educational objectives. The Professor who is deep and sound in knowledge can "walk around" theories and concepts and see them from different angles. He has critical insight into the subject and he knows the ramifications of all key assumptions leading to a derivation.

As an incidental addendum it may be stated that consultancy has a bearing on expanding the horizons of knowledge of an engineering teacher. It tells him how site limitations restrictions of time and funds affect designs. As he works under time pressure in a fiercely competitive market his intellect is sharpened, sometimes through bitter experience. Thus his knowledge is converted into wisdom. A living example of this situation is provided by the LBS Centre for Science and Technology at Trivandrum, which has helped many engineering teachers to move upwards and outwards along the cube of excellence.

The puritan in the academy believes that if students are excited by teachers, the quality of his teaching material must be second rate and that high student ratings reflect diluted and sweetened knowledge. This has been proved to be a misconception. Teachers who are rated low by students dismiss the ratings as rash and immature judgement of youth. They believe that in later life students will look back and value them more. This is certainly not so. Research on educational psychology by Marsh et al<sup>8</sup> has shown that the evaluation of faculty made several years after graduation was found quite consistent with the original opinion of the students.

Teachers should see that there is enough substance with excitement in the lecture. Thus knowledge and projection (dimensions one and two) should go hand in hand to create intellectual excitement.

### THE SECOND DIMENSION - PROJECTION

Projection involves clarity of presentation. The teacher should use concrete examples wherever possible. He should encourage the students to think instead of ramming the subject down their reluctant throats. Stimulation of enthusiasm in students is of course related to the teacher's own enthusiasm in his subject. Only then he will have a positive emotional impact on the students.

Teaching is a performing art and teachers must convey a strong sense of presence. The material should be delivered with the skill of a seasoned speaker. It is not mere "showmanship" as many would believe. Exciting teaching is not merely stimulation of emotions, but an intellectual

participation in a process of discovery as Perry et al<sup>9</sup> and Willams and Ware<sup>10</sup> have shown.

Effective projection in no way assures that a teacher will promote wisdom. Sound arguments are the basic ingredient of a good lecture; but the skill with which the lecture is delivered should match the skill with which it was prepared. Eventhough mastering stage skills is in no way sufficient to attain teaching excellence, it is impossible to attain excellence without practising these skills. The class room is a dramatic arena first and an intellectual arena second.

The college class rooms are fundamentally dramatic arenas with teacher as the focal point just as an actor on the Centre Stage. The students are subject to the same influences as a dramatic audience with both satisfactions and distractions. Drama is not confined to the conventional stage. People are caught up in the spell of drama whether they are witnessing a street corner jugglery or a political effigy burning.

In many class rooms the teacher stands on a rostrum, faces the audience and indulges in a sort of public speaking. He relies on his ability to engage an audience and to stimulate their excitement. Just as a mediocre theatrical performance loses its attention beyond the opening scenes, so also students lose interest in a mediocre lecturer after a few initial lectures.

The undulations in the speech of others such as pitch and inflection affect us. There is an empathy through sound. But how many engineering teachers have evaluated their speaking voice? How many have taken exercise to overcome speech deficiencies? Even though the aim is not to

get the versatile range of an ace actor of the tinsel world, how many have asked themselves the following questions?

- a. Have I paid serious attention to the ways others use their speaking voice before an audience? Are they slow and deliberate or fast and impetuous, deep and resonant or shrill and strident, crisp or mellow, drawling or staccato, monotonous or melodious?
- b. Have I noticed how many meaningless sounds habitually interrupt my speech-vocalizations like 'okay', 'you know', 'well', 'uh'.
- c. Have I recorded my own speaking voice on audio tape and listened to it afterwards carefully? Have I sought the opinion of others who have listened to my voice?

However, there are a few differences between the stage actor and the teacher on the rostrum. The actors are taught to speak the lines as if the audience were not present. They do not make eye contact with the audience to the extent possible. But eye contact is important for a teacher.

Unlike actors, teachers are not required to give the same lecture day after day with two matinee shows on week ends. But they do have to give an exciting performance day after day. But getting excited over a fundamental concept which you have taught numerous times is no easy task.

Teachers are after all human. They want to be liked and respected and walking into a class room of 50 strangers for the first time is guaranteed to raise their adrenalin level. How then do they get into a calm and

creative state of mind? Many outstanding Professors set aside a few secluded minutes to "tune their inner strings" before going to a class. Some close their doors and refuse to see visitors. Some take a long walk to their class room along a circuitous path. Stanislavsky, the great producer of the Moscow Art Theatre set himself to answer this issue for actors. He says that the actor must have a creative state of mind during a performance. He lists out four requisites for this purpose. 1. An actor being human will suffer from a nervous strain during a public performance. But he must fight it out. His muscles must be perfectly free from any strain especially when an emotional scene is enacted. 2. Concentration is the next requisite for a creative state of mind. 3. The third requisite concerns the time of arrival of the actors in the theatre. The actors usually come only in time to put up costumes and make up their faces. It never occurs to them that their minds too have to be dressed and made up. They must arrive at least two hours before the performance and "tune their inner strings" to bring their creative mechanism into action. 4. The fourth requisite is belief. No part can be successful unless the actor believes in it just as a little girl believes in the existence of her doll. An actor who has no imagination, Stanislavsky declares has either to develop it or leave the stage.

### THE THIRD DIMENSION - RAPPORT

An excellent teacher enjoys sharing knowledge with the students. He is concerned with the students as individuals. The students are so caught up with his teaching that they are surprised that the lecture is over. They feel compelled to talk about the class to others during the day and the hate to miss his class.

An excellent teacher promotes positive emotions and avoids stimulating negative emotions. These emotions affect the morale and motivation of students. As in all inter-personal encounters teachers and students use strategies to maximise the positive and minimise the negative feelings about themselves.

Some teachers give ample freedom to students to develop rapport. This is a short-sighted policy. It may be a novelty to let loose the reins early in the semester, but the euphoria evaporates quickly like the early morning dew and is no real substitute for enduring rapport developed over a period of time. Moreover students who are most in need of special attention are usually bashful and take time to draw near and feel comfortable.

Students have affectional needs and they prefer a smaller class as it provides a personal relationship with the teacher. Largeness in human institutions whether townships, government offices or class room, breeds an impersonality which makes rapport difficult. There is a Reciprocity Theorem at work in both projection and rapport (dimensions 2 & 3). It has been shown that personal attitudes produce reciprocal attitudes in others. For example, if a teacher believes that the students are rude and undisciplined and they dislike him, his attitude slowly surfaces and the students become less friendly towards him than they are in general.

There is also the James - Lange Effect which can be stated as follows. When we are afraid we flee; conversely when we flee we become afraid. Actual fleeing is not needed for this. A muscle set is enough. When an actor assumes an attitude of fear, spectators

tend to imitate the muscle set and get the emotion. Empathy is thus created.

Rapport is a must in the Indian context and many engineering teachers have cultivated this through their involvement in extra curricular activities of students. However, the Indian context has its own peculiarities and deserves a closer scrutiny by educational psychologists. Many strategies used by teachers abroad to develop rapport are not relevant to this country.

### THE INDIAN PANORAMA

Most studies on educational psychology in engineering campuses were not done under Indian environment. The students abroad tend to major in a subject in which excellent teachers are available. In India the choice of subject or branch of engineering depends on the rank or percentage marks in the entrance or qualifying examination. Mostly the student's choice of branch is not related to the excellence of the faculty in that branch or even in that college.

Richard Mann<sup>11</sup> and his associates at the University of Michigan have conducted an extensive study on the subject. They took tape recordings of class sessions of teachers over a whole semester and analysed them. They also put observers in the classes to note non-verbal behaviour. Mann used cluster analysis of all the student comments, tape recordings and notes and formulated several dimensions to describe the teacher's behaviour towards students and his rapport. He also classified the students individually as compliant (10 %) anxious-dependent (26 %) fatalistic (4 %) heroes (10 %) snipers (9 %) attention-seeking

(11 %) silent (20 %) and independent (10 %) This classification of Mann and the percentage in each category are also not fully relevant to the Indian campus, where there are very few students returning from military conscription, performing part-time jobs, married or emotionally and economically separated from families at the age of 18-21.

Dr George V. Mathew<sup>12</sup> applied the Guilford-Zimmerman Temperament Survey to professional college students and his temperament pattern charts show that engineering students are least religious, and least humanitarian, but highly economic minded, objective and friendly.

Pal's<sup>13</sup> study on personality structure of engineering college students has also shown that they are emotionally stable, objective and friendly. From both investigations it can be seen that student rapport is achieved more easily with engineering students than with science or humanities students.

A pertinent taxonomy of the college students of this country was put forth by Prof. Hridayakumari in her critique of contemporary college campuses with special relevance to Kerala State. She classifies campus crowd into several identifiable groups. Why has this motley crowd assembled in the College campus? Each group is motivated by a different stimulus. The agent gets admitted for political ground work, the rich idler saunters in as if into a wayside inn, the maverick comes to jeer. the sincere minority comes to study and graduate. Readers may remember the crowd scene in the famous play "Winterset". A good hearted Italian hauls his street piano back into his shed. But

before putting it away he decides to play one more tune. Out of the silence of the night a crowd gathers- an apple woman two urchins, a sailor and his girl, a radical, two young lovers, a policeman etc. Why has this crowd gathered? Each was attracted by a different stimulus. One came to dance, one to watch, one to laugh and deride, one to perform his duty. When the policeman tries to silence the music, the apple woman defends the poor musician's right to earn a living, the sailor jeers at the cop, the radical makes a speech on capitalistic oppression, the girl retreats fearfully into the background.

### THE BOILING CAULDRON

This is the Indian campus today in several engineering institutions. It is the Island of Circe, as Nirad Choudhuri would put it, where lofty ideals are deformed into pale platitudes. It has no parallel in the western countries and by the same token many conclusions drawn from researches abroad on educational psychology are not relevant to the Indian context.

In the Indian context where a large number of classes are lost by politically motivated strikes and protracted examinations, festivals and local holidays and more classes are let off than engaged, where is the time in a semester system to conduct classroom discussions and role-plays to develop thinking skills and perspectives? In the few working days salvaged during the semester, the teacher steps on the gas pedal and drives across a vast syllabus unmindful of the speed limit. Excellence in teaching goes by default.

It is into this boiling cauldron of the Indian campus the engineering teachers have to pour forth the ingredients of their excellence at a time when excellence in this

class room is not a requirement for survival except perhaps in a few institutions. Why should then a teacher strive to excel? When service seniority or political clout may give him more advancement in life and in society than teaching excellence, why should a teacher excel? When there are more negative reasons in this country than positive justifications for excellence, why should a teacher excel? Is there a *raison d'etre* for excellence?

The answer lies in the teacher himself. Every great teacher decided to master this art for the very personal reason that it gave him innate satisfaction to be a virtuoso in the classroom. Teachers who excel for personal reasons live happy and contended teaching over a number of years. Even after they become administrative heads, the class room pulls them back occasionally. But teachers who are motivated primarily by promotions, part time allowances and pecuniary perks waddle through the academic mire like disgruntled sows in a pigsty.

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- ( Note : "Dimensions of Effective Teaching" by the same author i.e. Dr.K.P.P.Pillai, will appear in the next issue of this journal i.e. Vol.8 No.1 of July 1994. - Editor)