
Developing Staff Members' of Higher Education in Rural District – A Challenging Experience Dr.N.Asokan

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1. Introduction

In the face of challenges from national and international competitors the better companies are investing more resources in the continual training and re-training of employees at all levels. They focus not only on the competence of their staff, but also give time to stressing the need for commitment to the organization's goals and to promoting a capacity to change. Should not the same be true of our institutions of higher education?

Higher education institutions, such as universities, professional colleges and polytechnics, are labour intensive organizations; they depend on people for the delivery of their services. The quality of the staff in institutions of tertiary education is thus central to their effectiveness, in the same way that it is to all people-centered organizations. A recent World Bank paper commented that "a high quality and well motivated teaching staff and a supportive professional culture are essential in building excellence" (World Bank, 1994). UNESCO has itself recognized the important role of staff in higher education by passing a Recommendation on the topic at its General Conference in Paris in November 1997.

In some academic fields it is said that the total of human knowledge is doubling every five or ten years. It is thus almost impossible for an individual staff member to remain in touch with the subject without a conscious investment in updating the subject knowledge. When these knowledge advances are allied to similar changes in pedagogy, learning materials

development and the use of technology, the scale of self improvement required becomes massive.

Educational Institutions globally – it could be argued – are part of a wider system. Curtis (1992) defines a system as a collection of interrelated parts which taken together forms a whole such that: (a) The collection has some purpose and (b) a change in any of the parts leads to or results from a change in some other part or parts. Within this framework, it is argued that social organizations such as businesses, Universities, colleges and other types are by definition open systems, which implies that they can be affected by environmental influences.

Whatever the context or framework, change can almost certainly happen. It is usually stimulated by "triggers". Change is often an outcome of the strategic process of a company / organization, especially if a company operates in a dynamic environment. Change can derive from two broad distinct environments such as the *external and internal environments* of any organization.

It is believed that the culture of an organization can influence how individuals behave at work and hence will affect both individual and organizational performances. According to Black and Porter (2000), the culture of the organization is a potential focus for change in organizations.

In considering any strategy for developing human resources an institution must consider **all** its staff; administrative and support personnel can play crucial roles in helping students to learn, and in enabling and facilitating an environment that favours learning.

Strong and innovative staff development is one strategy which guarantees the quality and relevance of higher education in a changing world. While different regions face very diverse economic and cultural challenges, their overall aim for higher education is strikingly similar - namely, to ensure the production of skilled human resources whose education and training can be placed at the service of society. In this way, higher education contributes to full human and social development. The achievement of this objective depends on the quality and effectiveness of the higher education community which embraces institutional leaders, policy - makers and managers, the professoriate and students -the main beneficiaries of the teaching and learning process.

It is essential that a response to the change and challenge is integrated and holistic. In the words of Mukherjee and Singh (1994) "there must be a total comprehensive approach where academic, management, administrative and technical support staff development are viewed as a whole within a facilitating infrastructure". There are two other key principles which should be borne in mind: staff at all levels should be encouraged to expect to embark on lifelong learning, in their discipline and in the skills needed for their workplace and their role in their institution; any staff development programme must adopt multiple mechanisms for its delivery offering flexibility of access.

Continuing professional development (CPD) in the academic teaching profession has had as disappointing a history as initial training. Even though some regard it "an essential rather than a desirable objective, an obligation rather than an option - both a professional expectation and duty and a responsibility that institutions have for their staff" (Gordon and Partington,

1996), this view is rarely echoed by those allocating resources within institutions or at national level.

There is a large gap between the massive need for staff development and the present small level of activity. Staff development thus becomes an essential strategy in bringing about the changes which are necessary. High-quality faculty professional development for every teacher is an urgent need and will become essential to institutions' capacity to compete for students in the years ahead and to survive and thrive (Lion F. Gardiner, 2000)

Teaching quality is one vital area related to staff development which the university needs to consider. Over the last decade, when higher education has undergone tremendous changes everywhere in the world, special effort has been put into understanding how students learn and how to improve the effectiveness of teaching.

The UNESCO policy paper entitled "Strategies for Change and Development in Higher Education" which states that: *"Quality, which is not a novel concern in higher education, has, however, become crucial in present policy debate concerning the development and reform of higher education."* (page 14.)

This view is echoed by the World Bank in its paper "Higher Education: the Lessons of Experience":

"A high-quality and well-motivated teaching staff and a supportive professional culture are essential in building excellence." (page 38.)

The half-life of cutting-edge technical knowledge today is on the order of a few years, but globalization of the economy is accelerating and the international market place for professional services is dynamic. In such an environment, an engineer/manger is like a small boat in a storm tossed sea if he or she cannot recognize global trends and lacks the ability: instinct or desire for continuous learning. In the vein that one

can provide the means, if not ensure the ends, we should create or adapt staff development programmes to support the professional growth of faculty.

Staff development, it will be argued, is central to the quality of higher education.

The paper looks at developing the competencies among the staff members at an engineering college in a rural district of Tamilnadu, India.

2. Mount Zion College of Engineering and Technology

Mount Zion College of Engineering and Technology is located at Pudukottai, one of the backward districts in Tamil Nadu state in India. The college is self financing, started in the year 2001, approved by All India Council for Technical Education, New Delhi and affiliated to Anna University Tiruchirappalli, Tiruchirappalli. The college offers seven under graduate engineering programs namely, Aeronautical engineering, Civil engineering, Mechanical engineering, Electrical & Electronics engineering, Electronics and Communication engineering, Computer Science & Engineering, Information Technology, with 1195 students and 96 teaching staff members.

Students admitted to the first semester of the eight semesters B.E. / B.Tech.Degree Programme passed the Higher Secondary Examination of (10 +2) Curriculum (Academic stream or Vocational stream (Vocational groups in Engineering / Technology) or passed the Diploma in Engineering / Technology as prescribed by the Government of Tamil Nadu.

Students admitted to the third semester directly as Lateral entry students, passed the Diploma in Engineering / Technology or Degree in Science (B.Sc.) (10+2+3 stream) with Mathematics as a subject at the B.Sc. Level.

Though the medium of instruction is English students with Tamil (regional language & mother tongue) medium backgrounds are also eligible to join B.E/B.Tech programme. Bilingual teaching is inevitable in this region.

Teaching staff possesses Undergraduate or Postgraduate engineering qualifications. Very few Ph.D qualified staff available in Science and Humanities department. It is very difficult to get a Ph.D qualified teaching staff in engineering stream. The average experience of staff is four years. The college has given an opportunity for fresh graduate and post graduate completed staff to develop their competencies demanded by the teaching profession as well as to maintain the staff student ratio as 1:15.

The background, exposure, belief, thought, a mix of feelings and assumptions and well-formed hypothesis wise both staff and students are sailing in the same boat. Some of the staff and students are first generation people in their family who studied in the college. They conflict with deeply held internal images of how the world works, images that limit them to familiar ways of thinking and acting.

3. Need for staff development

Higher education on a global scale experienced extraordinary change during the past 150 years in response to internal intellectual trends as well as external societal forces (Robinson, 2002). Universities are social organizations that operate in a wider environmental system, thus being affected by various pressures occurring inside or outside the entity. However, as Eckel et al (2000) argue, Universities and colleges have some particular attributes that make any change process different from other types of organizations.

Changes occur in any environment, thus influencing educational institutions, it is essential for educational institutions to be able to cope with environmental change (internal or external) affecting day to day operations. Change,

basically, can be viewed as a process that turns a steady-state system to a new steady-state system. In order for this to be done however, it is essential for educational institutions (or its individuals) to manage the transition from one state to another.

The changes affecting educational organizations and education in general are numerous and managers as well as academics in leadership positions need to cope with these not only in a traditional academic manner but also in a business – oriented manner

In relation to the main trends and issues of higher education today, the forces directing the process of change can be clearly discerned (M.-L. Kearney, 1994):

- The increased demand for access to higher education;
- The call for the diversification of this domain;
- The assurance of quality and relevance of higher education;
- The reform of higher education systems, including the management of change by institutions, especially universities;
- The significant reduction in funding for this sub-sector;
- The links between higher education and the labour market;
- The internationalization of higher education resulting in increased inter-university co-operation.

Each of these issues affects higher education staff development in its own particular way. All render this field a vital part of institutional policy-making as new ways are sought to manage change efficiently.

Scientific and engineering knowledge presently doubles every 10 years (Wright, 1999). Engineering will not operate in a vacuum separate from the society in 2020. All are experiences which are designed to ensure that the traditional goals of higher education - namely, the excellence of teaching, training and research - are respected and realized. However, the author

demonstrates a strong capacity for future-oriented thinking because all have understood that these important objectives must now be accomplished in a climate of radical change and, in certain contexts, turmoil.

The renewal of the teaching function has resulted in significant changes in faculty profiles. As the demand for higher learning continues to expand, so the pressure on institutions to provide quality staff has intensified. In a climate where tenure is far less obtainable, this is not an easy task. Thus, as criteria to define good teaching gain importance in the overall quality assessment of institutions, there is renewed emphasis on the ability of the professor to understand both his students and their learning environment.

The complex relationship between academic engineering, the corporations and large industrial concerns that employ the great majority of engineering graduates, and the nation's economy redefines the professional context for educating engineers and engineers in the future include

- Excellence in communication
- An ability to communicate using technologies
- An understanding of the complexities associated with a global market and social context
- Flexibility
- Receptiveness to change
- Motivation to think ahead the challenges of the present to imagine the future
- Teaching learning and assessment processes that move a student from one state of knowledge and professional preparation to another state.
- Mutual respect are essential as well

How students learn as well as what they learn in order to ensure that student learning outcomes focus on performance characteristics needed in future engineers/managers (Educating the Engineer of 2020, 2005, p17). Two major tasks define this focus.

1. Better alignment of curricula and the nature of academic experience with challenges and opportunities graduates will face in the work place
2. Better alignment of faculty skill sets with those needed to deliver the desired curriculum in light of the different learning styles of students.

Educating engineers' profession has a trans-organizational charterer. Engineering faculty, of course, will be on the front line of any change, and encouraging and enlisting their support for engineering education innovation is essential. Increased attention to teaching, to how students learn, and to student mentoring is important for enriching the undergraduate experience.

3.1. Need for change

Growing competition – it is argued – changed the way students are perceived by a growing percentage of educational institutions. This change has been driven by the desire to improve the efficiency and quality of provision in order to meet the changing needs of the global market place. Increasing competition implies that the student is expecting top quality service. Customer service has been one of the most important areas for organizations in every industry.

Over the past 20 years, virtually every college and university has implemented a quality initiative of some sort. Many institutions can point to more than one such initiative, with varying results (Bontrager 2004). Bontrager continues, effective enrolment management requires that institutions take their commitment to top quality service to a higher level (College and University Journal, p. 13).

As Mullins (1996) suggests, an organization can only perform effectively through interactions with the broader external environment of which it is part. In order to help ensure the organization's survival and future success, the organization must be readily adaptable to the external demands placed upon

it. Mullins argues that the environmental pressures are probably the most important and any organization should give great attention to these pressures in order to ensure it is not affected negatively.

The need of the change was derived from the change in the external environment such as increasing competition via more number of new colleges in the district, comparison of pass percentage and comparison of employment skill of students among the colleges in the district, and the change in the internal environment such as the management of the college, difficulty in admissions, financial problem which questions the future of the college.

"A spirited attack on the idea of the student as customer went down a storm with academics assembled at the recent British Academy of Management conference. It was argued in the same management conference according to the same article that as students are paying higher fees, they are putting more pressure on academics to meet their short-term demands. Student-customers are trying to negotiate almost everything e.g. course content, forms of assessment and assignment deadlines.

(<http://www.guardian.co.uk/education/mortarboard/2007/sep/24/aspiritedattackonthe>)

Due to the environmental influences in the rural district, staff members are putting more pressure on academics to meet their short-term demands. Staff members are trying to negotiate almost everything e.g. attending the college, syllabus coverage, lesson plan, teaching learning process and assessment.

The environmental influences examine the intensity of rivalry amongst existing colleges, the threat of entry by new colleges, the pressure from possible substitute products and / or services, the bargaining power of students and finally the bargaining power of prospective employers.

These internal and external environments have ‘forced’ a change. Change for survival, transformation and growth is the predominant perspective to progress and future success of the college. The author has realized the change is required for the college, which focus primarily on the systemic and developing competency of teaching staff of higher education. But there is more to think about than just accelerating change.

1. What to change?
2. What to change to?
3. How to change?

While answering these deep questions about the future of the college, the author looking carefully the present situation. The juxtaposition of vision (what we want) and a clear picture of current reality (where we relative to what we want) generates “creative tension”: a force to bring them together.

3.2. Meeting the minimum requirements:

Every teaching staff is expected to meet the minimum requirements as a teacher i.e., handling the subjects for 45 to 60 hours per semester, continuously assess the students by conducting continuous assessment tests, conducting laboratory experiments, evaluating the students lab records, guiding, assisting and supporting the students in preparing assignments, and conducting seminars, regularly conducting class committee meeting to find out the students learning difficulties and facilitating the learning environment, guiding the students for carry out their project work in the final semester, organizing the guest lecturers, arranging the industrial visits for practical exposure and encourage the students to participate extra & co curricular activities as per requirements of University regulations.

Staff members are expected to support, guide, and help the students to get the minimum pass marks in all the subjects to make them as graduate, to towards higher education, to develop entrepreneur skills, to get a decent job and to develop the overall personality.

These are absolute minimum requirements; there is no extra mile, no value added services to students. It is better to teach the students rather than wait for them to learn something from the world and then show them the right way to go about it.

3.3. Current Reality:

More broadly, current reality itself is, for many staff members, the enemy. Staff feels uncomfortable in coming to the college in time, handling classes as per the time table, covering the syllabus of five units, administering continuous assessment examinations, maintaining class & laboratory and students attendance records. Five to ten staff members are on leave daily. Except few, staff find it very difficult themselves even to meet the minimum requirements as a teacher. Staff gives priority to their personal life, if they are comfortable in their personal life, then only they attend their profession. Even very small disturbance in their personal life, they do not know how to manage the same and absenting themselves. An accurate, insightful view of current reality is as important as a clear vision.

Since staff members were not interested to come out of the “Comfort Zone”, and having low tolerance for change they expressed their resistance through absenting themselves frequently. Instead of discussing and accepting the changes, they started becoming “Skilled Incompetence”- staff members who are incredibly proficient at keeping themselves from learning (Peter, 2006, p25). Learning stretches personally, and it is always easier to stay in comfort zone.

If any assignment is given to meet the minimum requirements, it is very difficult to get the things done without rigorous follow-up. Follow up represents the absence of quality. If additional assignment is given, they find it difficult to prioritize the work. Staff are waiting for the situations to happen and react and sometimes avoiding the situations without bringing to the notice of the stakeholders. To summarize, staff are aimless and directionless.

By analyzing the previous semesters end semester examinations results, author observed that the continuous assessment marks plays a major role in pass percentage, which is the corner stone of academic activity. For all theory courses, the continuous assessment shall be for a maximum of 20 marks (consisting of 15 marks for tests/experiments and 5 marks for attendance) out of 100 marks, there is no system has been followed for awarding the continuous assessment marks. The continuous assessment marks awarded between 14 and 20, where as in some cases the students scored end semester examination less than 20 and in some cases scored less than 50, which is the minimum pass mark. The author concluded that unless we formulated the system of awarding the continuous assessment marks, continuously through out the semester, not at the end of the semester, by making the students to study to earn continuous assessment marks, there will not be any improvement in pass percentage.

3.4. Learning disabilities:

The way the organizations are designed and managed, the way people's job are defined, and , most importantly, the way we have all been taught to think and interact (not only in organizations but more broadly) create fundamental learning disabilities (Peter, 2006, p18) . These disabilities operate despite the best efforts of bright, committed people. Often the harder they try to solve problem, the worse the results. Learning disabilities are tragic when they go undetected. The first step in curing them is to begin to identify the learning disabilities.

The author identified the following are the learning disabilities of teaching staff at Mount Zion College of Engineering and Technology.

a.) I am my Position: Staff members are confused with their own identities. Most see themselves within a system over which they have little or no influence. They do their job, put in their time, and try to cope with the forces outside of their

control. Consequently, they tend to see their responsibilities as limited to the boundaries of their position.

b.) The Enemy is out there: The enemy out there syndrome is actually a by product of "I am my position" When staff focuses only on their position, they do not see how their own actions extend beyond the boundary of that position. This syndrome is not limited to assigning blame within the organization. "Out there" and "in here" are usually part of a single system. This learning disability makes it almost impossible to detect the leverage we can use "in here" on problems that straddle the boundary between us and "out there". Staff always blame their family, parents, school, college, teacher, situations by and large the society. This syndrome is almost always an incomplete story.

c.) Learning Horizon: A breadth of vision in time and space within which we assess our effectiveness. The most powerful learning comes from direct experience. When staff members' actions have consequences beyond their learning horizons, it becomes impossible to learn from direct experience. Herein lies the core learning dilemma that confronts organizations: we learn best from experience but we never directly experience the consequences of many of our most important decisions. The most critical decisions made in organizations have system wide consequences that stretch over years or decades.

d.) Skilled incompetence: A marvelous oxymoron to describe being "highly skillful at protecting ourselves from pain and threat posed by learning situations", but because we fail to learn we remain incompetent at producing the results we really want. If staff feels uncertain or ignorant, they learned to protect themselves from the pain of appearing uncertain or ignorant. Staff who are incredibly proficient at keeping themselves from learning becomes skilled incompetence.

Because staff "becomes their position" they do not see how their actions affect the other positions, the other roles of a teacher. Consequently, when problems arise, they quickly

blame each other – “the enemy” becomes players at the other positions or even the students. By and large, they do not learn from experience because the most important consequences of their actions occur elsewhere in the educational learning system, eventually coming back to create the very problems they blame on others.

3.5. Staff Culture:

According to Black and Porter (2000), the culture of the organization is a potential focus for change in organizations. In a way, as Black and Porter suggest “changing an organization’s culture can be as potent in its consequences as making major changes in technology”. Given the difficulty in being able to change an organization’s culture, one may begin to understand how culture – if rigid – can affect change be implemented. Given that culture has also been associated with the strategy of a company (Vecchio, 1991), its importance as a parameter to take under consideration when organizations intend to change is reinforced.

Staff members tend to see their responsibilities as limited to the boundaries of their position. When they focus only on their position, they have little sense of responsibility for the results produced when all positions interact. Because they become their position, they do not see how their actions and inactions affect the other positions. Consequently, when problems arise, they quickly blame each other.

As defined by Buchanan and Huczynski (1997), resistance to change is 'an ability, or an unwillingness, to discuss or to accept organizational changes that are perceived in some way damaging or threatening to the individual' (Organizational Behaviour, 1996).

Change invariably creates conflict. It spawns a hotly contested tug – of war – to determine winners and losers (Boleman &

Deal, 2003). Some individuals and groups support the change while others oppose.

3.6. Organizational transformation

Management can get started in results – driven programmes (Schaffer and Thomson 1992), in four (4) ways:

1. Ask each unit to set and achieve a few ambitious short term performance goals;
2. Periodically review progress, capture the essential learning, and reformulate strategy.
3. Institutionalize the changes that work - and discard the rest and
4. Create the context and identify the crucial business challenges (p. 89).

In order to survive and function well, the author identified the following four essential areas in which the teaching staff must be confident, competent and pro-active to implement educational processes effectively and efficiently:

1. fields of knowledge;
2. the pedagogical process;
3. personal mastery
4. life long learning.

These four areas must be closely associated if the expertise provided by higher education institutions and their human capital is to be ensured in tomorrow's world. Creating environments in which the need and possibility for learning capabilities are greater than ever, but so too are the challenges of building such capabilities. Building enterprises capable of continually adapting to changing realities clearly demands new ways of thinking and operating.

You have to believe in your heart that people want to pursue a vision that matters, that they want to contribute and be responsible for results, and that they are willing to look at shortfalls in their own behavior and correct problems whenever they are able. These beliefs are not easy for control-

oriented managers and that is why there remains a big gap between the “talk” and “walk” regarding developing people.

To answer the three deep questions What to change?, What to change to?, and How to change?, the author has identified the following objectives initially.

- a. To improve the teaching learning and assessing process
- b. To develop the discipline of personal mastery among staff members
- c. To create the culture of lifelong learning

Trust and focusing on, how staff relates to one another form the basis of our core theory of success. As the quality of relationships strengthens, the quality of thinking improves. As the member of a team consider more facets of an issue and share a greater number of different perspectives, the quality of their action improves, which ultimately improves the results we can achieve.

Looking back on their “knowledge networks” work, Allen and Sandow concluded, “as the philosophy of the physical sciences dominated the Industrial Age, the philosophy of the biological science is beginning to dominate the Knowledge Age. This philosophy view knowledge, people, and organizational as living systems...[which represents a shift from]

1. Focusing on parts to focusing on the whole
2. Focusing on categorization to focusing on integration
3. Focusing on individuals to focusing on interactions
4. Focusing on systems outside the observer to focusing on system that include the observer”

Focusing occurs when a staff discriminates important from unimportant or relevant from irrelevant information and then attends to the relevant or important information.

4. Staff development

Staff members did not resist change. They resist being changed. The change goals must consider how individual faculty members are receiving and interpreting messages or signals from institutional leaders (New educator, college of education, Fall 1999).

Leading an organization to constructive change begins by setting a direction – developing a vision of the future, along with strategies for producing the changes needed to achieve that vision (Kotter, 1990, p. 41).

According to Van Der Donckt, one major shortcoming appears to have been the ill-preparedness of higher education institutions everywhere to handle the change process (VanDer Donckt: 164.) Consequently, there has been enormous demand for training which will reinforce the best asset of higher education - its academic and administrative staff. Thus, human resource development, which extends across management training for all levels of personnel, including the acquisition of specific skills and familiarization with major higher education policy issues, has become a priority goal.

The leadership role will centre on the management of change and on reconciling the essential need to adapt what are usually conservative institutions with the opposition and unease that such change will cause. Thus, the key roles for such leaders will include:

- providing strategic guidance and a vision of where the institution should be going;
- encouraging innovation and an entrepreneurial culture and ensuring that institutional processes support rather than hinder this;
- maintaining commitment to institutional goals in a community which is instinctively suspicious of such things.

The author has developed a vision of the future primarily to meet the minimum requirements as per the University regulation and then move on to the next level of activities which strengthen the staff, students and ultimately the college, along with strategies for producing the changes needed to achieve that vision by

- effectively implement the teaching, learning and assessing process using Bloom's revised taxonomy,
- continually clarifying and deepening staff personal vision, of focusing staff energies, of developing patience, and of seeing reality objectively
- allowing the staff to discover the insights not attainable individually
- consistently realize the results that matter most deeply to staff, by becoming to their own lifelong learning.

Institutional managers (Head of the departments) have a leadership role at the discipline level and a key part in implementing institutional change. They will share in the turmoils of managing institutions (and people) in transition: however, because their responsibilities are at a more detailed level they will need to have more tangible competencies. Among them will be the following:

- people management skills, such as team building and helping staff to develop themselves academically and professionally;
- numeracy and understanding of financial and cost issues;
- IT awareness;
- sensitivity to new developments in the external environment, such as competitive threats;
- students consciousness;
- strategic awareness of the institution's position;
- understanding of how to use institutional decision making processes in a collegial environment.

When placed in the same system, people, however different, tend to produce similar results.

Strategic planning recognizes the intricacy of managing a higher education institution in today's world (Van Der Donckt:166.) Kashoki includes strategic planning in his check-list of anagement priorities in the coming years and stresses the dangers of entrusting key functions - whether academic or administrative - to untrained personnel (Kashoki:159,160.)

Academic staff in their teaching role (John Fielden, 1998) face probably the biggest set of challenges to their working patterns. They bear the ultimate burden of having to "do more with less", as student numbers increase without matching funding. They are being asked to teach a wider range of students (Tamil medium, Vocational group, lateral entry) in different ways involving new methods and technologies. Their accountabilities are being sharpened and made explicit, as quality reviews and assessments examine what they do.

In this harsh environment a model teaching staff member would have the following competencies:

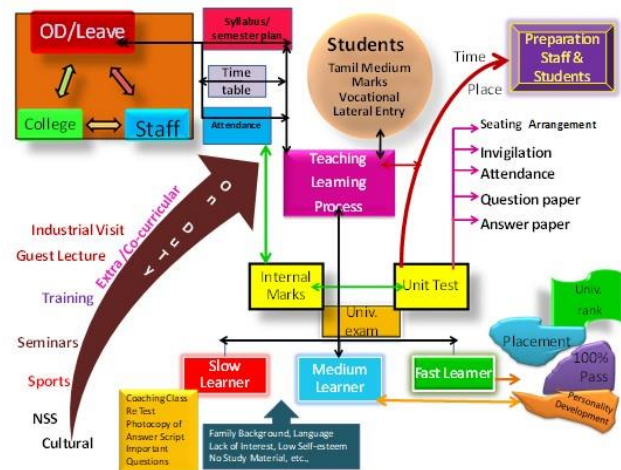
- awareness and understanding of the different ways in which students learn;
- knowledge, skills and attitudes relating to assessment and evaluation of students, in order to help students learn;
- commitment to scholarship in the discipline, maintaining professional standards and knowledge of current developments;
- awareness of IT applications to the discipline, both as regards access to materials and resources world-wide and as regards teaching technology;
- sensitivity to external "market" signals as regards the needs of those likely to employ graduates of the discipline;

- mastery of new developments in teaching and learning, including an awareness of the requirements of "dual mode" tuition with face to face and distance learning using similar materials;
- customer awareness, as regards the views and aspirations of stakeholders, including students;
- understanding of the impact that international and multi-cultural factors would have on the curricula;
- ability to teach a diverse range of students, from different age groups, socio-economic backgrounds, races etc, throughout a longer day;
- skills in handling larger numbers of students in formal lectures, seminars or workshops than hitherto, without the loss of quality;
- development of personal and professional "coping strategies".

This formidable list of required competencies is unlikely to come together in any one person, so that there will be a tendency to encouraging staff to specialise in some of the skills and functions described.

The author adopted a clearly defined strategy for the initiation of change since resistance to change will never cease completely. The author is committed to educate the staff members by organizational change. Author has explained why change is required, what is expected by it. Through this education, staff members were more understanding and created a sense of trust. The author conducted a staff meeting every week to facilitate the dialogue and team learning.

Fig.1. The interdependent and volatile environments staff are operating in.



As Bill Wulf [president of the National Academy of Engineering] has eloquently warned us, we work every day with systems whose complexity is so great that we cannot possibly know all of their possible end states. The author also clearly explained **the interdependent and volatile environments staff are operating in** to staff members repeatedly, how each pattern has an influence on the rest, an influence that is usually hidden from view. Each pattern is bound by invisible fabrics of interrelated actions, which often takes some time to fully play out their effects on each other.

For example, if staff is on leave, he/she has to arrange the alternative staff to handle the class. It alters the time table, lesson plan and teaching learning process. In turn it has impact on students' attendance and their internal marks. The internal marks' plays a major role in pass percentage. If staff is on leave how this influence and the interrelated actions was explained very often to the staff and make them to understand the learning horizon. Similarly all the interdependent patterns were explained very often.

Organizations have a tendency to change incrementally, not radically (Beech,2001), despite the growing number of challenges affecting any organization operating in a non – static environment.

Staff members worry about what effects any change will have for them personally in most of the cases, as change may affect their pay, their career prospects, the overall status quo in the college, their position, title, knowledge etc. Quite understandably, people within the change process are far more likely to embrace change if they feel it will make them better off.

- The college created a culture where participation in staff development activities is a regular feature of life and is welcomed.
- The author gives firm backing and support to staff development as an institutional priority and ensured that it receives adequate funding.
- The author itself took responsibility for helping members of their staff develop their performance and effectiveness.
- The college sets the target for individual staff to attend each one training programme in subject content, the pedagogical process and managerial skills every semester.
- The college created practice fields and established regular rhythm of practice and performance

We created the awareness about the learning disabilities of staff. Staff understood their identity, role and responsibilities. They slowly expand their boundaries of their position. They realized their own actions extend beyond the boundary of that position. Though they are not completely stop blaming others, but before blame others, they think twice whether the blame is right. They experienced the consequences of their actions within their learning horizon. They are able to visualize the consequences of their actions beyond their learning horizon accordingly they act and take decisions. The fear of pain and threat posed by learning situations are eroded.

5. Desirable Faculty Profiles and Specific Training Requirements

When it comes to changes in teaching, learning and assessing process, we tend to focus on the success of the past rather than the challenges of the future. We are teaching more and more about less and less. As our interest and awareness of global problems increases, our teaching efforts are increasingly being perceived as pointless attempts to teach everything about nothing.

Hassan El Hares (1994) opined that both the ideal graduate and the model faculty member for the 21st century will possess a number of desirable attributes. These qualities were first defined during a workshop on curriculum development, held at the U .A. E. University in 1993.

The graduate needs:

- the ability to identify a problem, then to develop and evaluate alternative solutions;
- self-learning skills and an interest in life-long education;
- awareness of the practical applications of knowledge;
- a positive attitude toward other people's ideas;
- a high level of maturity and responsibility;
- an integrated and interdisciplinary view;
- to be effective in communicating ideas by possessing strong oral and written skills;
- the ability to use computers for communication, analysis and design;
- to benefit from present university courses which are notable for the breadth and depth of their content;
- a knowledge of business strategies and management practices.

In contrast, the desirable characteristics of a good higher education teacher may be listed as follows:

1. Open-mindedness i.e. receptiveness to arguments or ideas

The professor should always invite criticisms or comments on the ideas presented; he should encourage an open atmosphere where students feel free to ask questions and seek help if needed. This will help him to develop and evaluate alternative solutions.

2. Versatility i.e. showing varied skills or ability

This is a good indicator of life-long learning because it suggests the capacity for self-instruction. In fact, a versatile professor will not concentrate on a few courses which are always the same, but rather he will be able to teach practically all undergraduate courses within his field.

3. Practice-oriented i.e. involvement in practical aspects of his discipline

It has been observed that the hands-on teacher, who is aware of the practical know-how and applications of his field, is highly likely to communicate these skills to his students. He is better equipped to tackle concrete problems and, in the technical disciplines, he is likely to involve practising professionals in his courses. This establishes the link between theory and practice and gives students useful experience of their future profession.

4. Self-confidence i.e. confidence in one's abilities

This will help the professor to build a climate of trust, openness, mutual respect and interdependence. Consequently, this encourages students to be more mature and responsible. It has been suggested that such a teacher is more inclined than others to give open book exams, to let students conduct seminars and presentations and to discuss practical problems related to everyday life.

5. Synthetic reasoning i.e. knowledge of deductive reasoning in order to integrate often diverse concepts into a coherent whole

This characteristic will help the teacher transmit an integrated and interdisciplinary vision to his students, which is particularly useful in complex fields of knowledge.

6. Logic i.e. well-reasoned thinking

If students are to acquire strong oral and written communication skills, their model – the teacher- must be of the highest quality. His ability to direct team activities in the classroom so as to impart a logical approach to problem-solving is of the greatest importance.

7. Promotion of the use of computers for communication, analysis and design

Today, both teachers and students generally realize that computers enhance productivity and thus strengthen the capacity to understand and solve a given problem. The student can thus work better and faster. Furthermore, access to communication services, such as E-mail, facilitates contacts so that global knowledge-sharing is a reality in the learning context.

8. Broad yet detailed mastery of the field

This trait is vital if the teacher is to deal with knowledge outside the actual parameters of the curriculum, which is often inevitable when dealing with highly motivated students.

9. Knowledge of time management and course organization

Students learn by imitation. Thus, faculty must set a proper example by demonstrating a positive attitude toward management practices. This also allows them to be more available for consultations with students and, in a world with continuing graduate employment problems, their professional advice is very frequently sought.

Many of these characteristics are inherent in the good teacher. However, they can be acquired through appropriate staff development programmes provided that faculty is open to change. Good teaching then becomes a combination of expertise (whether academic or technical), of attitudes,

technology and of skills - if all are present, then positive interaction between the teacher and his students will result.

$$\text{Success} = \text{Attitude} \times \text{Knowledge} \times \text{Technology} \times \text{Skill}$$

Silvio (1994) suggests that today's professor is in fact a knowledge manager as a result of his diverse professional role. He depicts a future where faculty must be media-literate and are responsible for ensuring that their students acquire the same sophisticated skills (Silvio, 1994: p130.) Furthermore, both teaching and institutional quality will be assessed in relation to this capacity for knowledge management.

Faculty must prepare students for solving unknown problems and not for addressing assumed scenarios. Therefore, the emphasis should be on teaching to learn rather than providing more knowledge. Teaching students to think analytically will be more important than helping them to memorize. Teaching them to cope with rapid progress will be more critical than teaching them the entire technology breakthrough.

In a scenario-free future, there are no anticipated problems, only anticipated challenges and possible opportunities. Teacher must focus on shaping analytical skills, problem-solving skills and design skills. Teacher must teach methods not solutions. They must teach future students to be creative and flexible, to be curious and imaginative (Linda Katchi, 2005, p151).

Faculties must understand and appreciate the impact of social/cultural dynamics on a team environment. They must appreciate the power of a team relative to the importance of each individual's talent. They must focus on developing skills that enable students to address the unknown.

Information and Communication Technology (ICT) simply become part of the generation and transfer of knowledge. Since teaching of students who are computer literate with a strong visual orientation is the need of the hour, Hares and

Jones, both of whom note the need for faculty to be skilled in Information and Communication Technology techniques as well (El Hares, 1994: p100, Jones, 1994: p115.)

If staff are inexperienced, then they need intensive teaching courses to acquire rudimentary pedagogical skills. Thus, the range of faculty profiles in today's higher education institution is already varied and is likely to be more so in the future. This, in turn, has clear consequences for the quality issue.

To create global faculties, focus on how to learn and how to apply what has been learned. Faculty need to focus on how to seek and find information. We need faculties who satisfy a few fundamental teaching principles but allow for true variations. Requirements must be flexible to react and respond to change.

5.1. Educating Faculties for 2020 and Beyond

The list of things that have not changed is long – far too long. Issues that are still with us, that have hardly changed during all these years, (Charles M. Vest, 2005), are:

- how to make the freshman year more exciting,
- how to explain what faculties actually do,
- how to improve the writing and communication skills of faculty,
- how to bring the richness of Indian diversity into business workforce,
- how to give faculty a basic understanding of business processes,
- how to get faculty to think about professional ethics and social responsibility.
- how to merge the physical, life, and information science when working at the micro and nanoscales
- how to conceive, design, and operate social systems of greater complexity
- how to work within a framework of sustainable development
- how to be prepared to live and work as global citizens

That is a tall order...perhaps even impossible order.

We always underestimate the rate of technological change and over estimate the rate of social change. That is an important lesson for faculty because we educate and train the men and women who drive technological change. We turn them loose to affect, and work within, the developing social, economic and political context.

There are many challenges ahead, it is important to remember that students are driven by passion, curiosity, engagement, and dreams. Although we cannot know exactly what they should be taught, we must think about the environment in which they learn and forces, ideas, inspiration, and empowering situations to which they are exposed. In the long run, making colleges exciting, creative, adventurous, rigorous, demanding, and empowering milieus is more important than specifying curricular details.

Globalization is not a choice, it is a reality. To compete in world markets in the “knowledge Age”, we cannot depend on geography, natural resources, cheap labour, or military might. We can only thrive on brain power, organization, and innovation.

But how are we going to accomplish all this teaching, learning and assessing? What has stayed constant and what needs to be changed? One constant is the need for a sound basis of Mathematics, Science, engineering principles and analytical capabilities, which are still the most important thing we provide to the students. “We need to move from the sage on the stage to the guide on the side” Studio teaching, team projects, open ended problem solving, experimental learning, engagement in research, and the philosophy of CDIO (conceive/design/implement/operate) should be integrated elements of faculty development.

Two obvious things have changed – we now have information technology and we have the MTV generation. So the idea is

to provide deep learning through instant gratification. Even though information technology is a powerful reality, an indispensable, rapidly developing, empowering tool, computers do not contain the essence of teaching, learning and assessing. These are deeply human activities. So we have to keep our means and ends straight.

6. Personal Mastery

Kazuo Inamori, (1995) says that for any aspect of business, the active force is “people”. People have their own will, their own mind, and their own way of thinking. If the employees themselves are not sufficiently motivated to challenge the goals of growth and technological development, there will be no growth, no gain productivity and no technological development.

Tapping the potential of people, Inamori believes, will require new understanding of the subconscious mind”, will power, action of the heart and sincere desire to serve the world. Personal mastery is the discipline of personal growth and learning. It goes beyond competence and skills, though it is grounded in competence and skills. It is continually expanding people’s ability to create the results in life they truly seek. It embodies two underlying movements. The first is continually clarifying what is important to us. We often spend so much time coping with problems along our path that we forget why we are on that path in the first place. The result is that we only have a dim, or even inaccurate, view of what’s really important to us.

The second is continually learning how to see current reality more clearly. We’ve all known people entangled in counterproductive relationships, who remain stuck because they keep pretending everything is all right. In moving toward a desired destination, it is vital to know where we are now.

Personal mastery is not something we possess. It is a process. It is a life long discipline. People with a high level of personal

mastery are acutely aware of their ignorance, their incompetence, their growth areas.

6.1. Team Learning

Team Learning (Peter, 2006, p218) is the process of aligning and developing the capacity of a team to create the results its members truly desire. Team learning involves mastering the practices of dialogue and discussion. In dialogue, there is free and creative exploration of complex and subtle issues, a deep “listening” to one another and suspending of one’s own views. By contrast, in discussion different views are presented and defended and there is a search for the best view to support decisions that must be made at this time. Dialogue and discussion are potentially complementary.

6.1.1. Dialogue and Discussion

Furthermore, staff members’ views asked through dialogue, for a change based on their potential, which is acceptable by all the staff members to gain further involvement and commitment to the change itself. The purpose of dialogue is to go beyond any one staff understanding, is to reveal the incoherence in staff members thought, is to become observers of staff members own thinking. The authors act as a “facilitator” who “holds the context” of dialogue. Authors have identified the following two basic conditions necessary for dialogue. 1. Suspending assumption. 2. Seeing each other as colleagues.

To suspend one’s assumptions means constantly accessible to questioning and observation. It means being aware our assumptions and holding them up for examinations. Willingness and treating each other as colleagues acknowledges the mutual risk and establishes the sense of safety in facing the risk. As a facilitator, the authors, helped the staff members maintain ownership of the change process and the outcomes – we are responsible for what is happening.

It is staff members’ thoughts and the way they hold on to them that are in conflict, not staff members. Once staff members see

the participatory nature of their thought, they begin to separate themselves from their thought. They begin to take a more creative, less reactive stance toward their thought. Through dialogue staff members can help each other to become aware of the incoherence in each other’s thoughts, and in this way the collective thought becomes more and more coherent.

In a dialogue, different views are presented as a means toward discovering a new view. It was more like loud debate, heated discussions and healthy conflict, with staff engaged in a search for the best acceptable answer. There are two interesting constructive statement made by the staff in the staff meeting. First, “We have met the enemy and he is us”. Second, “Why can’t we do good works at work?”

The affiliating University formulated the guidelines, for all theory courses, the continuous assessment shall be for a maximum of 20 marks (consisting of 15 marks for tests/experiments and 5 marks for attendance) out of 100 marks. So, first author has decided to formulate the system for the same. Staff members agreed after the dialogue in the staff meeting to

1. Implement the Bloom’s revised taxonomy
2. Administer unit tests after completing every unit of syllabus.
3. Calculate continuous assessment marks 20 for each subject and made it transparent to stakeholders.
4. Analyze the unit test results after every unit test to identify & help the slow learners
5. Conduct the coaching class and retest for slow learners
6. Attend the faculty development programme

These systems were communicated to the staff and students at the beginning of the semester in the staff meeting and in all the classes and ensure that every one would understand and accept it.

6.2. Practice field

The problem starts with not understanding knowledge, how it is created and how it operates in practical settings – because knowledge is social. Knowledge is what we know how to do, and we do things with one another. That is how the work gets done. Collaboration is the flip side of knowledge management. We cannot talk about one without another. So, to manage knowledge workers we need to address collaboration and tools that help staff collaborate.

Today much of our work is on knowledge networks, which we also call networks of collaboration: how staff work together to create value and to create new sources of value. This is a very organic process, but there are ways to understand it and ways to help rather than hinder it.

We have developed the discipline of “Team Learning”, which requires practice. It is very difficult to learn anything new without the opportunity for practice. The process whereby such teams learn is through continual movement between practice and performance, practice, performance, practice again, perform again. The staff meeting and administering the examinations became the practice field. It offers a very different environment, where staff members are actively doing what they want to be able to do well and talking about what’s working and what isn’t and gradually developing a greater ability for effective action in the “performance fields”, where results matter.

Based on, Kotter and Schlesinger (1979), Buchanan and Huczynski (1996), it is important for the change agent and / or the leaders in charge to educate and commit those affected by organizational change.

The author trained the staff as part of the teaching, learning and assessing process to improve the pass percentage, on writing the specific instructional objectives, mapping of five units of syllabus, instructional methods, students evaluation, mapping of objectives, instruction and assessment in accordance with Bloom’s revised taxonomy. All the staff

became conversant with the same and discussed in detail in the next chapter.

Whoever staff attended the faculty development programme, they developed the culture of presenting the same to all the staff in the staff meeting. It serves two purposes, first, awareness and communication about attending the programme and second developing the presentation skills of staff.

The author also educated the staff members on administering the examinations and explained in detail the importance of scheduling & seating arrangements, preparation and making sufficient copies of question papers, distribution and collection of question paper & answer scripts, importance of invigilation, paper correction and timely distribution of marks. Each department staff conducted each unit test to practice the skill of administering the examinations. This helps the understanding and enmeshing the team work among the staff. Our staff agreed to live in a community in which they would not exploit or blame each other, but rather help each other so that we may live our life fully.

After every unit test, staff members analyzed the results to identify the fast, medium and slow learners.

These results have been presented in the class as well as in the staff meeting for further analysis to improve the result in the ensuing unit tests and ultimately in the end semester examinations. The further analysis reveals that staff members have more responsibility in identifying and helping the slow learners in imparting the knowledge and skill to improve their pass percentage. These responsibilities include not only they act as teacher, but also act as counselor, mentor, facilitator, coach and many more. There is a need for change in teaching learning process and need for life long learning.

7. Teaching, Learning and Assessing Process

College teaching increasingly will be viewed as a true profession in its own right, underpinned by a solid base of

knowledge derived from empirical studies on learning and student development, college effects on students, and the management of learning in complex organizations. Professors will be understood to need solid grounding in both theory and practice in both higher education and one or more disciplinary content areas.

Intended student outcomes will become far richer than they in many cases are now. They will expand

1) beyond what is often primarily factual and low-level conceptual learning in a particular discipline to mastery of diverse higher-order cognitive skills such as critical thinking, complex problem solving, and principled ethical reasoning and

2) beyond the cognitive and psychomotor domains of learning to outcomes that will include significant affective components such as self-esteem and interpersonal and team skills.

Together these outcomes can lead to the development of the "whole person," a result we profess to value but often fail to achieve, and can fit a student for a fulfilling life, a successful professional career in a rapidly changing world, and significant contribution as a citizen in a democratic society.

We have started using Anderson et al.'s (2001) taxonomy, which helps staff members make sense of the curriculum, plan instruction and design assessment that are aligned with the objectives inherent in the curriculum and ultimately improve their teaching quality.

The traditional learning objectives (Linda.V et al., 2009) of engineering curricula have focused on fundamental knowledge, computational skills and their application. The reasoned aspect of teaching relates to what objectives teachers select for their students. The intentional aspect of teaching concerns how teachers help students achieve the teachers' objectives, that is, learning environments the teachers create and the activities and experiences they provide. The learning

environments, activities, and experiences should be aligned with, or be consistent with, the selected objectives.

When teachers are confronted with exceedingly large number of vague objectives, we need to organize and to make the objectives more precise. In a nutshell, then teachers need an organizing framework that increases precision and, most important, promotes understanding.

This part of the paper shows how the use of Bloom's revised taxonomy (Anderson et al. 2001) , as a pedagogical framework, can help teachers to address the issues and concerns pertaining to education. The best practices include Planning that is "objective –driven" begins with specifying instructional objectives from University syllabus (affiliated system) in terms of the classification of the Taxonomy table followed by "activity –driven", which gives initial emphasis to the instructional activities and then, operating from a "test-driven" perspective starts with concerns for assessment finally mapping of all the above in the taxonomy table.

7.1. Bloom's Taxonomy

It is the author's belief that the use of Bloom's taxonomy could improve the understanding of the pedagogical, or learning, objectives that should be considered in any educational program, amongst teachers. Bloom's taxonomy of the cognitive domain Bloom's taxonomy is possibly one of the best known and most widely used models of human cognitive processes. Bloom's model was originally developed in the 1950's and remained in use more or less unchanged until fairly recently (Van Niekerk ,2008, p. 249). A revised version of the taxonomy was published in 2001. This revised taxonomy has become accepted as more appropriate in terms of current educational thinking (Van Niekerk ,2008, pp. 249-260). Both versions of Bloom's taxonomy consist of six levels which increase in complexity as the learner moves up through these levels.

There are two main differences between the original and the revised versions of the taxonomy. Firstly, the revised version uses descriptive verbs for each level that more accurately describes the intended meaning of each level. Secondly, the revised version has swapped the last two levels of the original version around. This was done because recent studies have suggested that generating, planning, and producing an original "product" demands more complex thinking than making judgments based on accepted criteria. The hierarchy of complexity in the revised taxonomy is also less rigid than in the original in that it recognizes that an individual may move among the levels during extended cognitive processes. This paper will focus on the revised version of the taxonomy.

Wherever this part of the paper mentions Bloom's taxonomy, it should be assumed that the revised version is intended, unless otherwise stated. The following is a brief explanation of each of the six levels of this revised taxonomy. [Anderson et al. 2001, pp. 250-252]:

Remember: Remember refers to the rote recall and recognition of previously learned facts. This level represents the lowest level of learning in the cognitive domain because there is no presumption that the learner understands what is being recalled.

Understand: This level describes the ability to "make sense" of the material. In this case the learning goes beyond rote recall. If a learner understands material it becomes available to that learner for future use in problem solving and decision making.

Apply: The third level builds on the second one by adding the ability to use learned materials in *new* situations with a minimum of direction. This includes the application of rules, concepts, methods and theories to solve problems within the given domain. This level combines the activation of

procedural memory and convergent thinking to correctly select and apply knowledge to a completely new task. Practice is essential in order to achieve this level of learning.

Analyze: This is the ability to break up complex concepts into simpler component parts in order to better understand its structure. Analysis skills includes the ability to recognize underlying parts of a complex system and examining the relationships between these parts and the whole. This stage is considered more complex than the third because the learner has to be aware of the thought process in use and must understand both the content and the structure of material.

Evaluate: Evaluation deals with the ability to judge the value of something based on specified criteria and standards. These criteria and/or standards might be determined by the learner or might be given to the learner. This is a high level of cognition because it requires elements from several other levels to be used in conjunction with conscious judgment based on definite criteria. To attain this level a learner needs to consolidate their thinking and should also be more receptive to alternative points of view.

Create: This is the highest level in the taxonomy and refers to the ability to put various parts together in order to formulate an idea or plan that is new to the learner. This level stresses creativity and the ability to form *new* patterns or structures by using divergent thinking processes. In addition to these levels of the cognitive domain [4] also places major emphasis on the use of the following categorization of the knowledge dimension [4, pp. 45-62]:

Factual Knowledge - The most basic elements the learner must know in order to be familiar with a discipline. I.e. Terminology or specific details and elements.

{ **Conceptual Knowledge** - The interrelationships among the basic elements of larger structures that enable these elements

to function together. I.e. Classification, categories, principles, theories, models, etc.

Procedural Knowledge - How to do something, methods of inquiry, how to use skills, apply algorithms, techniques and methods. I.e. Subject specific skills, algorithms, techniques, and methods as well as knowledge of criteria for determining when to use appropriate procedures.

Meta-Cognitive Knowledge - An awareness and knowledge of one's own cognition. I.e. Strategic knowledge, Self-knowledge, knowledge about cognitive tasks, including contextual and conditional knowledge.

Activities at these six levels of the cognitive domain are usually combined with the one or more of the four types of knowledge in a collection of statements outlining the learning objectives of an educational program. Usually a *learning objective* statement will be used to create a set of *learning activities*. Learning activities are activities which help learners to attain the learning objectives.

A Learning activity consist of a *verb* that relates to an activity at one of the levels of the cognitive domain, and a *noun* providing additional insight into the relationship of the specific learning objective to a category of knowledge (Anderson et al. 2001, pp. 93-109). The uses of taxonomy often assist educators in gaining better understanding of learning objectives, and activities. However, it is not always clear how this increased understanding can help the educators.

7.2. Best Practices

Teachers often attempt to address needs of students without adequately studying and understanding the underlying factors that contribute to those needs (Fuller et al 2007, pp. 27-36). It has been argued before that educational material should ideally be tailored to the learning needs and learning styles of individual learners (Roper, 2005, p. 19).

The reference point for any educational program should be a set of clearly articulated "performance objectives" that have been developed based on an assessment of the target audience's needs and requirements (Fuller et al 2007, p. 96). Correct usage of an educational taxonomy not only helps to articulate such performance objectives but, more importantly, helps the educator to correctly gauge the needs and requirements of the audience.

The following are the best practices followed at Mount Zion College of Engineering & Technology in the teaching learning and assessing process.

- a. Identifying the pre-requisite knowledge for a particular subject.
- b. Mapping of five units of subject content for that subject
- c. Mapping of that subject with other subjects of a programme
- d. Delivering the knowledge content of pre-requisite knowledge at the beginning of the semester.
- e. Preparing the specific instructional objectives from the syllabus in accordance with Bloom's revised taxonomy
- f. Preparing the lesson plan
- g. Teaching learning process in accordance with Bloom's revised taxonomy
- h. Continual evaluation during the semester and at the end of the semester in accordance with Bloom's revised taxonomy
- i. Mapping of objectives, teaching learning process and assessment in the Bloom's revised taxonomy table.

7.3. Methodology

The best practices is illustrated for 60 students of final year (seventh semester) undergraduate engineering Information Technology programme during 2009 – 2010 for User Interface Design subject at Mount Zion College of Engineering and Technology, Pudukkottai, Tamil Nadu, India.

Planning that is “objective –driven” begins with specifying instructional objectives from University syllabus (affiliated system) in terms of the classification of the Taxonomy table followed by “activity –driven”, which gives initial emphasis to the instructional activities and finally, operating from a “test-driven” perspective starts with concerns for assessment. Objectives exist in many forms, ranging from highly specific to global and from explicit to implicit. The most commonly used model of educational objectives is based on the work of Ralph Tyler (1949). Tyler suggested that “the most useful form for stating objectives is to express them in terms which identify both the kind of behavior to be developed in the student and the content.

There are five units in the syllabus. First unit dealt with introduction of human computer interface, second unit dealt with designing components, third unit dealt with characteristics of components and presentation styles, fourth unit dealt with web pages and fifth unit dealt with testing. Mapping of these five units illustrated after the pre-requisite knowledge delivered before the actual content delivered as per the lesson plan.

7.3.1. Example

Illustration of One sample objective is given below:

Subject content given in the IV unit of syllabus: Text for web pages

Working knowledge of WINDOWS have been identified as pre- requisite knowledge and delivered the same to the students at the beginning of the semester.

Objective: To apply the designing concepts to create a web page – *Procedural knowledge* domain and “*Apply*” cognitive process domain

Activities: Defined message, listed the type of messages, listed the type of words, defined icon, listed the categories of icon, defined static icon, defined dynamic icon, defined localization, defined accessibility, and defined earcons – *Factual knowledge* domain and “*Remember*” cognitive process domain

Activities: Explained how to choose the image, explained multimedia, explained types of errors, explained coloring,. - *Conceptual knowledge* domain and “*Understand*” cognitive process domain

Assessment: Apply the designing concepts to create a students info web page - *Procedural knowledge* domain and “*Apply*” cognitive process domain

Table1. Mapping of “To apply the designing concepts to create a web page” Objective, Teaching Learning Process (activities) and Assessment

KNOWLEDGE DIMENSION	THE COGNITIVE PROCESS DIMENSION					
	1. REMEMBER	2. UNDERSTAND	3. APPLY	4. ANALYZE	5. EVALUATE	6. CREATE
A. FACTUAL KNOWLEDGE	10 activities					
B. CONCEPTUAL KNOWLEDGE		4 activities 1.To explain how to choose the image 2. To explain multimedia, 3. To explain types of errors, 4. To explain coloring				
C. PROCEDURAL KNOWLEDGE			To apply the designing concepts to create a web page			
D. META-COGNITIVE KNOWLEDGE						

For each activity, the teacher can derive a lot of useful information about the "coverage" provided by the activities.

The teacher could choose to focus on the learning objective itself, and thus, only use assessment methods that require the learner to apply procedural knowledge. Or the assessor might decide to focus on one or more learning activities and thus have a wider range of assessment coverage. By noting assessment activities on the same taxonomy table, the teacher can ensure that the chosen assessments correspond directly to what he/she intends to assess.

In the given example, a clear "disconnect" between the learning objective, activities and disconnect between activities and assessment and the alignment between objective and assessment is observed.

Instead of focusing on the application, or use, of designing concepts, the activities focus on factual and conceptual knowledge. If the teacher directly focuses on application, then this factual and conceptual knowledge have become pre-requisite knowledge for that objective. Similarly, other "miss-alignments" can be identified with the help of this taxonomy table.

Seventy five learning objectives were established for User Interface Design subject in accordance with Bloom's revised taxonomy. All the seventy five learning activities are delivered to the students over the period of 53 hours as per the lesson plan prepared before beginning of the semester.

These learning activities "are most important activities receiving the larger share of the available resources". In order to design activities that will result in maximum learning, one can look for activities that involve more than just one type of knowledge.

The following table illustrates unit wise the number of objectives classified in accordance with Bloom's revised taxonomy and the representative sample of learning objectives is selected as questions to evaluate the students' achievements of learning objectives.

Table 2: Table of specifications

UNIT	No. of objectives pertaining to Factual Knowledge/ Remember	No. of Questions	No. of objectives pertaining to Conceptual Knowledge/ Understand	No. of Questions	No. of objectives pertaining to Procedural Knowledge/ Apply	No. of Questions	Total No. of Objectives in Interface Design subject	Total No. of Questions selected for End semester exam.
1	3	2	7	2	0	0	10	4
2	10	2	11	2	0	0	21	4
3	6	2	8	1	4	1	18	4
4	4	2	8	2	0	0	12	4
5	3	4	6	1	5	1	14	6
Total	26	12	40	8	9	2	75	22

7.4. Findings and discussions of teaching, learning and assessing process

Linda.V et al., (2009) considered what has traditionally been the focus of engineering curricula: *mastery* of the core competencies. Empirical data show that a greater degree of *engagement* or *active learning* results in higher *mastery*.

There are 26 objectives pertaining to Factual Knowledge, out which 12 objectives are used for evaluation of students at the end of the semester. 11 out of 60 students (remembered) i.e. 18.30% of students correctly answered all the 12 objectives, and 21 out of 60 students (remembered) i.e., 35% of students correctly answered 50 % of the objectives.

There are 40 objectives pertaining to Conceptual 1 Knowledge, out which 8 objectives are used for evaluation of students at the end of the semester. 8 out of 60 students (understood) i.e.,13% of students correctly answered these objectives and 24 out of 60 students (understood) i.e.,40 % of students correctly answered 50 % of the objectives.

There are 9 objectives pertaining to Procedural Knowledge, out which 2 objectives are used for evaluation of students at the end of the semester. 5 out of 60 students (able to apply the factual and conceptual knowledge in a given situation) i.e.,8% of students correctly answered these objectives, and 11 out of 60 students (able to apply the factual and conceptual knowledge in a given situation) i.e.,18.30% of students correctly answered 50 % of the objectives.

Table 3: Mapping of Objectives, Teaching Learning Process (activities) and Assessment for User Interface Design Subject

KNOWLEDGE DIMENSION	THE COGNITIVE PROCESS DIMENSION					
	1. REMEMBER	2. UNDERSTAND	3. APPLY	4. ANALYZE	5. EVALUATE	6. CREATE
A. FACTUAL KNOWLEDGE	26 Objectives 26 Activities 12 Questions 18.3% mastered					
B. CONCEPTUAL KNOWLEDGE		40 Objectives 40 Activities 8 Questions 13% mastered				
C. PROCEDURAL KNOWLEDGE			9 Objectives 9 Activities 2 Questions 8% mastered			
D. META-COGNITIVE KNOWLEDGE						

These learning activities "are most important activities receiving the larger share of the available resources". In order to design activities that will result in maximum learning, one can look for activities that involve more than just one type of knowledge.

An example of how Bloom's revised taxonomy might be applied to learning objectives, activities and assessment in a User Interface Design subject was provided. This brief example, to show how a taxonomy table based on this example, could assist educators to address the issues and concerns pertaining to education as best practices.

If all the objectives, activities and assessment are placed in the taxonomy table, then it helps us to "understand about understanding". By examining the taxonomy table the teacher can easily identify areas of knowledge, or levels of the cognitive domain, that has not been covered by the learning activities. Similarly, areas where multiple activities cover the same levels of cognition and categories of knowledge can be identified. Through the use of such taxonomy certain common weaknesses in educational programs might be addressed. The "miss-alignments" can be identified with the help of this taxonomy table

8. Lifelong learning

In addition to producing professionals who have been taught the advances in core knowledge and are capable of defining and solving problems in the short term, institutions must teach students how to be lifelong learners (Educating engineers, 2005, p2).

Lifelong learning is the "lifelong, lifewide, voluntary, and self-motivated" (Department of Education and Science (2000) pursuit of knowledge for either personal or professional reasons. The term recognises that learning is not confined to childhood or the classroom, but takes place throughout life and in a range of situations. Learning can no longer be divided into a place and time to acquire knowledge (school) and a place and time to apply the knowledge acquired (the workplace) (Fischer, Gerhard, 2000).

As Argyris (1985) says, there is a need to learn, arises from a "learning gap" between what is known and what needs to be

known. Learning involves a fundamental shift or movement of mind. Lifelong learning is an activity to fill up the “competency gap” between what you want and what is your current competency level to achieve what you want. It cannot be learnt without the willingness to practice. The willingness to act towards what you want, to risk, to fail.

There are three things important for practicing

1. Self discipline
2. Comfort with repetitiveness
3. If required, comfort with being alone.

Gerald Grow defines self directed learners as those individuals who are able to “Examine themselves, their culture and their milieu in order to separate what they

- Feel from what they should feel
- Want from what they should want
- Value from what they should value”

Organizations learn and grow only through individuals who learn. Individual learning does not guarantee organizational learning. But without it no organizational learning occurs. Learning in this context does not mean acquiring more information, but expanding the ability to produce the results people truly want in life.

Learning (www.solonline.org) is a process of enhancing learner’s capacity, individually and collectively, to produce results they truly want to produce. This definition has been helpful because it emphasizes two crucial features of learning that are often misunderstood: 1. the building of capacity for effective action, as opposed to intellectual understanding only; and 2. the fact that this capacity builds over considerable time.

Learning always has two levels (Peter, 2006). At one level, all learning is judged by what the learner can do, the results they produce. On the deeper level, learning is about developing a capacity to reliably produce a certain quality of results.

9. Findings and discussion

Support, guidance and training provided to staff members to those that need assistance, negotiation and agreement took place with potential resisters as they had important power within the organization.

Staff members experienced their responsibilities after analyzing the results of unit tests, it not only includes as teacher, but also includes as counselor, mentor, facilitator, coach and many more. Staff members identified there is a need for change in teaching learning process and life long learning.

The authors have identified three categories of staff members after providing guidance and training. First category, the staff members who can discharge the duty as a teacher by understanding their responsibility, without follow-up, second, with follow-up and third who can find it very difficult to discharge the duty as a teacher even with repeated follow-up and training.

The first category staff members learned to identify and minimize resistance and thus become more effective change agents. The second category staff members strengthen the change process, where as the third category staff members slowly left the college due to *low tolerance for change, questionable adaptability and learning disabilities*. All the time and energy we spend on third category staff siphons

energy away from developing and working with first and second category staff.

However, the boldest stance in relation to the phenomenon of ICT is taken by Silvio who suggests that today's professor is in fact a knowledge manager as a result of his diverse professional role. He depicts a future where faculty must be media-literate and are responsible for ensuring that their students acquire the same sophisticated skills (Silvio,1994:p130.) Furthermore, both teaching and institutional quality will be assessed in relation to this capacity for knowledge management.

The example discussed in this paper suggested that educational programs would be more effective if they adhered to pedagogical principles and staff members are imparted intensive training on Bloom's taxonomy and acquired rudimentary pedagogical skills.

Curriculum developers should use taxonomy, like Bloom's taxonomy, before compiling the content category of the educational programme. The use of such taxonomy could help to understand the learning needs of the target audience better.

Overall, the author emphasizes three key conclusions:

1. That staff development, as a fundamental element of institutional quality, must be part of an integrated approach which encompasses all types of training necessary for enhanced effectiveness and efficiency;
2. That investment in human capital has become a vital strategy in tackling the main issues confronting higher education today;
3. That staff development helps assure the contribution of higher education to capacity-building, and thereby to the human and social development processes.

Firstly, the experiences all focus on the common goal of excellence - academic, pedagogical or managerial. At the same time, they stress that none of these areas can be treated in isolation but rather should be seen as components of a holistic strategy for institutional development. Furthermore, they demonstrate that the value of this integrated approach to staff development is now widely recognized in markedly different regional contexts.

Secondly, their content relates to current questions which will probably continue to dominate higher education at least during the first decade of the 21st century. In a recent lecture entitled "Issues in British Higher Education for the Next Ten Years" given at UNESCO's International Institute for Educational Planning, Gareth Williams commented on five major issues:

- The consequences of the massification phenomenon;
- Modularization as a curricular innovation;
- Large-scale investment in new learning technology;
- continued limitations in funding;
- The quality of the academic profession (Williams: Summary.)

As these questions are also of world-wide concern, they require that quality must be defined in relation to the specific conditions of different regions. Regarding the last point dealing with the quality of the professoriate, Williams recommended that:

"Staff development needs to be taken more seriously "

Staff development has become a top priority for industrialized, developing and transitional states alike, seeking to address training needs on a holistic basis so as to strengthen the academy overall.

Lastly and most importantly, higher education staff development must be situated as part of the capacity-building process. This balances education and training so that each individual realizes his or her talents in order to accede to a better quality of life - as such, it is a tenet of social and human development.

10. Conclusion

Schaffer and Thomson (1992), suggest that management needs to recognize that there is abundance of both underexploited capability and dissipated resources in the organization. In their article which was published in the Harvard Business review in 1992 "Critical Success Factors (CSFs) in change", the authors argue that the most important point in any change process is to focus on results rather than activities.

In order to ensure successful learning amongst all students, it is extremely important to fully understand the educational needs of individual students.

Learning taxonomies help us to "understand about understanding".

Staff members became more skilled, had grown less afraid of change, learning the specific steps needed to make any large adjustment to new circumstances, worked well together to keep leaping into a better and better future. They ensured that the changes would not be overcome by stubborn, hard-to-die traditions.

Creating practice fields and establishing a regular rhythm of practice and performance has become a common strategy. Change leads to another change. We will achieve *homeostasis* – the ability to maintain conditions for survival in a changing environment.

We want it because we want it.

Through learning we

- re-create ourselves

- become able to do something we never were able to do
- re-perceive the world and our relationship to it
- extend our capacity to create

As lifelong learning is "lifelong, lifewide, voluntary, and self-motivated" learning to learn, that is, learning how to recognize learning strategies, and monitor and evaluate learning, is a pre-condition for lifelong learning

The faculty of next generation will need skills to be globally competitive over the length of his or her career.

We establish regular practice field for sharing information and enabling staff members to connect with each other more easily.

The effective institutional management and innovative teaching methods can help ensure that advanced knowledge and know-how are contributing to the solution of the crucial social and economic issues facing humanity today.

Key words: Personal mastery, Educational Taxonomy, Teaching Learning & Assessing, Learning Disabilities, Change, Team Learning, Lifelong Learning, Culture, Dialogue, Practice Field,

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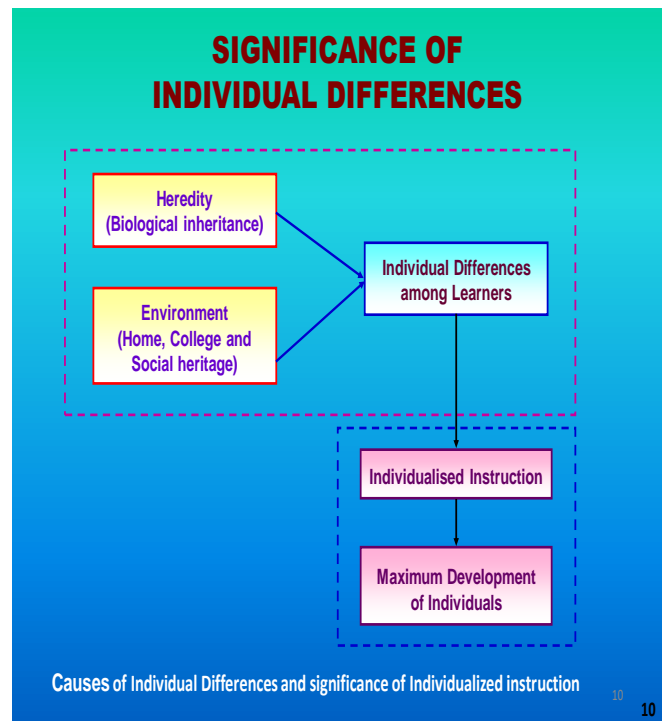
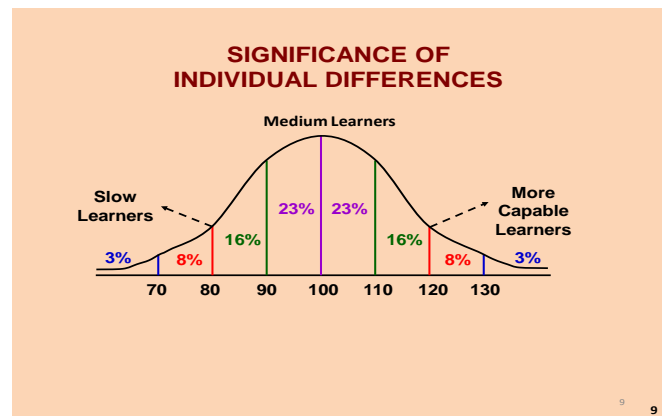
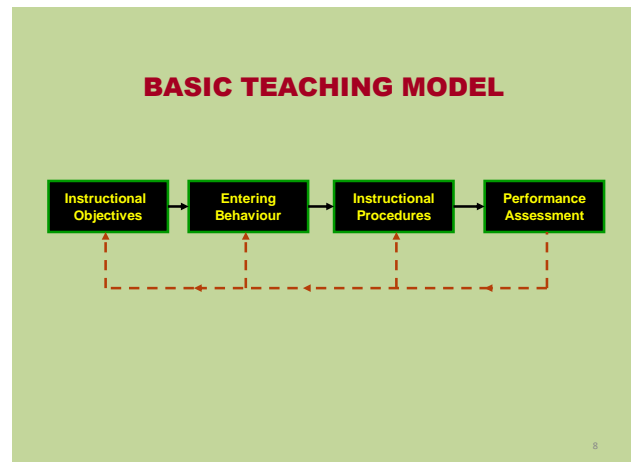
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Very complex system with many variances, (Intake) uncertainties, (activities) and unknowns (Result)

Difference between Syllabus and curriculum

- Educational Objectives
- Integrated sequence of subjects
- Detailed contents (Syllabus)
- Planned Teaching – Learning Experiences

- Criteria for methodologies for evaluation



Text books are the same everywhere but Learning
Experience isn't There is no proper explanation on how
Maths, Physics and Chemistry related to Engineering. In
USA 40% of the Engineering students drop out in 1 year.

Knowledge creation, imparting, acquisition and sharing.
(Check paper News)

21st Century Knowledge Society Learning Society Life long
learner Learning - Individual's onus
Learn, how to learn Delearn / Unlearn and Relearn
Ignorance is not an excuse
Live till old, Learn till you live – chinese proverb
Lear – Fire or fear greed or aspiration

“Historically shared knowledge” that defines the subject
matter of a particular discipline.

It is not static;

Changes are made as new ideas and evidence are accepted
by the scholarly community.

The term Knowledge to reflect our belief that disciplines are
constantly changing and evolving in terms of the knowledge
that shares a consensus of acceptance within discipline.