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on

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#Let'sBeatCoronaTogether

Improving Quality of Teaching-learning Involving Students and Industry Personnel

R Nagaraj* and C Sivapragasam**

Of the many innovative recommendations in the National Education Policy (NEP)-2020, the recommendation to give more autonomy to institutions and faculty members to design curriculum, pedagogy and assessment methods is highly welcome. The need for creative thinking and competence in higher order skills in students have been recognized by many across the globe [1-3], but its effective implementation is lagging in the Indian higher education system which is mostly dominated by teacher-centred learning. There are some good initiatives by many institutions which have gone for NBA accreditation of their programmes but such initiatives are yet to receive recognition beyond the institution boundary. The recommendation in NEP-2020 will certainly break this barrier in the days to come.

Proposed Model

This article proposes a model for improving the quality of teaching learning (Figure 1) by increasing the participation of the students and industry personnel at different levels. A partial implementation of this model in terms of allowing faculty members to have flexibility in designing assessment methods for a given course is already in place at the Kalasalingam Academy of Research and Education (KARE). At first stage, for a given course, a faculty comes up with a set of assessment methods which promote higher order thinking such as mini project, model development, field visit, experimental design, open book test, evaluation by industry personnel as well as peer evaluation. The other conventional assessment methods such as quizzes and written exams can be retained but with greater emphasis on higher order thinking questions. For each of the assessment methods chosen, proper justification has to be given. This can become an important document along with the course plan for the course. At the second stage, this document is made available to students and industry personnel to invite their suggestions. When students are made part of the design of the assessment methods itself, their interest in the course is expected to increase even before the course is taught. The student will most likely begin to see the faculty as a facilitator of effective learning. The involvement of industry personnel at the stage of design of assessment methods will add lot of practical values to impart necessary skills in students to improve their employability. It is better to include assessment by industry personnel as one of the mandatory assessment methods, atleast for those courses which are most important from the employability perspective.

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Fig 1: Proposed Model for Improving Teaching-learning



At the third stage, the actual assessment is carried out by the faculty member using the pre-defined rubrics. Although an individual student is assessed originally for his or her individual performance or competence, due to the relative grading concept, the final assessment score or grade will not necessarily be indicative of his or her actual performance or competence. In order for the students to improve himself or herself, it is proposed that the student does a self appraisal of his or her performance. This will help the student to identify where exactly he or she has to improve and keep the spirit of lifelong learning. The rubrics for the self appraisal need not be same as the ones adopted by the faculty. The student can devise his or her own rubrics which will inspire him to take steps to improve.

Conclusion

A model is proposed here for practical

implementation of autonomy in assessment. The proposed model will not only improve the quality of teaching learning but also add inner confidence in the students to face the challenges as he or she takes on professional career.

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Scientific Methods in Research and Sir Francis Bacon: Contemporary Relevance (Part -I[#])

K Paddayya*

All inductive sciences dealing with nature and the human world are linked together by a common thread from the point of view of mode of investigation. This linking thread is formed by the scientific method. The scientific method is not to be confused with the use of scientific gadgets and techniques whose number has now grown into a legion. Rather it refers to a generalized process of acquiring reliable knowledge about the world around us. A whole body of literature under the label philosophy of science has appeared in print about its various aspects-how it differs from other modes of investigation such as religious revelations, psychic pronouncements and poetic compositions; its development across centuries; roles of inductive and deductive forms of reasoning; nature of explanation and its types; and place of law—like formulations.

In the larger sense, scientific knowledge is an extension of common sense; indeed, the great nineteenth-century scientist Thomas Henry Huxley called it systematized common sense. Science has certain definite attributes which distinguish it from other modes of information. These include inter subjectivity, testability, comprehensiveness, and precision achieved by the employment of a specific body of concepts and measuring procedures and devices. Most important of all, unlike religious enunciations which claim finality, science is self-corrective and makes a provision for revisions, thereby rendering knowledge acquisition a dynamic process.

Various definitions of the scientific method are available. Johnson, a Geologist by profession, defines it as, "any method which effectively utilizes the several powers of the mind in a systematic, impersonal, nonemotional, unprejudiced effort to discover the origin and relationships of the phenomena, and the laws which control their manifestation" (Johnson, 1975). Carl Hempel, a Philosopher, calls it inquiry which examines, "how knowledge is arrived at, how it is supported and how it changes" (Hempel, 1966). John Dewey, also a Philosopher and Educationist, calls it inquiry and says that it originates in doubt and terminates when warranted assertions for its removal are arrived at (Dewey, 1938). Doubts about the empirical world involve questions not only of what, when and where but of why and how as well. The scientific method seeks to answer these questions. Three general sequential stages are recognized in the application of the scientific method in empirical sciences: initiation of inquiry; natural history (inductive) stage; and hypothesis formulation and testing. Writers from Aristotle to Einstein have recognized that the scientific method involves an unending cycle between facts and ideas.

In general discussions about the scientific method, the British Philosopher Sir Francis Bacon's (1561-1626) name does come up frequently. He is commonly referred to as the chief protagonist of inductive methodology and the matter is mostly left at that level. There is now a resurgence of interest in Bacon's thought and a comprehensive project called "Oxford Francis Bacon" intitiated by Graham Rees in the 1990s is in progress for reassessing his contributions. Indeed there is more to his work than meets the eye and in this article I intend to highlight the relevance of his ideas to the contemporary world of learning in particular and society in general. It will be useful to start with a brief historical account of the scientific method (Losee, 1977).

Historical Perspective

Aristotle was the first person to comment on the method of inquiry which in the ancient period was treated as part of natural philosophy. He valued knowledge for its own sake and equated it with understanding materials and events as they are through experience gained by using our senses. His inductive–deductive method commences when observations are initiated about events and materials and from these observations certain explanatory principles are induced. It is these principles which form the source for a discipline's set of deductive or syllogistic statements; these have a sort of finality

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associated with them and hence regarded as necessary truths. Aristotle's method held its sway throughout the medieval period and his writings were compiled to form a guide-book called the *Organon*.

Modern period commenced with a new scientific fervour about the phenomenal world, as facilitated by Copernicus' announcement of heliocentric theory and Kepler's formulation of laws governing planetary motions. Through his telescopic observations, Galileo extended support to Copernicus' heliocentric formulation and thus introduced the method of experimental proof for testing scientific conclusions. As we shall soon note, Francis Bacon replaced Aristotle's dialectic and syllogistic method with his inductive method. While Bacon advocated progressive ascent from particulars to general principles, Descartes' deductive methods ought to begin with the most general principles at the apex and proceed downwards to the lowest level.

The 17th and 18th centuries witnessed further developments. Newton reformulated Aristotle's inductive-deductive method and its elaboration by Francis Bacon and Galileo as the method of analysis and synthesis. It insisted on experimental confirmation of the consequences deduced by synthesis and also emphasized the value of deducing consequences that go beyond the original inductive evidence. Newton's name is often associated with the statement "Hypotheses non fingo", meaning "I feign no hypotheses". This has been interpreted by some writers to mean that Newton was against the use of hypotheses. He made this comment while referring to various theories put forward by workers about the underlying cause of gravitation. Actually speaking, he himself toyed with the notion of an ethereal medium being the governing force of gravitation. He further conceded that hypotheses could direct future work and also he provided a place for scientific generalizations (Blake, 1960).

We then have the formulations of two British thinkers–John Locke and David Hume – and two German writers – Gottfried Leibniz and Immanuel Kant. Locke held that science's goal was one of arriving at a set of probable generalizations about phenomena and their associations and sequences and that these do not satisfy the rationalists' ideas of necessary truths. While holding sense impressions as the sole source of knowledge of matters of fact, Hume did provide a role for the mind to arrive at empirically significant concepts by 'compounding, transposing, augmenting, or diminishing' of ideas derived from sense impressions. But he clarified that even with the availability of these empirical concepts no necessary truths could be taken for granted. Hume's ideas of causation too were tuned to the probabilistic nature of knowledge.

Leibniz attached a higher degree of probability to empirical generalizations about 'nominal essences' of the phenomenal world because these are derived from metaphysical principles or monads formed about its 'real essences'. Kant conceded with Hume that sense experiences form the basic source of our knowledge of external world but accorded a more prominent and agentive role to the mind or the knowing subject, which takes up the job of structuralrelational organization of raw material accumulated through sense impressions. He specified three stages in the organization of sense impressions into a coherent body of knowledge: a) the unstructured sense impressions are ordered with respect to Space and Time ('Forms of the Sensibility' or perceptions); b) such perceptions are related to what he calls 'categories of understanding' or concepts such as Unity, Substantiality, Causality, and Contingency; and 3) organization of 'judgements of experience' into a unified body of knowledge through application of 'Regulative Principles of Reason'. Kant believed that the regulative principles of reasondo prescribe ways of constructing scientific theories. He cited predictive power and testability as criteria of acceptability of scientific theories.

In the 19th Century conceptions about the scientific method became more specific and elaborate and formed an important component of philosophy of science. John Herschel stated that laws of nature used for building scientific theories refer to correlations of properties or sequences of events and that these could be achieved either through specification of inductive schema or by the formulation of hypotheses. William Whewell was both a historian and a philosopher of science, as exemplified in his two outstanding works titled 'History of the Inductive Sciences(1837)' and 'The Philosophy of the Inductive Sciences (1840)'. He visualized scientific progress as a series of steps involving a successful union of facts and ideas. Whewell clarified that induction was not a mere compilation of facts but involved colligation where binding together of facts takes place under

a conceptual framework. Scientific progress involved successive incorporation of lower level generalizations into higher level generalizations and the latter into theories.

John Stuart Mill's *System of Logic* continued the inductive tradition of previous periods but surely transformed it into a more elaborate procedure. He prescribed four methods for discovery of scientific laws – method of agreement, method of difference, method of concomitant variation and method of residences. Like Whewell, he provided a place for inventive ideas or hypotheses in scientific research but insisted that a true verification of a hypothesis entails the exclusion of all possible alternative hypotheses. W.S. Jevons treated induction and deduction as complementary to each other where the former is the *inverse* of the latter. Charles Sanders Peirce reframed the method of hypothesis and called it abduction.

As a sort of counterbalance to this growing empiricist approaches of the century, soft approaches came up in the German-speaking areas of continental Differences began to be pointed out Europe. between natural and human sciences in respect of both subject matter and methods of study. Wilhelm Windelband drew a distinction between nomothetic (generalizing) and idiographic (particularizing) sciences. As concerns the larger goal of knowledge, Dilthey adopted a hermeneutical perspective and held explanation (Erklären) as the goal of natural sciences and understanding (Verstehen) as that of cultural sciences (Ermarth, 1978). Corresponding to the Verstehen approaches, some idealist trends cropped up in the British philosophy of science. All these soft approaches provoked in turn strong response from the advocates of positivist thought.

Two of these positivist reactions are worth mentioning here, both belonging to the second quarter of the 20th Century. The Vienna Circle of Central Europe sought to free empirical sciences as well as personal and public life from what they called, 'metaphysical and theological debris of millennia' and instead injectinto these a scientific world-conception (Hahn, Neurath and Carnap, 1929). The second reaction came up in the U.S. under the auspices of the University of Chicago. Some of the workers from continental Europe who had migrated to the U S due to the Nazi outrage, jointly with others such as Bertrand Russell and John Dewey, developed a project called Foundations of the Unity of Science: Toward an International Encyclopedia of Unified Science. As indicated by the title itself, this project was aimed to bridge the schism that had been created in the empirical sciences by hermeneutical trends and 'to show how various scientific activities such as observation, experimentation, and reasoning can be synthesized, and how all these together help to evolve unified science' (Neurath, 1955).

Thanks to the stimulus provided by these developments, positivist philosophy of science reemerged in a prominent way in the Anglo-American world by the middle of the last century. Karl Popper's 'Logic of Scientific Discovery(1980)', Ernest Nagel's 'The Structure of Science (1961)', A.J. Ayer's 'Language, Truth and Logic (1971)' and Carl Hempel's 'Aspects of Scientific Explanation' (1965) and 'Philosophy of Natural Science (1966)' served as major opinion-shaping publications. Michael Scriven apply summed up the legacy of positivism in these words, "There comes a time in the affairs of science and philosophy when nothing is so valuable as hard-headedness. Positivism brought that heard headedness to philosophy, and perhaps to some parts of science, at a time when it was needed ..." (Scriven 1969).

Not surprisingly, the second half of the century witnessed a strong critical reaction to the positivistic Fresh debates came up about topics trends. like theory-observation distinction, objectivity, comparability, ontological status of concepts and terms, etc. These soft or post-positivist trends were pioneered by Stephen Toulmin, Hilary Putnam, Paul Feyerabend and others. Thus came into existence several realist and idealist philosophies of science rooted in hermeneutical and phenomenological approaches (Klee 1999). As indicated by the title itself, Feyerabend's book 'Against Method: An Anarchist Theory of Knowledge' denied the existence of any method in knowledge production and declared that "Anything goes" (Feyerabend 1988). Likewise, Kuhn's book 'The Structure of Scientific Revolutions (1970)' has shown how herd mentality, not objectivity, prevails to some extent in the choice and application of scientific theories.

From the foregoing rapid survey it is clear that since ancient Greek times, there is a repetitive cyclical movement between positivist (hard) and idealist (soft) conceptions of knowledge and between inductivist and deductivist methodologies for gaining it. The truth is that in the larger sense these sets of supposedly binary perspectives complement rather than exclude each other.

Francis Bacon: His Thought and Method

Sir Francis Bacon (1561-1626) straddled the 16th and 17th centuries and occupied a prominent place in both public life and academic world in Britain. He was a stormy petrel in both these domains and heralded the modern period in the intellectual history of Europe. After completing his college education from Trinity College in Cambridge and obtaining a law degree from Gray's Inn in London, he chose to enter public life rather than pursuing an academic career and, despite connections in high government circles, had to wait till 1607 when appointment came as Solicitor General to King James I, then as Attorney General in 1613, as Lord Keeper in 1617, and, finally, as Lord Chancellor in 1618. In 1621 he was impeached and jailed on charges of graft but the King later intervened and terminated his imprisonment.

Bacon desired to bring about a wholesale reformation in the British society encompassing educational, administrative, legal and religious institutions. Towards this end he submitted over a period of forty years a series of memoranda and reports to Queen Elizabeth I and later to King James I. He formulated a very comprehensive project called the Great Instauration which aimed at a reformulation of the world of science. He could complete only some portions of a six-part text he had planned towards this end. Unfortunately he failed to get support from the authorities in implementing his proposals. In fact, he confessed his failure and called himself only a trumpeter rather than a practitioner, or a combatant, of new ideas (Nichol, 1888-1889; Anderson, 1948; Rabb, 1968 and Klein, 2012).

Bacon drew a distinction between religious and secular learning and saw in the latter a means for acquiring mastery over nature with the goal of ameliorating the condition of man on the earth. For this purpose he stressed the need to metaphorically "storm and occupy her (Nature's) castles and strongholds, and extend the bounds of human nature, as far as God Almighty in his goodness may permit." Bacon recognized that mastery over nature rested on secure knowledge of arts and sciences and that "we cannot command nature except by obeying her." So for him the whole issue boiled down to the formulation of a reliable method of inquiry. It is to this task he devoted much of his time and his writings on this topic have found a permanent place in theories of the scientific method. There are three aspects of Bacon's work which need some additional comments: a) his overall conception of the knowledge domain and its role in society; b) his critique of contemporary learning and university education in Britain; and c) his own conception of the scientific method. We will briefly deal with these three aspects in the following pages.

New Epistemological Perspectives

As I mentioned above, Aristotle's writings were widely accepted throughout the medieval period and were in fact compiled to form the Organon. But Bacon was far from enchanted with Aristotle's views about the nature and purpose of knowledge. Contrary to Aristotle's metaphysical views, he pleaded for separation of science from teleology and theology. He held that attempts to investigate final causes of physical and biological phenomena lead only to verbal disputes which arrest scientific progress. Bacon denied purposive adaptation, whether ordained by God or otherwise; it shied away from bold attempts to put nature in, what he metaphorically called, "witness box and cross-examine it." He wanted the scientist to become a child again before nature and face it, which alone will enable him to discover the Forms or general principles constituting the apex of the body of knowledge.

Bacon was totally opposed to Aristotle's notion of treating knowledge of nature as an end in itself. Contrary to this, he viewed knowledge as a means for man to gain mastery over nature by unlocking its riddles and powers and use its resources for improving the quality of human life. Bacon recognized that Aristotle's views not only failed to benefit mankind but actually came in the way of attempts made towards this end. He bemoans this failure in particular and says discoveries such as gunpowder, paper and printing, silk and mariner's compass hold much hope for further progress (Bacon, 1885).

Another notable aspect of Bacon's conception of science is that he treated it as a cooperative effort or inquiry. Towards this end he made many proposals before the Crown and the government but with little success. Nearly forty years elapsed since his death before his followers forming the Boyle Circle founded the Royal Society in London in 1660 and obtained a royal charter for it two years later.

Bacon recognized three major epochs or periods in the development of science and philosophy, viz., the age of the Greeks, then the Roman period, and that of contemporary Western Europe which he wanted to revamp and reshape. He rejects Aristotle's division or grouping of sciences into theoretical, productive and practical groups, and instead classifies them into history, literature (poesy) and physics (Bacon 1973: 69-209). He divides natural science into physics and metaphysics, the former grappling with variable and particular causes (Bacon 1973: 92-3). Bacon imparts special meaning to metaphysics. It reflects on general and constant causes. Forms are the general principles arising from these causes and are at the summit of Bacon's pyramid of knowledge. The base of the pyramid consists of singular observations and from these one moves to invariant or constant relations among phenomena and then to still higher general correlations, finally leading to the stage of formulation of Forms. Bacon then introduced the concept of Summary Philosophy or philosophia prima which is the "parent or common ancestor to all knowledge" and deals with "common principles and axioms which are promiscuous and indifferent to several sciences" (1973: 92). This concept obviates teleological focus and opens up new possibilities for the application of general laws in the encounters with empirical world.

Now a few words about Bacon's views about the nature of matter and cosmology. He holds that one could explain various processes operating in nature only after gaining insights into the hidden structures and secret workings of matter. He accounts for natural order by attributing it to the interplay of matter and motion. He locates permanent movement in matter at the atomic level. In its final version Bacon's theory of matter is more corpuscular than atomistic; particles are endowed with powers that make a variety of motions possible after combining with air and fire. These views are a part of his conception of cosmology, magic and alchemy.

In short, Bacon prefers Democritus' natural philosophy of the pre-Socratic period to Aristotle's scholastic method based on deductive logic and reliance on authorities. He says that these dogmatists are like spiders which spin webs out of themselves. The empiricists, he continues, are equally untrustworthy because like ants they amass only and consume. The true job of science is akin to the efforts of bees which not only gather materials from nature but add to these their own input to produce a valuable item like honey. Bacon sums up the metaphor by saying that science "...does not depend entirely or even chiefly on the strength of mind, nor does it store up in the memory the materials provided by Natural History and Mechanical Experiments unaltered, but change and digest them by the Intellect..." (Bacon 1885: 78).

Bacon's Critique of Contemporary Learning

Even as a student of Trinity College at Cambridge Bacon expressed grave doubts about the quality of learning that was being imparted there and raised objections against its close association with theological scholarship. In the next 30 years his ideas about learning and its contents and methods became sharper and more explicit. It was against this background that he published his book *The Advancement of Learning* in 1605 (Bacon 1973).

As indicated by the title itself, this book is concerned with the promotion of learning: its virtues, critique of the existing system of knowledge, removal of hindrances to its advancement, organizational support required for research, and a new method for facilitating its acquisition. He elaborated on the new method in a second book called *Novum Organum* published in 1620.*The Advancement of Learning*, the only book which Bacon published in English, consists of two parts. The first part is addressed to King James I. Bacon says that his intention in writing this book was to pay way for a "good society, well-governed, orderly, religious, chaste, courageous, soldierly and rich" and states that such a society is possible only when promotion of learning would be set as the goal.

Bacon begins by defending learning against the negative attitudes of three kinds of persons: theologians, politicians and learned men themselves (Bacon, 1973: 4-60). He dismisses the various theological arguments raised against learning: that it was the cause of the fall of man; that, like serpent's poison, its influences make men swell; that it increases man's anxiety; and that it makes men heretics and tends them to contemplate second causes and deviate from dependence on God who is the first cause. Bacon then says that politicians dislike learning because they think that it "doth divert men's travails from action and business, and bringeth them to a love of leisure and privateness; and that it doth bring into states a relaxation of discipline, while man is more ready to argue than to obey and execute..." (1973: 8).

Thirdly, discredit or disgrace to learning is brought by learned men themselves either because they fail to keep up civility and honour of life once they gain some riches or because they fail to observe decency in their behaviour and discretion or because they bring upon their work (negative) influences from their own countries and their own masters. Bacon also finds errors and vanities in some of the studies completed by learned men. He groups these imperfect studies into three kinds: a) fantastical learning (vain imaginations); b) contentious learning (vain altercations); and c) delicate learning (vain affectations).

Bacon then appeals to King James to extend his overall support to "endowment of the world with sound and fruitful knowledge" (1973: 61) by providing suitable grants to places of learning, libraries and learned persons. He pleads for the creation of a Salomon's House which will facilitate interaction and exchange of ideas among scholars. Most important, Bacon points that the majority of colleges still concentrate on religious or ecclesiastical subjects and that arts and sciences have been given but inadequate attention. He laments that philosophy and universality have been treated as "idle studies" (1973: 63) and that their neglect has hindered the progress of learning.

Another aspect of Bacon's analysis of learning concerns his division of knowledge into various branches (1973: 65-209). He says that history, poesy (literature) and philosophy correspond respectively to memory, imagination and reason which are the three essential components of human understanding. He makes a statement about the relevance of historiography of learning which is worth quoting: "But a just story of learning, containing the antiquities and originals of knowledge and their sects, their inventions, their traditions... all other events concerning learning, throughout the ages of the world ... will make learned men wise in the use and administration of learning..." (1973: 70).

Bacon recognizes four divisions in history: natural, civil, ecclesiastical and literary. Memorials (commentaries and registers) and antiquities or "history defaced" are the basic sources of civil history. Those who deal with historical science will be glad to note that he pays a compliment to the laborious nature of historical reconstruction by calling historians "industrious persons (who) by an exact and scrupulous diligence and observation, out of monuments, names, words, proverbs, traditions, private records and evidences, fragments of stories, passages of books that concern not story, and the like, do save and recover somewhat from the deluge of time" (1973: 73). Poesy (or literature), arising as it does from imagination, takes licenses to "make unlawful matches and divorces of things."(1973: 82), it is of three kinds: narrative, representative and allusive.

Philosophy, the third broad domain of learning recognized by Bacon, is again divided into three branches: divine (theology), natural and human. Natural philosophy or science deals with the mysteries of nature–operation of causes and production of effects. Following Aristotle, Bacon opts for a fourfold division of causes – material and efficient causes, and formal and final causes. The former set of causes is the subject matter of physics and the latter that of metaphysics. He makes mathematics a part of metaphysics. Human philosophy comprises branches of knowledge which deal with body (medicine, cosmetic art, athletics and sensual arts) and mind. Studies of the mind deal with its nature and functions (intellectual and moral).

Bacon concludes the book by saying that he has attempted a true and faithful account of the contemporary intellectual world, drawing attention in particular to its gaps and shortcomings. He further clarifies that his aim was one of improvement and amendment but not radical change and break. He takes responsibility for all errors but attributes whatever good that may be there in the book to God and the Crown.

The Advancement of Learning is a remarkable piece of writing in the whole history of learning from more than one point of view. It is "an epic poem in prose, where cerebration takes the place of fable" (Johnston 1973: xii). Its principal message is loud and clear. First, it is amazing that a person from outside the academy evinced such deep interest in learning at higher levels and spotted its inadequacies and limitations in all details. He further dared to bring these to the notice of the Crown and government. Secondly, the unfriendly attitude of religious circles towards learning and the suspicions which the political groups harbour about learned persons as highlighted out by Bacon unfortunately still persist in many regions of the world. As we shall soon note, India is one such region. Equally valid is Bacon's list of frailities and vanities of the learned ones themselves.

Thirdly, for his time Bacon's division of knowledge into three major branches (history, literature and philosophy) was quite appropriate. His comments on the laborious nature of historian's task and his sources are true and appropriate. All archaeologists should be pleased to note that Bacon included antiquities too as a source material. He treats these as "history defaced, some remnants of history which have casually escaped the shipwreck of time (1973: 73). Finally, Bacon has devoted 60 pages of the text (1973: 117-179) to the topic of mind and its functions. This is one of the first major attempts at developing a theory or philosophy of mind. His comments on body-mind complementarity, mind's powers of reason and understanding, divination and fascination, and invention still merit much attention.

New Method

As the saying goes, in the application of the scientific method identification of an issue or a problem correctly is as good as half solving it, and then comes the formulation of a suitable research strategy. Having made a full survey of the ills of contemporary learning in Britain and their sources, Bacon turns his attention to devising a methodological framework for bringing about improvements. For this purpose he published his other famous work Novum Organumin 1620 (Bacon 1885). Bacon desired his text to supplant Organon representing the medieval compilation of Aristotle's opinions about man, world and God. Already in his text Cogitataet Visa published in 1607Bacon rejected Aristotle's syllogistic method and suggested an alternative to it involving laborious accumulation and treatment of basic facts and drawing from them inferences about the world around us. Novum Organumis devoted to the elaboration of this task.

In the Preface to the work Bacon (1885: 3-10) refers to the opposing schools which made pronouncements about nature: a) vainglory of dogmatists who claimed that already everything was

known about the world, thereby "extinguishing and destroying inquiry"; and b) sceptics who despaired that nothing at all could be known. The ancient Greeks adopted a middle course and did initiate inquiry. But, as Bacon complains, they stopped at the "outer courts of Nature" and left its "secret chambers" unexplored because they relied only on their powers of intellect to arrive at Anticipations of Nature. Bacon wants to continue on the path of the Greeks but adopts a combative attitude towards nature and formulatesa rule-based approach for obtaining, processing and threading together raw sense data in order to arrive at what he calls Interpretations of Nature. His plan "consists in laying down grades of certainty, in defending the senses by reducing them to their proper functions, in rejecting for the most part that operation of the mind which follows directly after the operation of the senses; and then in opening and laying down for the mind a new and certain way from the perceptions of the senses" (Bacon 1885: 4).

In the first part of *Novum* Bacon seeks to rid sciences of signs and causes of errors and for this purpose he draws attention to the fallacies of human senses and reason, syllogism and traditional philosophical systems. The Aristotelian method of induction failed to recognize that nature is more subtle than human intellect and therefore jumped from particulars to the highest generalities or axioms; it erred further by using syllogism while relating higher axioms to lower axioms. Bacon then says that progress of scientific knowledge was vitiated by three kinds of false philosophy, viz. sophistical, empirical and superstitious traditions which respectively relied on vulgar conceptions, a limited number of experiments and superstitions (1885: 32-7).

Bacon treats fallacies governing human reason as the most pernicious obstacles to the growth of knowledge. He calls these Idols or phantoms of human imagination or crackled mind (1885: 19-He considers these as dangerous because 31). these lead to corrupt and ill-ordered predispositions of the mind, which in turn pervert and infect all intellectual perceptions. Bacon recognizes four types among these fallacies: a) idols of the tribe; b) idols of the cave; c) idols of the market place; d) idols of the theatre. Idols of the tribe are inherent to human nature as such. These refer to prejudices and affections of the human mind and proneness of senses to fall a prey to distorted impressions of reality. The second category, idols of the cave, refers to the predicaments, perceptions and prejudices of individual persons arising from their respective peculiar constitutions, education, upbringing and habits. These individual peculiarities have their sources in factors like fondness for a particular subject or a particular period or a particular personality in history, excessive feelings to unite or differentiate and inclination to view things/situations in a larger or narrow perspective. Idols of the market place refer to false conceptions or notions that sometimes arise in the course of social intercourse between individuals. These enter human minds quietly in the form of words and names (e.g. love jihad) and shape one's perceptions of the outside world. To put it in Bacon's own words: "But words clearly put a force on the intellect, disturb everything, and lead men on to empty and innumerable controversies and fictions" (1885: 20). These three idols or phantoms are inherent to or part of human nature and as such could be controlled to some extent. It is a different matter with idols of the theatre. These are outside of human nature and refer to influences, basically negative ones received from writings of various kinds, e.g. philosophical as well as scientific schools of thought.

After warning about the various psychological, cultural and linguistic pressures that vitiate man's use of his reasoning faculty, Bacon turns to the more important task of devising a strategy for "conquering nature by obeying her" i.e. a comprehensive and fool-proof method for gaining a body of reliable and useful knowledge about nature and its structure and functioning. This is the method of induction which he put up as an alternative to demonstration by syllogism. In most of the writings Bacon's inductive method has been treated in a simplistic way consisting of acquisition of sense data, their enumeration and drawing some generalizations. It is now being recognized as a sophisticated framework in its own way, already anticipating some of the developments that came up in the twentieth-century philosophy of science.

Bacon's method implies both a step-wise ascent from particulars to axioms and a descent from axioms which entail new particulars, these in turn necessitating reformulation of axioms. Induction by simple enumeration procedure is "childish" and no longer accepted as a reliable procedure for

transforming sense data into sensible generalizations because even a single contrary instance can vitiate their validity. Sense data is processed into facts by organizing it in the form of tables. These tables are of three types: a) tables of absence and presence; b) tables of deviation, or of lack of proximity; and c) tables of degree or comparison. These tables allow one to spot "rejections and exclusions" and then arrive at those genuine generalizations which have no contrary instances. While emphasizing the importance of sense data, the inductive method does not exclude the relevance of experimental observations. True understanding consists of slow and gradual steps from particulars to lesser axioms, then to middle level axioms and finally to most general axioms. In this process a crucial role is played by middle level generalizations or "living axioms" which mediate between particulars and general axioms. This in short is Bacon's method of arriving at Interpretations of Nature. Among the final results issuing out of this arduous process, he gives primacy to what he calls prerogative instances which cover phenomena of various kinds and as such possess generality conducive to future investigations.

King James I who received the text of *The Novum Organum* is said to have confessed that "like God's word, it passethone's understanding." Be that as it may, like *The Advancement of Learning*, it occupies a special place in the entire literature dealing with the scientific method. Bacon's warnings about biases and prejudices influencing human senses and reason are applicable to all ages. As concerns his inductive method, there are two or three aspects which are striking.

First, Bacon elevated induction beyond the level of simplistic enumeration and assortment of basic sense data and prescribed a rigorous process for transforming these into facts and these in turn into generalities. Then he introduced the innovative principle of exclusion which obliges the investigator to exclude all possible contrary cases before threading together facts to arrive at general principles about structural properties of nature and their interrelationships/causes. In this respect he already anticipated the basic idea behind the method of conjectures and refutations formulated by Karl Popper in the last century (Popper, 1963).

Secondly, Bacon's inductive method treats scientific inquiry as a dynamic process and provides

scope for further investigations into nature. It provides for both an upward movement from observational and experimental data to axioms or generalities and from the latter back to raw data, as necessitated by surfacing of anomalous situations. In Bacon's own words: "...But axioms duly and orderly abstracted from particulars in their turn easily point out and mark off new particulars; and so render the sciences active" (1885: 16). In other words, as argued by Ducasse 1960: 71-4), he recognized the importance of hypothesizing by treating even higher level generalities as only provisional answers whose consequences need to be evaluated in the light of fresh facts.

Thirdly, recognizing the infinite nature of the phenomenal world and the "uncertainly certain" nature of the generalities which one arrives at after an arduous process, Bacon lays emphasis on the fact that in our studies dealing with nature we mostly deal with middle order generalities. This is a message which is relevant to all inductive sciences which are often by plagued by idiographic versus nomothetic and diachronic versus synchronic controversies. Quoting Plato's Phratetus, he writes in The Advancement of Learning: "... That

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particulars are infinite, and the higher generalities give no sufficient direction: and that the pith of all sciences, which makes the artsman differ from the inexpert, is in the middle propositions, which in every particular knowledge are taken from tradition and experience..." (Bacon1973: 123). Social sciences like sociology and archaeology have recognized the truth value of this observation and have developed middle range theories of their own (Merton 1968; Binford1981; 2001; Stone and Paddayya 2020).

To put the matter in a nutshell, Bacon has the distinction of capturing, four centuries ago, all the major precepts of what we now call the scientific method, viz., biases vitiating scientific objectivity; complementary roles of observation and experimentation; need for extracting generalities from "teeth of stubborn and irresistible" facts; cyclical relationship between particulars and generalities; and viewing even higher order generalities as tentative or hypothetical answers that need to go under the hammer of new facts or particulars, thereby making learning a continuous process ever expectant of revealing new secrets of the empirical world.

> To be Continued.....

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Weekly E-Essay Series of Scholarly Articles on **Reimagining Indian Universities**

A 'Weekly E-Essay Series of Scholarly Articles on 'Reimagining Indian Universities' was launched on AIU Website on 15th May, 2020 as a part of the change which AIU seeks to bring about in the academics in this day and age of COVID-19. The essays scheduled for release in this series are in a broad range of fields covering a variety of topics pertinent to 'Reimagining Indian Universities' received from distinguished experts and authorities in the area of Indian higher education included in the Book 'Reimagining Indian Universities' edited by Dr. Ms.Pankaj Mittal and Dr Sistla Rama Devi Pani. In the series, every week one scholarly article written by an erudite scholar of Indian academia is being released on the AIU Website. The series was initiated with the essay of Prof Bhushan Patwardhan, Vice Chairman, University Grants Commission, India on 15th May, 2020.

The essays are unique, enlightening and inspirational. Those who are interested in reading these essays may browse AIU Website: www.aiu. ac.in. Ъ

Shielding Education during Pandemic: The Changing Role of Teacher in Higher Education from Web 0.0 to Web 5.0[#]

Rashmi Soni* and Divya R Panjwani**

According to Oxford Dictionary, Education refers to 'a process of teaching, training, and learning, especially in schools or colleges, to improve knowledge and develop skills'. If we look to these many years i.e. from Vedic period to the digital age, we can find drastic change in the process of teaching-learning, in the elements of education, in the curriculum and expectations from education system and in the role of teachers.

Teaching-learning and Pandemic

The twin year, 2020 will always be remembered by the education community all over the world when schools, colleges and educational institutions were shut down due to Corona virus. By the end of March, 185 countries had closed, affecting 90 per cent of the world's students. Same adverse effect was seen on Indian Education System when in March, nationwide government institutions were closed due to the COVID-19 Pandemic. Because of the closures of educational institutions all over the world, classroom teaching education has moved rapidly to distance learning where educators got little time for planning or reflection on both the potential risks to safeguard against and the potential opportunities to leverage.

Necessity is the mother of invention and crises brings opportunities and deep challenges for transformation. It has been observed in the past that crises in education have always shown that it is possible to switch for better.

Education of approximately 300 million students worldwide has been disrupted due to COVID-19. Generations have passed but this level of disruption was never found in schools and Universities. Though the uncertainties prevailed and still prevail, education continued even when educational institutes had to be closed down. In this uncertain environment, it's important that learning continues, even if it cannot happen in person. That is why institutes provide access to expert faculty, best practices, and other online learning resources for people who are studying, teaching or working remotely.

Statement of the Problem

This paper analyses how education is being protected and shielded during pandemic and reflects the ever changing role of teacher from Web 0.0 to Web 5.0.

Need and Justification of Study

It is important to know how the teachers perceive the present crisis situation (specially the pandemic) especially in terms of teaching and learning. It is important to know the problems faced by the stakeholders during transition period where there is compulsorily a major shift of technology in teaching-learning process. It is important to understand how educational institutions and teachers are actively and positively involved in devising the new pedagogies in this process of transition. It also becomes important to support the efforts of teachers with the historical transition from web 0.0 to web 5.0.

Research Design

Document Analysis technique was applied in this study. Document analysis includes analysis of materials that contain information about the events for which the investigation is targeted.

Objectives

- To identify the role of teachers from Web 0.0 to Web 5.0
- To find out the problems faced by teachers and students in the teaching-learning process in higher education during Lockdown due to COVID-19

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• To frame strategies for using best technology and pedagogy in developing Learning Management System

Findings

With the worldwide use of internet since 1989, the web technologies have undergone several changes and developments. It can be seen in the following points how the role of a teacher has changed through times:

- a. Web 0.0 CONNECTING In the initial years of Internet, web was called as 'HTML' (Hyper Text Mark Up Language) (Alabay, 2014). It can be said as a PC age of Web 0.0.
- **b.** Web 1.0 Viewing and Linking is the main concern of this stage. This was also known as 'The information Web' under the period of 1990's and the year, 2000. Under this stage education institutions had just started to portray their information but that was very less. Role of teachers was limited to classroom only with chalk and duster as their teaching aids.
- c. Web 2.0 Participation was the major feature of this era and so it was known as 'The Social Web'. Here users interacted and connected with each other. Generating information for the whole world, sharing it, collaborating to produce best learning resources which proved the strength of community interaction with the world. The period was 2000 to 2010.
- d. Web 3.0 Connecting People with Devices and vice-versa was the main crux of this era. The era was popularly known as 'The Internet of Things'. The use of devices and internet was in routine of everyone. Here the role of teachers emerged as a server of tailor made materials, satisfying personalized and customized needs and developing deductive reasoning among students.
- e. Web 4.0 was characterised by the era of 'Artificial Intelligence'. It's not a new era but we can say an alternate version of the previous one where everything is on the tips of fingers of teachers and students. The time period comprises of 2020–2030. They can be connected through their devices in the real and virtual world in real-time.

f. Web 5.0 will be known as 'The Telepathic Web' or 'The Symbionet Web' 'Open, Linked and Intelligent Web = Emotional Web; 'The next web'. The phases are still in developing mode. Machines will communicate with each other and with human beings the way we communicate with each other in our daily life. The role of teacher here can be the developer of artificial brain and constructor of Digital Aura. Presently, the preparation is going on for this next (2040-2050) era.

In all these phases from Web 1.0 to Web 5.0 the teacher has changed his/her role from crawl, walk, run, jump and fly.

The forced online learning during pandemic has its issues as under:

- a. Educators were not prepared for closure of the running system and shifting completely to online learning which is a challenging situation for anybody.
- b. The role of personality and the styles of teaching are different in online learning compared to the traditional one.
- c. Closures of Higher Education institutes during pandemic has widen up the equality gaps as each and every student doesn't have access to devices and connectivity.
- d. Same level of face to face interaction is not possible in online learning.
- e. Though the technology is updated, but everyone doesn't have access to same material or same learning management system.
- f. It has directly altered the teaching calendar and assignments.
- g. Besides network issues, effective teaching is a big issue.
- h. With the changing demand of the time, new teaching method need to be devised.
- i. The worst form of learning emerged as the student has to sit passively and listen to videos; the approach used in distance learning is known to all that it does not work very well.
- j. Teachers have to diversify their skills in improving pedagogical analysis.

To frame strategies for using best technology and pedagogy in developing Learning Management System are:

- a. Planning the Online Learning
 - Teachers should know that their learners fall into which category of digital environment
 - Unconnected and helpless
 - Conventionally involved
 - Concentrated and enthusiast
 - Planning the alternatives for missed assignments that are taking place during the online learning
 - Flexibility and creativity is required
- **b.** Increasing use of Blended Learning approaches should be done after trying and testing it. Smart use of flipped classrooms helps the teacher to plan activities properly, devise new methods of teaching, develop an activity-based teaching and hook up the interest of the students with learning by doing and participation.
- c. Teachers should use Design Thinking as a Strategy for Teaching and Evaluation. Design thinking is a human centred & collaborative approach to problem solving that is creative, interactive & practical (Brown, 2008)
 - It is a Divergent-Convergent Approach with involvement of deeper understanding.
 - Problem Solving is done through Multidisciplinary Approach which involves creative process.
 - The approach is related to life and problems are seen as opportunities and failures are celebrated
- d. To solve the problems of Higher Educational System like mismatch in demand and supply, mushrooming of low quality institutions etc. there is a need where purposive education can be given to students anytime, anywhere and according to their pace. This can be done through Mass Customization of Education whereby.
 - Teaching-learning should be delivered to students by the use of Technology taking the concern of particular context and the package is prepared for particular target group.

- Open Educational Programmes need to be developed that will satisfy the demand of the learners in the form of Capsule Courses.
- e. Educational Institutes are working day and night for bridging the gap for present situation to reach out the learners and satisfy their needs. In this challenging scenario, it is important to recognize the efforts made on the part of educational institutes and teachers by respecting, appreciating and supporting them for the important role they are playing in society.
- f. Modern Teachers for Modern Learners: Teachers need to be more Techno-savvy so as to use pedagogical tools according to the situation. Various Learning management systems should be used by teachers like Google Classrooms, Edmodo, Microsoft Teams to create virtual classrooms.
- g. Coming out together by collaboration is the key to come out of this crisis. By sharing the burden through online community, teachers can collaborate, learn from other teachers, reinvent themselves and make things a bit easier for the stakeholders.
- h. Web 4.0 Technologies to reach Education 4.0. The purpose of reaching for Education 4.0 is to meet the future needs of the world in coming decade. There will be smart city, smart homes, smart farming, smart retail stores, smart supply chain management and connected cars. Various Technologies available during this era includes Augmented Reality, Virtual Reality, Internet of Things, Artificial Intelligence, Big Data Analytics, Machine Learning/Deep Learning, 3D Printing, and Digital Simulation etc. The type of behavioural outcomes emitted by using these technologies will decide strategies to be implemented in the next era.

Conclusion

The present study analyses about various web technologies along with the role of teachers during that era. It can be seen that the developments in web technologies has its direct impact on the field of education. Teachers are always ready to welcome the new methodology depending upon the networks and technology. A new pedagogy, thus progresses rapidly from day to day. A picture of sudden and complete shift from traditional teaching to distance mode during pandemic is also discussed here. The problem in teaching-learning faced by the stakeholders is highlighted. Later on, how teaching learning opportunities during this accidental revolution can be made engaging is also discussed. At the end how we can reach out to Education 4.0 with the help of web 4.0 has been analysed. Prediction of 5.0 is not done in detail in this study. In a nutshell, the journey of the changing in pedagogical roles uptil now is highlighted.

Suggestion for Further Research

Web 5.0 can be explored to the fullest and we can reach there in few years instead of waiting for a decade.

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Benchmarking in Teacher Education: Adapting Best Practices to Improve Quality

Ismail Thamarasseri*

Benchmarking is the practice of comparing professional processes and performance to industry bests and best practices from other establishments. The dimensions of Benchmarking typically are quality, time and cost. Benchmarking is a systematic way of self-evaluating, learning from others and improving what you do. Benchmarking is an emerging practice in teacher education.

What does benchmark entail and what are its limitations? How do we know if students are learning the right things at the right times? Should high achievers set the standard for education? These are the main questions surrounding the practice of benchmarking in education. Benchmarking in education occurs when measurable standards are set for learning.

For example, benchmarks might be set for the concepts that must be mastered in each course. They might also be used to see where a particular student, programme, or even Teacher Education Institution (TEI) ranks in comparison to others. Increasing competition, demands for accountability, and higher volumes of available information are changing the methods of how institutions of teacher education operate in the mid-1990s.

For teacher education to enact substantial and sustainable changes in efficiency and productivity, a new way of thinking or paradigm that builds efficiency and a desire for continual learning must be integrated into institutional structures. Tools are also being developed that measure or benchmark the progress and success of these efforts. Among the improvement strategies and techniques such as Total Quality Management (TQM), Continuous Quality Improvement (CQI), and Business Process Reengineering (BPR), benchmarking has emerged as a useful, easily understood, and effective tool for staying competitive.

The concept of benchmarking originated in the business world; companies needed to know where

they stood in comparison with their competitors and in which areas, they needed to improve their standards. It developed from the work of W. Edwards Deming, a leading theorist in systems thinking, and in turn, became associated with the 'quality improvement' movement in the USA. National Education Policy (NEP)- 2020 item number 15.3 rightly said, "In order to improve and reach the levels of integrity and credibility required to restore the prestige of the teaching profession, the Regulatory System shall be empowered to take stringent action against substandard and dysfunctional TEIs that do not meet basic educational criteria, after giving one year for remedy of the breaches. By 2030, only educationally sound, multidisciplinary, and integrated teacher education programmes shall be in force. NEP- 2020 item number 15.7 further states, "In order to maintain uniform standards for teacher education, the admission to pre-service teacher preparation programmes shall be through suitable subject and aptitude tests conducted by the National Testing Agency (NTA), and shall be standardized keeping in view the linguistic and cultural diversity of the country." These policy frameworks indicate that, there should be a Benchmarking practice in Indian Teacher Education sector.

Worldwide, professional standards, teacher standards, teaching-learning standards and teacher education standards are considered instrumental for improving teacher preparation, their quality and professionalism. In this context, it becomes pertinent to deliberate upon the multiple benchmarking frameworks in operation and how these frameworks are informing teacher education programmes for preparing quality teachers.

What is Benchmarking?

Although the use of comparative data has been used for years in some industries, including higher education, benchmarking as defined today was developed in the early 1980s at the Xerox Corporation in response to increased competition and a rapidly declining market. The strategy of benchmarking is important both conceptually and practically, and is being used for improving administrative processes as well as instructional models at TEIs by examining

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processes and models at other TEIs and adapting their techniques and approaches. More concisely, benchmarking is an ongoing, systematic process for measuring and comparing the work processes of one organization to those of another, by bringing an external focus to internal activities, functions, or operations. The goal of benchmarking is to provide key personnel, in charge of processes, with an external standard for measuring the quality and cost of internal activities, and to help identify where opportunities for improvement may reside.

Benchmarking is similar to the human learning process, and it has been described as a method of teaching an institution how to improve. As with other quality concepts, benchmarking should be integrated into the fundamental operations throughout the organization and be an ongoing process that analyses the data collected longitudinally. Benchmarking attempts to answer the following questions:

- How well are we doing compared to others?
- How good do we want to be?
- Who is doing it the best?
- How do they do it?
- How can we adapt what they do to our institution?
- How can we be better than the best?

Previously, questions like these may have not have seemed important to TEIs. However, in the competitive and rapidly changing knowledge markets of the 1990s, organizations are learning never to be satisfied with the status-quo, and to continually question their internal operations and relative position in the eyes of prospective learners. To answer these questions, several multi-step benchmarking methods have been developed by leading benchmarking practitioners. Benchmarking procedures can be condensed into four steps: planning the study, conducting the research, analysing the data, and adapting the findings to the home institution that is conducting the study. The first step involves selecting and defining the administrative or teaching process(es) to be studied, identifying how the process will be measured, and deciding which other institutions to measure against. Second, benchmarking process data is collected using primary and/or secondary research about the colleges, universities, or other organizations being studied. The third step consists of analysing

the data gathered to calculate the research findings and to develop recommendations. At this point, the differences or gaps in performance between the institutions being benchmarked help to identify the process enablers that equip the leaders in their high performance. Adaption of these enablers for improvement is the fourth step in the first repetition of a benchmarking cycle, and the primary goal of the project.

A review of the benchmarking literature shows that there are primarily four kinds of benchmarking: internal, competitive, functional/industry, and generic or best-in-class. Internal benchmarking can be conducted at large, decentralized institutions where there are several departments or units that conduct similar processes. The more common competitive benchmarking analyses processes with peer institutions that are competing in similar markets. Functional or industry benchmarking is similar to competitive benchmarking, except that the group of competitors is larger and more broadly defined. Generic or best-in-class uses the broadest application of data collection from different industries to find the best operations practices available. The selection of the benchmarking type depends on the process(es) being analysed, the availability of data, and the available expertise at the institution.

Benchmarking Models and Approaches in Education

In education, the term 'benchmarking' was first noted in UK Higher Education in 1957, with reference to standards of students. However, since that time it has been applied in a number of ways and in different areas. Benchmarking models used internationally have been influenced by the various purposes or the focus of benchmarking in these countries as part of their quality schemes or frameworks. In the UK, the government focus has been on Quality Assurance or regulation as demonstrated by its keenness to establish parity of standards in all levels of education based on an 'outcomes process model'. It has been noted that while there is still a requirement for institutions to relate what they are doing to external standards, there has been a shift towards outcomes-based measures, as evident in the set of guidelines on 'subject benchmarking' which served to establish nation-wide standards in curriculum design, focused on learning outcomes. This shift indicates a move towards Quality Enhancement

because the new processes have been set-up to encourage institutions to develop their own Quality Enhancement procedures; in Scotland it has already become a requirement.

Benchmarking and Quality Enhancement in education in the USA, was informed to a marked degree by the industry model. Benchmarking collaborators were usually companies which did business with the university partner; they provided the funds for the projects in return for 'market opportunity'. The industry model benchmarking is frequently based on the 'Plan, Do, Check and Act (PDCA) cycle for continuous improvement' also known as the Deming Cycle and consists of the four elements: plan, do, check and act. The PDCA cycle has been used repeatedly, expanded into many different models and adapted for benchmarking.

Is Benchmarking Applicable to Teacher Education?

Due to its dependence on quantitative research methodology, benchmarking is especially suited for TEIs in which these types of studies are very familiar to faculty and administrators. Practitioners at TEIs have found that benchmarking helps overcome resistance to change, provides a structure for external evaluation, and creates new networks of communication between schools where valuable information and experiences can be shared. Benchmarking is a positive process, and provides objective measurements for baselining, goal-setting and improvement tracking, which can lead to dramatic innovations. In addition, quality strategies and renouncing efforts are both enhanced by benchmarking because it can identify areas that could benefit most from Total Quality Management (TQM), and make it possible to improve operations with often dramatic innovations.

Why Benchmark?

Educators can use benchmarking to improve performance among specific students or even among students at large. Let's say we have a highperforming TEI in Kottayam district in Kerala. Benchmarking may help other TEIs and districts understand and replicate the practices used in that high-performing TEI in Kottayam district. In other words, TEIs can use benchmarking to set standards for best practices in learning and achievement. Stated more simply, benchmarking can raise standards in education by creating a model for excellence and achievement. This model can then be duplicated by others. In this way, benchmarking in education sounds too good to be true. While benchmarking is a recognised practice in industry and commerce, it has yet to find an equivalent place in the field of education. Benchmarking in teacher education is an active process of evaluating the practices of teaching and learning. Benchmarking is a process of deciding what is important; understanding how you now do it and how well you do it; learning from others how they do it; and applying what you have learnt in a way that leads to you doing it better than before. Then you do it all again. The attempt to introduce benchmarks into teacher education is driven largely by a concern to demonstrate the results of educational policy, system management and funding. Benchmarking makes sense only if the teacher educator can become aware of the way in which the practices of the classroom lead to students showing particular learning outcomes. Any separation of outcome from practice disables teachers' understanding and constructs policy as nothing more than deliberate social control. Teacher education is a good example of the need to read learning outcomes in the context of the practices from which the learning is generated.

Educational Institutions vary greatly and so do classes in schools and yet mentor teachers have no difficulty in making a general judgement that graduating teachers are ready to teach. The notion of competence is implicated in practical experience, both of the mentor and the graduating teacher. The understanding of the nature of competence and how it comes to be valued require an attempt to describe and interpret practice. Competence in teaching is the 'becoming' kind of state for the teaching practitioner which is 'beyond competence,' a reflective and reflexive engagement of the practitioner with practice and theory. The acknowledgment that a graduating teacher receives the approval of a supervising teacher that she is 'ready to teach' is not a statement of the attainment of some absolute standard. It is a formal step in becoming a competent teacher, but one which is carried out through an intimate and extended interpretation of practice and dialogue. Frameworks for interpretation are necessary to make understandings and decisions clear. In an interpretive environment, it is not only people who are evaluated in institutions, the institutions themselves are open to scrutiny. Thus, an interpretive schema such as the National Competency Framework for Beginning *Teaching* becomes the object of inquiry as much as the teachers, teacher educators and student teachers who work within its scope. One outcome of the benchmarking of teacher education may be an improved framework for describing, interpreting and judging teaching.

How Can a TEI initiatives Benchmarking?

Before beginning a benchmarking study, a TEI should decide if benchmarking is the correct quality improvement tool for the situation. After processes are selected for analysis, the appropriate personnel, who have a working knowledge of the area undergoing the benchmarking analysis should then be chosen to conduct the study. A TEI can take part in an externally sponsored benchmarking project with predefined objectives, or conduct a project on its own or with the help of consultants. For instance, getting an International Organization for Standardization (ISO) certification. It is recommended that, as a start, an institution new to benchmarking, begin with a more 'grassroots' level departmental or administrative project that measures best practices internally, or with local competitors.

A TEI that is more advanced in quality improvement efforts can seek out world-class competitors better and implement the findings more readily than a benchmarking beginner. Information on prospective benchmarking partners can be obtained from libraries, professional associations, personal contacts, and data sharing consortia. Once the benchmarking data is collected and analysed, it can be distributed in a benchmarking report internally within the institution and externally to benchmarking partners for implementation of improved processes.

The overall goal is the adaption of the process enablers at the home institution to achieve effective quality improvement. Benchmarking is more than just gathering data. It involves adapting a new approach of continually questioning how processes are performed, seeking out best practices, and implementing new models of operation.

The Benefits of Benchmarks

Standards and benchmarks can help educators revitalize both teaching and assessment. Using

benchmarks will create a curriculum of high academic standards for all students. The benchmarks are linked to rubrics. Teachers have found the benchmarks to be "a great instructional aid" for clarifying expectations and motivating students. Before teaching a lesson, teachers review the benchmarks with students and show them samples of student work from past years. The benchmarks also help teachers monitor students' yearly progress. Assessment has also been transformed by the benchmarks. Assessing by the benchmarks also provides an alternative to standardized tests. Benchmarking in TEIs is a tool that not only allows a TEI to know where it stands on the global scale, but most important it gives a chance to improve and to measure this improvement. Benchmarking enables (1) The exchange of experiences and ideas between individual TEIs and teachers, (2) Education authorities to identify and learn from better performing education systems, (3) Each TEI to know where it stands. This is useful information for the schools, teachers, parents and pupils, (4) Benchmarks to be developed of expected performance levels that schools can measure and improve against.

International Perspectives on Standards and Benchmarking in Teacher Education

Ensuring quality teachers and quality teacher education programmes have been fundamental global concerns over the decades. High quality teachers are critical to the future development of national educational systems and economic vitality. Teachers' quality and professionalism are closely linked to their professional standards, preparation and development. Teacher education, therefore, plays a central role in preparing quality teacher and also laying foundation for the development of teacher as a professional. The discourses on standards and benchmarking provide effective platforms for measuring and improving performance, practice, and knowledge of teachers. Standard framework can be considered a diagnostic approach to the delivery of education which evolves through research and practice to generate new knowledge and to maintain an accountable profession. The analysis of teacher standards in both developed and developing countries clearly indicates that standards contribute to the professionalization of teaching and raise the status of the profession. Therefore, standards and quality dimensions form the cornerstone for the teacher education policy, planning, and implementation. The ideas, concepts, and constructs for standards and benchmarking in teacher education are derived from comparative perspectives and implications on quality dimension processes.

The concepts of standards and benchmarks in teacher education around the globe are interpreted and used in diverse ways. The developed countries of the world have specific teacher education benchmarking frameworks, as per their country-specific expectations and requirements. Countries such as the USA, Australia, Canada, Scotland, and Singapore have exclusive standards frameworks for initial teacher education. Singapore and Finland have recognised the implication of teacher education standards and benchmarking on improving teaching profession. The implementation of standards is considered an important part of the solution to the problem of assessment, accreditation, and maintenance of teacher quality by the USA and Australia. Acknowledging the potential of standards to raise teacher quality, the East and South Asian countries are using implicit models by drawing essence from teacher, teaching and learning and professional standards frameworks as guiding reference for teacher education.

The comparative analysis of benchmarking frameworks across different countries reveals common features such as professional knowledge, professional competencies, professional skills, and professional conduct. Therefore, it can be argued that teaching learning and professional standards make teacher education programmes accountable to deliver quality and to prepare competent teachers.

Criticism towards Benchmarking

positive Despite the majority of recommendations for using benchmarking and successful examples of its current use, there are critics of its applicability to higher education. The stated objections include the belief that benchmarking is merely a strategy for marginally improving existing processes, that it is applicable only to administrative processes (or only to teaching practices), is an understatement for copying, is lacking innovation, or that it can expose institutional weaknesses (Brigham, 1995 and Dale, 1995). These concerns are largely unfounded because benchmarking can radically change processes, apply to both administration and

teaching, adapt not "adopt" best practices, and if the Benchmarking Code of Conduct is followed, confidentiality concerns can be reduced. The Code of Conduct calls for benchmarking practitioners to abide by stated principles of legality, exchange, and confidentiality (APQC, 1993). Benchmarking can make it possible for the industry to improve processes by identifying and bringing home best practices, and therefore offering a way of responding to demands for cost containment and enhanced service quality in a cost-effective and quality-oriented manner (Shafer and Coate, 1992).

Conclusion

Benchmarking is the continuous, systematic process of measuring one TEI's output and/or work processes against the competitors or those recognized best in the teacher education sector.

Benchmarking helps TEIs to understand their strengths and weaknesses. Benchmarking helps better satisfy the student's needs by establishing new standards and goals. Benchmarking motivates teacher educators to reach new standards and to be keen on new developments. Further it allows TEIs to realise what level(s) of performance is really possible by looking at others. Benchmarking practices is a costeffective and time-efficient way of establishing a pool of innovative ideas.

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Chase the Technology to Beat the Pace

Shashi Shanker, Chairman, Oil and Nature Gas Corporation (ONGC) delivered the Convocation Address at the 40th Convocation of Indian Institute of Technology (Indian School of Mines) Dhanbad on 21st December, 2019. He said, "Friends, Future is not tense. Future is demanding. And to reconcile yourself with the expectations of future, self-curation is needed. Commitment with conviction, courage with confidence and clarity of mind that you need to strongly navigate into the future. The journey may not seem a cakewalk, it may turn out a tight-rope walk as you progress in the professional world. You may fail, but you should certainly not fall back on patience, you will succeed but should certainly not succumb to the greed." Excerpts

Director, IIT(ISM) Dhanbad, Prof. Rajiv Shekhar, Hon'ble Members of Board of Governors, Degree Recipients, Faculty and Staff of IIT (ISM) Dhanbad, Members of the media, Dear students, and Ladies and Gentlemen: I feel proud and privileged to be invited here today to address this august gathering on the 40th Convocation Day. Indeed, it is a rare privilege. Yes, a very rare one to speak on this momentous occasion of the 40th Convocation of IIT (ISM) Dhanbad which is one of the finest institutes and incidentally also my Alma Mater.

First, I congratulate all the graduating students for the successful completion of a wonderful academic journey. I am sure, you have thoroughly enjoyed your time in the classrooms, canteens, corridors and each other's company. You must have imbibed the aroma of the ethos and ethics, culture and class, humanity and humility, courage and companionship that this Institute has been propagating and inculcating for nearly a century now to ignite and incubate young minds.

I take this opportunity to convey my heartiest congratulations to all the parents who have made years of untiring efforts and, perhaps, many personal sacrifices to pride themselves with a winning smile for the academic success of their children. It is you who have dreamt and raised your children to live the dreams. And we have got a pool of brilliant torchbearers who will chart out the future roadmap in India. My sincere thanks to all of you.

Teachers are the priest of knowledge. They not only create the path but also handhold the students to accomplish a mission. It is their knowledge coupled with determined spirit and experience that shape up the raw talent. This Institute is blessed with such great teachers, who are carving out, in silence, a niche for the students for decades. Today, I am simply at a loss of words to express my gratitude and respect to all the teachers.

This day is an unforgettable milestone in everybody's life. It is the day when a graduate embarks on a journey as a professional. When one sets out to reinvent and redefine life and society.

Being here on this day, in this place, is extra special for me. I feel not only nostalgic but also proud. Old hostel, Admin building, Ramdhani tea stall, Scolomin Saturnalia (now Srijan), Penmann Auditorium where I spent my student life; everything is so fresh in my mind.

Right from inception, this institute has been the sole gateway for anyone who aspires to join the energy sector, for the one who dreams to fuel the engine of growth.

We often jokingly say – there is nothing certain in the oil and gas business, but what is certain is that on any given day you will certainly run into someone from ISM Dhanbad. Truly, the contributions that this institute has made to chase and capture the most elusive and permeable element of the earth are beyond any expression. This institute has drawn and shaped the country's energy map.

The Learning and every single experience that you have received here will have a huge strength for you to face the professional challenges ahead. This institute has made you future ready. Now it is time to shape the future.

Friends, Future is not tense. Future is demanding. And to reconcile yourself with the expectations of future, self-curation is needed. Commitment with conviction, courage with confidence and clarity of mind that you need to strongly navigate into the future. The journey may not seem a cakewalk, it may turn out a tight-rope walk as you progress in the professional world. You may fail, but you should certainly not fall back on patience, you will succeed but should certainly not succumb to the greed.

Failures shouldn't spawn frustration in you because when you experiment, you tend to taste failures. And if you don't experiment, you fall back on excuses. On this day, let us enter into a promise that, we will embrace the strength of an ethical mind and pure love for whatever we try and whatever we do. When you have a passion, you create your own path for success.

Dear Students, we are standing on a watershed in the history. You are entering a new and exciting India. An India that is growing rapidly towards progress to emerge as a global economic power house.

It took 60 years for India's GDP to grow to \$1 trillion, but took only eight years to reach the next \$1 trillion. Now we are going forward towards a \$5 trillion economy by 2024, and double that in the 5 years to reach the \$10 trillion mark. The Hon'ble Prime Minister has already given a clarion call to gear up for accomplishing the \$5 trillion dream and it is the responsibility of each one of us to work on it.

This is not merely number, but a pledge to build a more inclusive, sustainable and equitable society, to set an example to the rest of the world. Remember it's the trillion dream for a billion smile.

The path to becoming a leading global superpower will not be without challenges and constraints. But it will also throw up many opportunities. As the old adage goes, when the going gets tough, the toughs get going. I am quite sure that you will be able to surmount all challenges to build tomorrow's NEW INDIA.

One of our primary challenges is to create jobs. We are home to the world's largest population of youth. By 2020, the average Indian age will be 29 years and nearly 10 to 12 million people will be eligible to enter the workforce every year over the next 10 years.

The focus on Youth as the pivot of our future development is also reflected in our Hon'ble PM's initiatives – be it Skill India, Digital India or Start-up India.

The millennials are also thinking differently. They dream big. They are risk-takers and innovators. For something like Start-up India is a fantastic initiative in this regard. It is a platform that is geared towards technology-adoption and problem solving. And who better than the likes of you here – all keen, competent and young engineering and science graduates – to be a part of something like this.

Friends, the IITs of our country are among the most visible brands globally and today, you've become a part of that rich legacy. You must wear the badge of being an 'IITian' with pride as well as great responsibility, because when you walk out of here you do not just represent Brand IIT but also Brand India.

I tried to do this in my own humble way. I have been fortunate enough to be a part of the story that today ONGC is the country's largest energy explorer and a diversified energy conglomerate with global stature. Last year, ONGC clocked the highest ever Revenue and the largest ever profit.

There is also a lot of opportunities in emerging areas in our country itself in Big data analytics, Nano technology, Internet of Things, Artificial intelligence, Machine Learning etc. All these technologies are still at their infancy and have huge potential to grow at a faster pace. Chase the technology. Beat the pace.

Oil and gas, especially upstream sector, is always on the lookout for new technologies and ideas. Because oil is found in the mind first and then in the earth. It is a business of knowledge for more than a century, we have mined in the remotest places and in the most difficult terrains for resources that fuel our modern existence.

In India, this upstream oil and gas sector has been anchored by ONGC, the company which I joined 37 years ago as Graduate Trainee and had the opportunity to lead as CMD for the last 2 years.

ONGC today is not only a 65 billion dollar conglomerate but also one of the top Exploration & Production companies of the world, contributing more than 70 percent of India's domestic oil and gas production.

While it is true that the world is waking up to and readily accepting new forms of energy, our country, at least in the foreseeable future, will still require significant amounts of oil and gas to power its economy and improve the living conditions of millions of its people. For instance, crude oil requirement is set to grow more than double from current levels of 4 million barrels per day to around 10 million barrels per day in 2040. Our natural gas consumption is also set to more than treble. At the same time we need to be more climate responsible, and for that climate– efficient technology must have to be evolved.

So, the energy sector as a whole will be quite active in foreseeable future and companies in oil and gas sector will throw lot of opportunities going forward. In view of the growing focus on sustainable and responsible energy, we are also adapting our longterm strategies to respond to these changes. Today, I look at ONGC as not just an upstream oil or gas player, but rather as an energy company with interests across the energy ecosystem – from oil and gas to greener energy solutions.

We at ONGC are constantly looking out for people who will be a part of this evolution. Just like this institute, when you join us, you do not just represent a company, but a widely respected national and global energy brand. Our employee benefits are among the best in the industry – be it compensation or welfare measures. You will also be happy to know that, to harness fresh ideas from young Generation like you, we launched Rs 100 crore Start-Up Fund and there has been some wonderful ideas from youngsters which we are supporting for further development.

You are beginning a new journey. You will have your doubts, but always remember to stand on your ground despite setbacks and one day surely you will reach your cherished destination. Robert Frost's lines spring to my mind –

> Two roads diverged in a wood, And I took the one less traveled by And that has made all the difference

Devote ample time to your health and to your family. Develop interests outside of your professional work, and make relationships.

And finally, always remember: Give back to the society which has given you everything that you need.

All the best, and thank you!

HANDBOOK ON MANAGEMENT EDUCATION 2012

The 10th edition of "**Handbook on Management Education**" contains State-wise information on 509 institutions in 178 universities conducting management programmes. The information of Institutions in the Handbook includes: Year of establishment of Department/Institute; Name of its Head/Director; probable date of Notification/last date for application; Number of seats available; Seats for NRIs/Foreign students; Eligibility; Application procedure; details of Common Entrance Test; Fees; Hostel Facilities, etc. Also given are 'Faculty Strength', commencement of academic session and System of Examination. Information on 34 non-university institutions, the programmes of which have been recognized by AIU and list of institutions conducting PGDM recognized by AIU as equivalent to MBA.

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Celebration of Convocation Ceremony at Saurashtra University, Rajkot

The Convocation Ceremony was celebrated at Saurashtra University, Rajkot, Gujrat through a virtual platform on December 19, 2020. The main theme of the 55th Convocation of the University was 125th Birth Anniversary of world renowned folk Artist and National Poet, Shri Zaverchand Meghani. Hon'ble Governor and Chancellor, Saurashtra University, Shri Acharya Devvrat, Shri Bhupendrasinh Chudasama, Minister of Education (Cabinet), and Education Minister (Gujarat), Mrs. Vibhavariben Dave showered their blessings and wished on the occasion. About 29777 students of 14 disciplines were awarded degree during the Convocation. Total 114 gold medals were offered to 98 students of 13 disciplines and 108 prizes were distributed. The Registrar, Dr. Jatin Soni announced these degrees.

Dr. Vijay Deshani, Pro-Vice Chancellor of the University welcomed all to the Convocation Ceremony and said that Saurashtra University is the first Government University which has achieved NAAC 'A' grade. Dr. Desani shared brief idea about the programs on the campus in which he said that with support of Jain International Organization, for the first time in the State, Saurashtra University has started UPSC training center for Civil Services for free of cost on campus. Two students from the center have cleared preliminary exam which is a matter of pride. It is also a matter of great joy that this year 5 gold medals are given by the Pandurang Chair in memory of the founder of Swadhyay Parivar, Shri Pandurang Shashriji (rev. Dada). Dr. Deshani said that today, when all graduates are going to receive their degrees and contribute in the society, in today's time of science and technology they must strive for principles, sensitive, and new energy and make a better nation. He also expressed his feelings by saying that all those who are graduating today, must make efforts towards changing the time with the help of truth, sincerity, and determination. He also wished them a bright future ahead.

Vice Chancellor, Dr. Nitin Pethani said that good education develops basic values and for such good education, presence of students, parents, teachers, academic institutions is very important. He said that convocation is nothing new but it is our ancient vedic tradition. The way to begin education is one of the samskars, offering a degree after education is also a samskar. It reminds us of the convocation being organized in the times of Taitarey Upnishad in guru-shishya tradition. Guru, during convocation in those times, addresses students who are moving out of the gurukul and says how they are going to face worldly struggle and challenges. At the end of their education, Guru used to say with the help of their education how students will make things better in the world. It is also noted in Hitopadesh that education is an asset-which is best in all materials because it cannot be defeated, measured or destroyed. It motivates students to imbibe values of satyam-shivam-sundaram and incorporate values like sacrifice, restrain, spirituality and humanity in their lives. The Vice Chancellor said that he is overwhelmed with pride the achievement of all the gold medalists and degree holders. He said that he also hopes that all of them will prove their degree to be worthy and will play vital role in the progress of the nation. Vice Chancellor said that education is a pious act which is always constant. Keep your knowledge updated in this competitive world. There is a saying in Sanskrit which says, 'one who possesses qualities like hard work, adventure, patience, intelligence; strength and courage are helped by destiny also'. So, dear graduates, your families, nation, and the world have a lot of hopes in you, he further added. Vice Chancellor also said that by using natural resources prudently, protecting environment and with the commitment for upliftment of the human kind, you must fulfill your duty towards the society. The world has hopes from coming generation. You can give a new direction to the world with the knowledge and skill of technology. He appealed graduates for joining campaigns like 'Start up India', 'Make in India' and 'Digital India' and with their skills and knowledge, they can uplift the rural people.

Education Minister (Gujarat), Mrs. Vibhavariben Dave while addressing said that Saurashtra University is one of the most promising universities of the State and stressed that convocation is not only the event of offering gold medals and degrees, but it is also an occasion when graduating students are proud of their achievements and at the same time they are also brainstorming about true education. It is very much important to achieve values of life along with being educated. Education makes overall development of a student, he added. The degree at the end of education helps in earning and thus an individual becomes self reliant. Moreover, education helps in expanding horizons of knowledge. Mrs. Vibhavariben Dave also said that under the able leadership of Hon'ble Prime Minister Shri Narendra Modi and Hon'ble Chief Minister Shri Vijaybhai Rupani constant efforts are being made at the national and state level for the upliftment of the education. She said that State is constantly concerned and trying to provide help through various schemes so that students get facilities and they do not remain deprived of education. State government is sincerely trying that all students must get basic facilities and qualitative education is imparted by qualified teachers, she said. She wished that may Saurashtra University performs well in upcoming accreditation by NAAC and she also wished successful future to all those who were receiving gold medals and degree today.

Shri Bhupendrasinh Chudasama, Minister of Education (Cabinet) said that he is expressing his deep feeling of happiness for being the part of the celebration. He wished best to all the gold medalists and graduates on their achievement and bright future. The way vedant does not mean end of the veda, similarly dikshant does not mean end of diksha. Diskha is the crux of what a guru taught, directed, and guided. Dikshant is readiness for facing worldly struggles and guidebook for being helpful to the society. In eternal tradition of science and technology in India, we do not use word education; rather it has always been knowledge. He said that now you are going to enter a competitive world. Your goal, readiness for struggle, and values will bring pride to your degree. Central and State governments are committed towards qualitative education and making progress in facilities. Further, New Education Policy is prepared after having a discussion and suggestions from experienced academicians and experts who are directly connected with academics. There is no doubt that this New Education Policy will be beneficial for students, teachers, educational institutes and the society at larger level, he told. The youth is the building blocks of the nation and progress and culture of this nation are in their hands, he further added.

Hon'ble Governor and Chancellor of Saurashtra University, Shri Acharya Devvrat made remarks as a Chairperson. He expressed his happiness on being part of the celebration. He wished that students who are getting degree today, become better citizens with their education. He expressed his hope that if students are well educated, they will be able to maintain qualities like honesty, sincerity, responsibility throughout their lives. Universities should also update their syllabus as per the requirement of the State and Nation and with this students will be able to bring glory to our nation at international level. In his address, Shri Acharya Devvrat said that in the 21st Century, our nation. India is standing at a very crucial point where knowledge if we talk of quality and proof, itself is an asset. Responsibility of the universities/ institutions which are imparting higher education is to convert information into knowledge and lead the nation in right direction, he added. One important part of higher education is that the knowledge that one has gained should have its utility in the society. Education and skills should come together and help in building a strong nation and it is also important that education should become a good source for earning also. Along with this, an educated student should be motivated for research that may lead to patent filing, and that makes him/her self reliant and he can give an opportunity for work to others, he further added. Further, youth should avail maximum benefit of government schemes like RUSA, GIAN, Make in India and create job opportunities within the nation. Responsibility of various Higher Education Commissions like University Grants Commission and National Assessment and Accreditation Council is to take our higher education at par with international standards.

Shri Acharya Devvrat addressed the students and said that it is extremely important that along with education, students develop a foresight which includes best human values. In this world of science and technology, it is important that we make efforts in erasing distance between human beings. Rajkot is a place where the father of the nation Mahatma Gandhi had worked. Gandhiji used to say, "This earth fulfills needs of everybody but not everybody's grid." As you are receiving your degree today, do not only use it to get a job or earn for yourself, he said. You should also think that through values you learnt along with education, you should be helpful to the society and also think what can you offer to the society, he added. He congratulated Vice Chancellor, Dr. Nitinbhai Pethani and Pro-Vice Chancellor, Dr. Vijaybhai Desani for various aspects of the University and providing online education and appreciated other activities done during time of COVID-19. The Convocation was compered by the Syndicate member, Shri Nehalbhai Shukla and Vote of Thanks was proposed by the Controller of Examination, Mr. Nilesh Soni.

International Workshop on Research Methods

A three-week International Workshop on 'Research Methods: Insights and Applications' is being organized by The Department of Journalism and Mass Communication, University of Calcutta, West Bengal in collaboration with the Institute for International Journalism, E.W. Scripps School of Journalism, Ohio University, USA from January 16, 2021 to February 05, 2021 in Virtual Mode. The Faculty and Research Scholars in Social Sciences may participate in the event. The Modules of the event are:

- *Module I*: Interview as Research Method (January 16-22, 2021)
- *Module II*: Qualitative Content Analysis (January 23-29, 2021)
- *Module III*: Survey Research (January 30- February 05, 2021)

For further details, contact Organising Secretary, Department of Journalism and Mass Communication, University of Calcutta-700 073 (West Bengal), Contact Number: +91 98304 69974, E-mail: *cuiijresearchworkshop2021@gmail.com*. For updates, log on to: www *caluniv.ac.in/seminar/ seminar.html*.

National Webinar on COVID-19 Pandemic and Enforcement of Labour Law

A One-day National Webinar on 'COVID-19 Pandemic and Enforcement of Labour Law: Challenges and Remedies' is being organized by the Centre for Transparency and Accountability in Governance, National Law University, Delhi and National Labour Law Association, New Delhi in collaboration with Friedrich Ebert Foundation, India and Centre for Labour Laws NLIU Bhopal, Madhya Pradesh on January 30, 2021.

The liberalization of the Indian economy has no doubt increased economic activities but, at the same time, has caused contractualization / casualization of employment relations and resultant widening of inequalities. The COVID-19 Pandemic has also caused serious disturbances in the world of work. There is a continued expansion of the informal economy infested with precarious work conditions. Further, the capital-intensive modes of production with the segmentation of production processes have come to question the future of work worldwide. The so-called whitecollar workers are engaged in jobs that were earlier earmarked for blue-collar workers. Apart from this, the challenges faced from robots and automation, including the surge of artificial intelligence in industrial production, have opened a new arena for reformulating labour policy and the law. The new normal with regards to social distancing, work from home, etc are also posing challenges.

The Corporates have generally been adopting labour rationalization policies in order to reduce costs so as to remain viable in an increasingly competitive environment. In order to meet the situation described above, national and state governments have introduced various measures such as fixed term employment; longer hours of work; work from home, etc. A significant shift has taken place in employment from permanent to temporary, casual, and short term contract employment. This has weakened the collective bargaining machinery. Instances are not lacking where permanent workers in non-core activities are removed and replaced by contractual workers either through outsourcing to other firms or direct recruitment. Most of the Labour law reforms have been enacted to facilitate 'ease of doing business' as also trade. Further, COVID-19 has also adversely affected employment across the globe. The Conference may deliberate on the contemporary issues relating to the Labour Law Reforms. The Subthemes of the event are:

- Labour Law Reforms Across the Globe.
- Impact of Pandemic on the Employment in Organised and Unorganised Sectors.
- Labour Market and Role of Social Partners Including Workers' Organizations / Association.
- Contract Labour Law and Policies.
- Legal Protection and Social Security to Unorganized/Informal Workers.
- Skill Development Law and Policy.
- Women Worker, Maternity Act, and Employability.
- Globalization, International Labour Standards, and Decent Work.
- Hard vs. Soft Laws.
- Challenges of Robotics, Automation, including the Surge of Artificial Intelligence.
- Social Security and Unemployment Insurance.

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- Future of Work and Labour Law Policies.
- Ease of Doing Business and Protection of Rights of Workers.
- Fixed Term Appointment.
- Voluntary / Premature Retirement.
- Employment in SDG.
- Street Hawkers, Sewage Workers, Domestic Workers, Security Guards, etc.
- Any Other Topic Directly Related to the Central Theme of the Conference.

For further details, contact Convener, Dr. Jeet Singh Mann, Director, Centre for Transparency and Accountability in Governance (CTAG), National Law University, Sector-14, Dwarka, New Delhi -110078, E-mail: <u>ctag@nludelhi.ac.in</u>. For updates, log on to: www. nludelhi.ac.in/

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THESES OF THE MONTH

SOCIAL SCIENCES A List of doctoral theses accepted by Indian Universities (Notifications received in AIU during the month of October-November, 2020)

Accountancy

1. Kachchhy, Udayan Shardul. A study on relationship between financial performance and scrip prices of selected companies listed on Nifty during 2005-2014. (Dr. H C Sardar), Department of Accountancy, Gujarat University, Ahmedabad.

Anthropology

1. Raikwar, Rajul. A study of academic stress, anxiety and health profile among the adolescent Other Backward Classes (OBC) girls of Sagar District, Madhya Pradesh, India. (Prof K K N Sharma), Department of Anthropology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

Commerce

1. Banu, Yasmeen. **Performance evaluation of cooperative banks with special reference to Hyderabad District**. (Prof. Varun Kumar), Department of Commerce, Arunachal University of Studies, Namsai.

2. Chauhan, Dhartibahen Mansukhbhai. A comparative study of capital structure of selected private and public sector banks. (Dr. Devendra N Vyas), Department of Commerce, Rai University, Ahmedabad.

3. Gajjar, Nirav. A study on customer satisfaction regarding the service quality of departmental store in Ahmadabad City. (Dr. Bhavesh Lakhani), Department of Commerce, Rai University, Ahmedabad.

4. Meher, Bharat Kumar. An analysis of effectiveness of strategies adopted for managing non-performing assets in Indian bank: A case study of Sagar District of Madhya Pradesh. (Prof G L Puntambekar), Department of Commerce, Dr Harisingh Gour Vishwavidyalaya, Sagar.

5. Mirza, Sirajbeg Salimbeg. An analysis of working capital management of cement industry: A comparative study of selected cement companies. (Dr. Devendra N. Vyas), Department of Commerce, Rai University, Ahmedabad.

6. Mishra, Ramakrushna. An evaluation investors perception towards public sector and private sector mutual funds in India. (Dr.S C Acharya), Department of Commerce, Sambalpur University, Sambalpur.

7. Saurabh. Impact of liberalization policy on India's export performance in different sectors. (Prof. Varun Kumar), Department of Commerce, Arunachal University of Studies, Namsai.

8. Thakkar, Kishor Chhaganlal. Working capital management of fertilizer industry in Gujarat: A comparative analysis of selected companies. (Dr. C. M. Thakkar), Department of Commerce, Rai University, Ahmedabad.

9. Vaid, Jatin. Business tourism marketing: A study of hotels and convention centers in NCR. (Dr. Subodh Kesharwani), Department of Commerce, Indira Gandhi National Open University, New Delhi.

10. Zala, Devendrasinh Dalpatsinh. The study of financial performance of selected co-operative banks established in North Gujarat. (Dr. C.M. Thakkar), Department of Commerce, Rai University, Ahmedabad.

Economics

1. Kiran Bala. An economic analysis on Indo-ASEAN trade. (Dr.Manoj Siwach), Department of Economics, Chaudhary Devi Lal University, Sirsa.

2. Mamta Rani. An analysis of India's trade with Latin American countries since 1995. (Dr. Neelam Chaudhary), Department of Economics, Maharshi Dayanand University, Rohtak.

3. Monika. A study of disparities in economics and social infrastructure development: Empirical evidence from Haryana. (Dr. Santosh Nandal), Department of Economics, Maharshi Dayanand University, Rohtak.

4. Sangwan, Jyoti. A comparative study of organic and non organic farming: Empirical evidence from Haryana. (Dr. Anita Dagar), Department of Economics, Maharshi Dayanand University, Rohtak.

Education

1. Anita Devi. Reasoning ability and problem solving ability among secondary school students in relation to their study habits, learning styles and certain demographic variables. (Dr. Maduri Hooda), Department of Education, Maharshi Dayanand University, Rohtak. 2. Chaturvedi, Hiral Prakashbhai. A study of study habit of higher secondary school students in relation to their gender, types of school and social economics status. (Dr. Jayantibhai B Parmar), Department of Education, Rai University, Ahmedabad.

3. Kant, Rama. Ucchatar madhyamik istar ke vidharthiyaon ke loktantrik mulyoan ka unke ling parivesh evam samvegatamak buddhi ke sandarbh mein tulnatamak adhyayan. (Dr.Chandrakanta Jain), Department of Education, Dr Harisingh Gour Vishwavidyalaya, Sagar.

4. Mallik, Prashanta. **Elementary education in rural areas of Western Orissa: Constraints and prospects**. (Dr.N Barpanda), Department of Education, Sambalpur University, Sambalpur.

5. Patel, Ankitaben Jayeshbhai. Construction and standardization of lateral thinking test for teachers. (Dr. Namrataben Upadhyay), Department of Education, Rai University, Ahmedabad.

6. Rinkee Devi. A study of environmental awareness among teachers of Ahmadabad municipal corporation schools. (Dr. R. N. Thakur), Department of Education, Rai University, Ahmedabad.

7. Saini, Anu. Academic procrastination and academic anxiety among senior secondary school students in relation to their self confidence, self-efficacy and locus of control. (Dr. Maduri Hooda), Department of Education, Maharshi Dayanand University, Rohtak.

8. Sharma, Sakshi. A study of epistemological concepts and teaching attitude among prospective teachers. (Dr. Jitender Kumar), Department of Education, Maharshi Dayanand University, Rohtak.

9. Sheetal. Creative thinking abilities and study habits of senior secondary school students in relation to modernizaton and demographic variables. (Dr. Neeru Rathee), Department of Education, Maharshi Dayanand University, Rohtak.

10. Sur, Sanjukta Rani. A comparative study of parents perception and awareness in relation to their educational status on care, protection and services available for their mentally retarded children in Mayurbhanj District of Odisha. (Dr. Nirupama Barpanda), Department of Education, Sambalpur University, Sambalpur.

11. Suresh Kumar. Impact of alienation, internet addiction and birth order on anxiety and academic achievement of college students. (Dr. Hemant Lata Sharma), Department of Education, Maharshi Dayanand University, Rohtak. 12. Thakkar, Tejas Ashokkumar. Effectiveness of concept attainment model with reference to educational achievement in the subject of business organization and management. (Dr. Bhavesh Kamleshbhai Shah), Department of Education, Rai University, Ahmedabad.

13. Trivedi, Krishna Arvindbhai. A study of emotional intelligence and social intelligence among student-teachers. (Dr. Nusarat Kadri), Department of Education, Rai University, Ahmedabad.

14. Yadav, Santosh. Teacher freezing among secondary school teachers in relation to their sense of humour, organizational climate and adjustment. (Dr. Umender Malik), Department of Education, Maharshi Dayanand University, Rohtak.

Home Science

1. Khakhar, Manisha Narendrabhai. A study on socioeconomic condition, job satisfaction and challenges of worker in Bandhani (Cottage) industries with reference to Jamnagar City. (Dr. Fulsinh V. Chauhan), Department of Home Science, Rai University, Ahmedabad.

Journalism & Mass Communication

1. Rekha Rani. Haryana ke yuvaon par television vigyapnoan ka prabhav: Ek adhyayan. (Dr.Sewa Singh Bajwa), Department of Journalism & Mass Communication, Chaudhary Devi Lal University, Sirsa.

Law

1. Shah, Urvi Naman. Critical study on copyright piracy in India with specific reference to online piracy of music, sound recording and films. (Dr.S P Rathor), Department of Law, Gujarat University, Ahmedabad.

2. Devendra. **Cyber offences in India: A critical legal study**. (Dr.K A Pandey), Department of Law, Dr Ram Manohar Lohiya National Law University, Lucknow.

3. Dhama, Ritu. **Right to education in India: An assessment**. (Dr. Mahabir Singh), Department of Law, Kurukshetra University, Kurukshetra.

4. Jakhar, Mukesh. **Provisions relating to minorities under Indian constitution: Issues and Challenges.** (Dr. Jitender Singh Dhull), Department of Law, Maharshi Dayanand University, Rohtak.

5. Nagar, Nirmal. Human rights of women under criminal law: An analytical study of provisions and practice. (Dr. S S Shilwant), Department of Law, Maharshi Dayanand University, Rohtak.

6. Raj Rani. Law relating to consumer protection in India: A study of emerging trends. (Dr. Jaswant Saini), Department of Law, Maharshi Dayanand University, Rohtak.

7. Verma, Saurabh. **Justice delivery system in India: Recent trends**. (Dr. A S Dalal), Department of Law, Maharshi Dayanand University, Rohtak.

Library & Information Science

1. Desai, Maganbhai Haribhai. Future role and need of resource sharing and consortia among university libraries of Gujarat State. (Dr. Umesh Patel), Department of Library and Information Science, Rai University, Ahmedabad.

2. Tandel, Haribhai Parsottambhai. Faculties attitude towards the libraries of arts, commerce, and science college at Navsari and Valsad District: A study. (Dr. Umesh Patel), Department of Library and Information Science, Rai University, Ahmedabad.

3. Vaghela, Ajitsinh Bhavubha. Users' satisfaction level with reference to availability and accessibility of Information and Communication Technology in the libraries of science colleges of Ahmadabad: A study. (Dr. Pravinkumar Patel), Department of Library and Information Science, Rai University, Ahmedabad.

Management

1. Agarwal, Rohit. **E-marketing study on customers perception on buying behavior towards travel industry**. (Prof. Alok Kumar Singh), Department of Management, Arunachal University of Studies, Namsai.

2. Baser, Surya Kailash. Expectations and perceptions online shopping: A study of online shoppers in select cities of Gujarat. (Dr. Kerav Pandya), Department of Management, Gujarat Technological University, Ahmedabad.

3. Boya, Venkateswara Reddy. Impact of human resource management practices on operational excellence: A study on pharmaceutical industry, Hyderabad, Telangana, India. (Dr. K S Sekhara Rao), Department of Management, Koneru Lakshmaiah Education Foundation, Guntur.

4. Dhulipala, Shree Jyothi. A study on risk management methods and practices of traders in Indian commodity derivative markets. (Dr. D Srinivasa Rao), Department of Management, Koneru Lakshmaiah Education Foundation, Guntur.

5. Gaur, Priyanka. A study of financial inclusion: Extent and coverage with reference to Faridabad District. (Dr. Anjali), Department of Management, Maharshi Dayanand University, Rohtak. 6. Khairnar, Avinash Shivaji. **Knowledge management in Small to Medium Enterprises (SMS)**. (Dr. Khairnar Avinash Shivaji), Department of Management, Rai University, Ahmedabad.

7. Lilaram, Vidhani Bharti. Indian retail banking industry: Opportunities and challenges in selected leading banks in India. (Dr. R. K. Balyan), Department of Management, Rai University, Ahmedabad.

8. Nisha. A study of TQM practices and its impact on employee engagement in private sector. (Dr. Vijay Rathee), Department of Management, Maharshi Dayanand University, Rohtak.

9. Pandey, Ashish Kumar. Retention and motivational strategies in Arunachal University of Studies in respect of employees. (Prof. Satish Kumar), Department of Management, Arunachal University of Studies, Namsai.

10. Pandit, Kusha. Work life balance of working women in service sector. (Prof Kuldeep Kumar), Department of Management, Alakh Prakash Goyal Shimla University, Shimla.

11. Patel, Dhaval Mukeshkumar. Customers satisfaction towards mobile service provider in Gujarat with special reference to Mehsana District. (Dr. Bhavesh Lakhani), Department of Management, Rai University, Ahmedabad.

12. Vyas, Ashish P. An empirical study of stress level among the employees of chemical factories: A case study of central region of Gujarat. (Dr. Bhavesh Lakhani), Department of Management, Rai University, Ahmedabad.

Physical Education & Sports

1. Geeta. A study of media portrayal of athletes and its impact on sportsman. (Dr. Kultaj Singh), Department of Physical Education, Maharshi Dayanand University, Rohtak.

2. Patel, Priteshkumar Chandrakant. Effect of plyometric and Speed Agility and Quickness (SAQ) training on selected physiological and physical fitness attributes of male handball players. (Dr.D B Desai), Department of Physical Education, Gujarat University, Ahmedabad.

3. Pushpa Kumari. A comparative study of lifestyle, mental health and quality of life amongst team and combative sports players of Haryana. (Dr. R P Garg), Department of Physical Education, Maharshi Dayanand University, Rohtak.

Political Science

1. Baghel, Sarvan Singh. Garib kalyan mein Deen Dayalji dwara srijit aantyodaye aur ekatamak baad

vichar kee samajik aur rajnaitik bhumika. (Prof. Om Prakash Sharma), Department of Political Science, Arunachal University of Studies, Namsai.

2. Pooja. Jhuggi Jhonpriyo se nishkashan aswaichik visthapan aur maanabadhikar mudde: Dilli ke saandarbh mein ek parikshan, 1990-2014. (Prof. Anurag Joshi), Department of Political Science, Indira Gandhi National Open University, New Delhi.

Psychology

1. Patel, Tejal P. Pregnant women's involvement in Tapovan Research Centre of Children's University and its impact on anxiety and happiness. (Dr. Ashok N Prajapati), Department of Psychology, Children's University, Gandhinagar.

2. Raj, Ritu. Positive organizational behavior and school culture: Predictors of happiness and turnover intentions of teachers. (Prof P K Rai), Department of Psychology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

3. Sandhu, Jagjeet. Wisdom in relation to personality, intelligence, emotional intelligence and family environment. (Dr. Umed Singh), Department of Psychology, Kurukshetra University, Kurukshetra.

Public Administration

1. Sukhdev Singh. An assessment of functioning of government colleges and self financing colleges in Haryana. (Dr. Satyawan Dalal), Department of Public Administration, Chaudhary Devi Lal University, Sirsa.

Social Work

1. Parmar, Priyankkumar Bharatkumar. A study on career aspirations of youths in Gujarat. (Dr. S. R. Prabhakar), Department of Social Work, Rai University, Ahmedabad.

2. Patel, Vilashbahen Ramabhai. A study of women empowerment among various castes: With reference to Anand and Kheda District. (Dr. Fulsinh V. Chauhan), Department of Social Work, Rai University, Ahmedabad.

Sociology

1. Awasthi, Shashikant. Krans- sanskritik vivah anterashtriya sandarbh mein: Khujrahoan prayatan ke vishesh sandarbh mein. (Prof. Diwakar Sharma), Department of Sociology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

2. Borthakur, Upasana. Women work and economy: A study of tea plantation workers in Assam. (Prof. Nita Mathur), Department of Sociology, Indira Gandhi National Open University, New Delhi.

3. Rajak, Naval Kishor. Dr Harisingh Gour Vishwavidyalaya ke chatre chatraoan par social media ka prabhav: Ek samajshastriye adhyayan. (Dr. Neelu Rawat), Department of Sociology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

4. Roy, Smita. A sociological understanding of the challenges of old age persons: A case study of Lucknow District. (Prof Sanjay Singh), Department of Sociology, Dr Ram Manohar Lohiya National Law University, Lucknow.

5. Varun Kumar. Khetihar mahila majdur: Ek samajshastriye adhyayan (Uttarpradesh ke Ambedkar Nagar Jile ke Devriya evam Devchadrepur Gaon ke vishesh sandarbh mein. (Dr. Kali Nath Jha), Department of Sociology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

Tourism & Hospitality Services

1. Manish Kumar. Host community attitudes towards foreign tourists: A case study of Himachal **Pradesh**. (Dr. Ravi Bhushan), Department of Tourism Management, Kurukshetra University, Kurukshetra.

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Nominations addressed to Scientist Incharge – SSB YSA Unit, CSIR HRDG New Delhi must be submitted in the prescribed format along with reprints of significant publications of the last 5 year's period via e-mail to <u>ssb@csirhrdg.res.in</u> on or before **31**st **March 2021**. No hardcopy to follow. Please visit <u>www.csirhrdg.res.in</u> for further details and nomination format.



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