

Rs. 30.00  
ISSN- 0566-2257



# UNIVERSITY NEWS

*A Weekly Journal of Higher Education*

**Association of Indian Universities**

Vol. 58 • No. 16 • April 20-26, 2020

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*Celebrating  
90  
Years of  
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#Let'sBeatCoronaTogether

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Subscription is payable in advance by Bank  
Draft/MO only in favour of Association of  
Indian Universities, New Delhi.

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## Virtual Education: A Viable First Choice in Post COVID Era

K Viyyanna Rao\*

It is a great misfortune that the entire mankind had to fight with the draconian Corona Virus, spreading at a rapid pace beyond imagination. Hope we would be successful in containing the same in due course of time. The pandemic had made the people understand how science is still at a nascent stage, being not able to prescribe a definite cure. It is time to realize that meddling with the nature indiscriminately can turn out to be perilous. Hope, the wisdom prevails that we are all bound to conduct ourselves within the limits set by the nature. No more the mankind can afford to ignore the warning bells.

The ongoing Coronavirus pandemic has posed serious challenge not only to our health and economic well-being, but has changed our society's basic structures in almost all spheres. As far as schools, colleges and universities are concerned, administrators are suddenly cornered as to how to deal with the campuses, students, faculty, etc in this precarious situation. While the universities are also following the advisory of lockdown, it is their responsibility to ensure that the precious time of the students is not lost in this process and they should ensure to complete the term of the students. Now, policy makers and administrators have realized that this shortcoming can be overcome by embracing 'virtual/online' teaching methods. Certain universities have developed specific 'Apps' and directing the colleges, staff and students to download the same and continue to conduct online classes. The 'Apps' are also made compatible to Mobiles, Computers, Laptops, etc. Certain universities have directed the colleges to create 'WhatsApp' Groups (class-wise) and put audio's and videos on the group and ensure continuity in the teaching – learning activity. Though, all students may not be benefitted fully, it is gratifying that least an initiative has set in; and the same would be popular among the stakeholders overtime, indicating the need to make education virtual. It is in this background that an attempt has been made in this write-up to examine the feasibility and indispensability of virtual education in the Indian context. It is also attempted to survey the existing practices and environment created towards this end.

### Virtual Education -- The Concept

Virtual Education is referred to as the method of instruction where the teacher and student are separated by time, space or both. In contrast to the conventional methods where instruction is offered face to face in classrooms, laboratories, etc., in virtual education, the instruction is carried through technological tools like internet, video

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conferencing, multi-media, mobile phones, tablets, WhatsApp, etc. Whereas, the Cambridge Dictionary defines the 'Virtual learning' as a system for learning and teaching using the internet and special software. In another sense, the term 'virtual' is defined to mean 'nearly true', as it is a replica. It is interpreted in the sense that the 'virtual activities' are generated by a computer to simulate real objects and activities. In this sense of the term, virtual education 'mimics' the conventional education mainly attempting to replace the 'teaching-learning' methods. Whatever be the interpretation, the doubts and questions lingering in the minds of many are:

- 1) Whether the Virtual Education is feasible and how far it can turn out to be a viable alternative?
- 2) Whether the Virtual Education is going to be as effective as the conventional education? If not, why one must look to this as an alternative?
- 3) Whether Virtual Education can replace the conventional education in all this entirety or conventional education still has its potential to survive or continue as the primary means of Teaching-Learning process?
- 4) Whether the learning environment in India is sufficiently equipped to implement Virtual Education as an alternative? What are the opportunities and difficulties?
- 5) Finally, whether opting Virtual Education is indispensable in the present day context of technology advancements? If so, whether Virtual Education would supplement or compliment conventional education?

In the discussion that follows, attempt has been made to answer these questions, keeping in view of the availability of facilities, infrastructure and the preparedness of the stakeholders.

### **Virtual Education – Experiences Abroad**

Though India emerged to be one of the leading experts in the field of software development, the application of the same has found its first use with the setting up of a Virtual Design Studio (VDS) in 1993 to aid the students pursuing the study of Architecture. The VDS has used the existing tools than like the Computer Aided Design (CAD) software. The significance of this work was that the students were able interact over the tool and exchange their ideas. Later on, offering programmes and courses has become popular and by the turn of the twentieth century, many universities in

USA, Canada and Europe have come on this platform and started their online learning platforms in various names as Virtual Education, Distance Education and Online Education. As per the information known, the University of London was the first University to offer distance learning and award degrees as early as in 1858. Later in 1873, the 'Society to Encourage Studies at Home' was founded in the United States. In 1892, William Rainey Harper, the founder and first President of the University of Chicago promoted the idea of correspondence courses in 1892. By 1920, several Universities in UK, USA and other European countries have started their own outfits. Interestingly, this system of distance learning was not appreciated. People and many educationists laughed at these attempts and looks down these initiatives only as the poor business models to deceive the students. For a long time, these systems were considered inferior to real systems and thus dubbed as 'extremely undemocratic'. Unfortunately, even after about a century of evolution, the correspondence study (or the distance education) has not established its roots firmly. Even now, the degrees secured under this mode are considered inferior for a variety of reasons and they could not gain equal respect in the employment market in the west and also in India. There were instances, even in India, that the recruitment advertisements used to highlight in bold, stating that 'the candidates holding such degrees need not apply'.

A new dimension got added, with the spread of ICT tools, in the name of 'online education'. The so called distance/correspondence education got converted into the online mode; where the delivery of the content has happened through certain electronic gadgets via internet. In this process, the University of Phoenix become the first institution to have launched both the UG and PG programmes through the online system in 1989. Later in 1996, enthusiastic entrepreneurs, viz., Glen Jones and Bernard Luskin started the 'Jones International University', with courses run completely on Internet. Prior to this, there were stray instances of using the technology for connecting students and staff. One such example was the 'Intranet' created by the University of Illinois (1960) for the use of students. It was the kind of system where the select computer terminals were connected to each other to provide access to the students to share course materials and also listen to the recorded lectures. Slowly these initiatives spread outside the campuses and there emerged an Electronic University Network (EUN) linking colleges and universities. The

momentum got so intensified that ‘online education’ has got to stay, challenging the locus of conventional Teaching – Learning Programme.

### **Origin of Virtual Education in India**

The origin of Virtual Education in India need to be traced through the introduction of distance education in the country. The foremost organised effort in establishing a University for distance learning dates back to 26<sup>th</sup> August, 1982, when the Government of Andhra Pradesh through a separate legislation established the A.P. Open University. Later in 1991, it was renamed as Dr. B.R. Ambedkar Open University. The efforts of Prof. G. Ram Reddy, as the doyen of Distance learning in India are praiseworthy. He, who served as the founder Vice Chancellor of A P Open University, later also held the position of Vice President of Commonwealth of Learning (CoL) Canada in 1989. He also headed the first National Open University started with the name Indira Gandhi National Open University (IGNOU) in 1985. Encouraged by the success of this University, several other Conventional Universities, mainly at the State level, entered the fray, making the competition severe and cut-throat. These universities, being autonomous and independent, followed their own methods, many a time adding to the disrepute. There was no check on the proliferation of courses, classes and centres. Ultimately, the quality of education offered through these outfits turned out to be questionable and a causality. With the permissions being granted for the setting up of Deemed Universities and Private Universities, the confusion got further confounded. The situation prevailing thus warranted some kind of control from the Government through an appropriate regulator. Eventually, the University Grants Commission(UGC), took up the matter and started a wing in its fold, called the ‘Distance Education Bureau’. Originally, there was the Distance Education Council operating at IGNOU to monitor the growth and working of distance learning in India. Owing to the fact that DEC, being the wing of IGNOU, other universities questioned the locus and supremacy of the unit and hence UGC had to step in.

Many of these distance outfits have started deploying technology to manage the affairs to a different degree. Initially, audio lessons were telecast through air (with a dedicated facility) and later started producing video lessons and distributed to the regional centres and colleges in the form of cassettes. After the further advancements in the

technology, many CDE centres are utilizing satellite services, internet and conducting online classes and providing interaction between the teachers and students. As per the survey of KPMG, India and Google on the prospects of ‘Online Education’, it is expected that there will be an eight fold increase in the numbers in a period of five years (between 2018 and 2021) growing from USD 247 million in 2016 to USD 1.96 billion in 2021. Looking at this unusual potential, every player is leaving no stone unturned in creating his/her ‘own niche’ in the market. This also necessitated the Government to monitor the system carefully and closely to ensure that the hapless students do not become preys to them.

### **UGC Guidelines for Online Education**

In order to regulate the HEIs that are offering online education, the UGC has issued regulations titled ‘UGC (Online Courses or Programmes) Regulations 2018 on 4<sup>th</sup> July, 2018. These Regulations intended to lay down the minimum standards of instruction for the grant of certificate, Diploma or Degree through online mode, using internet and interactive technology. Though these Regulations, the UGC has put a stop to all those institutions that do not satisfy the prescribed criteria. The eligibility specified by the UGC is as follows:

- Any HEIs that intends to offer courses or programmes through online mode should have been in existence for a minimum period of five years.
- The HEIs should have accredited A+ (with a minimum score of 3.26 on a 4.0 point scale of the NAAC).
- The HEIs should be one among the top 100 institutions under the National Institutional Ranking Framework (NIRF) in the overall category.
- The HEIs will be eligible to offer only such courses or programmes that are already being offered in the regular or distance mode.
- The HEI should also have demonstrated its capability for designing and developing courses in terms of the following requisites:
  - i. Has fully qualified in-house faculty to design and offer the courses.
  - ii. Has an access to SWAYAM platform.
  - iii. Has the ability to conduct examinations only, using technical facilities available.

Those institutions that satisfy the above criteria can make an application for recognition to offer programmes online. As per the information available (UGC's Circular dated 30-01-2020), there are only seven HEIs across India that were permitted to offer programmes through online mode. The mix of programmes permitted include BBA, MBA, BA, BCA, B.Com., M.Com., MA (Journalism and Mass Communication) and certain courses in Journalism, Retail Management, etc. The highest number of 24 programmes were approved to be offered by the Amity University, Noida, U.P. for the Academic Years 201-20 and 2020-21.

### **Crossing the Crossroads**

As can be seen from the above, the presence of online education can be considered very minimal. There are also only a handful universities that can get qualified to be eligible to offer these programmes. If we take into consideration the criteria, the cop is already decided, saying that one must be in the list of Top 100 of NIRF. Therefore, the maximum that can be considered itself is limited to 100. But in the situation arising out of the corona virus spread, almost every university and every college needs to develop capability in this respect. The question, it appears, is not about the eligibility, but about the 'reach of education to the extent possible through online means, as efficiently as possible. Therefore, the UGC has to revise its own Regulations in the context of unheard and unimagined epidemics like the present one. It is a matter of gratification that many universities and Departments of Education of various State Governments have issued guidelines as to how to carry out the academic programme in these difficult situations, utilizing all the technology support. It is commendable that some Universities have developed special 'Apps' for used by the Faculty and students and stay connected. Some Universities have also established a kind of 'Monitoring Mechanism' to track the process while it is going on. All these attempts surely revolutionise the way the courses and programmes are offered online. In this context it is pertinent to mention that Association of Indian Universities is doing the onerous task of compiling the experiences of the universities in offering online courses during COVID-19. In the opinion of the author the experiences of all the universities in their experimentation with online systems thus collected by AIU may be compiled and prepared as 'Manual' for use by all others in future. This

can also be given to DEB and Ministry of Human Resource Development (MHRD) to make policy changes in Distance Education.

### **Clearing the Doubts**

It is the nature of humans that whenever a new thing comes into play, there will be so many doubts in the minds of stakeholders. The reason for this lies in the fact that 'people resist change'. Nobody likes to get disburged from the present level of comfort or position, even the change is going to benefit. People prefer to a great extent the 'status quo' situations. It is also based on the common adage that 'a bird in hand is worth two in the bush'. The same predicament holds equally good in case of this new development too. In this background, attempt is made to answer the questions raised above in the context of virtual education. The first question pertains to the feasibility of the concept of virtual education. The answer to this is yes; it is feasible to take the Virtual Education a higher level. Taking into account the advancements in the field of Artificial Intelligence (AI), there is no room for any doubt in terms its feasibility. Artificial Intelligence has progressed so much that machines (i.e., robots) rebound to replace human beings in every crucial function. As things stand, Robots are greatly being pressed into service in health care, agriculture, food preparation, manufacturing and military. The interesting aspect is that robots are able to perform critical surgeries, therapies and even are providing the service of 'patient companionship'. Imagine such a situation, where it engages you, if you so wish. After all, a simple gadget like Mobile phone is piercing to 'redefine human relations'. Humans have got accustomed to this so much that they can afford to forget anything, but not the mobile. For, it has become a companion and a lifeline to youth especially.

The applications of Artificial Intelligence are spread wide and far. Artificial Intelligence (called by some as Deep Learning) has multiple applications not only in making machines work, but also in helping business relations to grow. Almost every field of business activity is now engulfed with the Artificial Intelligence. The E-Commerce platforms are able to conduct billions of dollars/rupees business only with the help of the support of Artificial Intelligence. The reach is such that there is the situation of challenging the Human Intelligence (HI). Around 2016, David Henson constructed a Humanoid (and named it as Sophia),

which imitates the human gestures, facial expressions, converse with people (of course on predefined topics) and will also take questions for answering. This made the world awestruck at the potential of the Artificial Intelligence, after the Deep Blue Experiment (a chess playing computer developed by IBM in 1996). This machine was pressed to play chess with the then world Champion Garry Kasparov. Interestingly, the Deep Blue one the first game, Kasparov won three matches and drawn two! Thus, putting the score at 4-2 in favour of the World Champion. Through this experiment, the power of Artificial Intelligence came to be known by the world. The epilogue is that the IBM got the machine dismantled later and did not wish to continue the tussle. Therefore in the context of fast growing technology, nothing is impossible. By analogy, it is possible that machines would take up the job of teaching, conducting classes, clearing doubts and what all a teacher in a classroom will do.

The second question pertains to the issue whether Virtual Education could be effective as in the case of conventional mode of Teaching-Learning Programme. It is to be accepted that machine is a machine. All these hardware and software packages are only tools to aid the process of learning. The content is to be generated by the teacher only. Therefore, the success of Virtual Education depends upon the effective content generation, designing and planning for its delivery. It is at the delivery end that Virtual Education tools are going to help the process. One thing is very sure that the effectiveness of Teaching-Learning Programme can be greatly enhanced with the help of these tools and supplement the effort of the teacher. After all, any machine, with whatever intelligence, is designed and constructed by man only. Therefore, Virtual Education shall be viewed as an aid to supplement the effort of the teacher. In the given circumstances of technological advancements, it is possible to offer education online, as effectively as possible, as against the conventional mode, in respect of its third phase, i.e., delivery of the content.

Thirdly, there is an interesting question asked many a time in respect of the fading away of the conventional system. Still greater question is about the replacement of the teacher by the machine. If the foregoing discussion is any indication, technology is a tool. It can only supplement the effort of the teacher; it cannot supplant him. For, a teacher required not just for transferring the content; but also for motivation,

inspiration and eventually for providing direction to the society. A teacher is respected not because he possesses knowledge; but he is a conduit in shaping the behavior of the wards. The influence of the teacher on the student is lifelong and eternal. A student mimics the teacher right from the childhood to that of his end. Committed and dedicated teachers are the be alon and source of light to the nation. A nation that ignores education and the role of teachers would turn intellectually empty and would be unable to face the unimagined critical situations. It is for this reason, teachers always occupy the pivotal place in any society. Those that ignore only lead them into peril.

The fourth question pertains to the learning environment in terms of its suitability and maturity. As we can observe, the learning environments are evolving. During 1950s, radio was a great thing; then we moved to switch on television sets and now the internet. All these became possible over a period of time. The use of this technology in the field of education is also growing and would continue to be promising. The greater challenge would be in terms of creating such an environment with necessary investments. Many an education institution is not able to catch up to the demand, only for the reason that these technologies are cost-prohibitive. With the meager infrastructure, being present in a majority of the HEIs, embracing these newer technologies is quite unthinkable. In the given circumstances, therefore, unless there is support made available from external agencies, it is quite unlikely that there would be any major breakthrough. Yet, it becomes indispensable one day.

### **Making Virtual Education the First Choice**

Having discussed the issues pertaining to the feasibility and indispensability of the Virtual Education, it would be pertinent to explore the possibilities for making it a reality. The institutional architecture imagined for this purpose is being presented here.

### ***Starting Virtual Education Centres in Every College and University***

In order to catch the evolving trend, there shall be direction from the regulators insisting upon the establishment of Virtual Education Centre in every Higher Education Institution(HEIs). A policy may be drafted providing for the mission and objectives of

the establishment of such Centre and the tasks that is expected to discharge. As we are now experiencing a total shutdown of every activity, including education, we would have been better off in meeting this contingency, had we thought of this earlier and taken action to put them in place. It is better late than never. So we should start it now.

### ***Establishment of Virtual Universities***

It appears that time is opportune to establish Virtual Universities to cater to the needs of online education. The question is whether to have only one such university for the entire nation, or to encourage states also to promote the same. Such a kind of facility would enable the country to develop competence in the field and develop the necessary ecosystem in terms of course materials, equipment, processes and delivery schedules. In a way, these Virtual Universities may be pressed into service to help and network with the conventional Universities in the form of ‘Mentor and Mentee’ model. This kind of the practice has been found highly successful in the field of setting up of new IITs. We are aware of the fact that the establishment of every new Central Institute is cared by another already existing institution as Mentor and takes up the responsibility of commissioning the new institute, till the later settles on its own. Such a kind of support may be thought of from this newly to be established University.

### ***Creation of a Secretariat at the Ministry of Human Resources Development***

It is time that the Government of India thinks seriously to create a Secretariat to guide and monitor the Virtual Education activities of various HEIs. It is true that there is Distance Education Bureau (DEB) set up as an outfit in UGC. Given the task involved, DEB with limited organisation structure will not be able to serve the purpose. Creation of the Secretariat also becomes imminent to take up the initiative under ‘Mission Mode’ and as a campaign.

### ***Virtual Education to be Taken Up as a Special Project for Funding***

It is also time that the Central Government think of earmarking a sizeable amount for creating suitable infrastructure for the Virtual Education to establish and stabilize. Cue can be drawn for the success story of Atal Tinkering Labs (ATLs) in schools and Incubation Centres (ICs) in colleges and universities under the programme of Atal Innovation Mission (AIM). In the same manner, the Central Government shall take up this as a special project. As a matter of fact, the Government of India has launched the Scheme of ‘National Mission of Education through Information and Communication Technology (NMEICT) with a substantial funding of about Rs.4,600 crore. By virtue of this liberal initiative, many campuses of the Universities and colleges became Internet and Wifi enabled. If Virtual Education is taken up on the similar lines, Indian HEIs forge ahead in this stream of education too.

### ***Utilising Virtual Education as a Tool to Internationalise Indian Education***

It is earnest desire of every Indian to regain the past glory of India as *Vishwa Guru* and attract thousands of Foreign Students to the precincts of Indian HEIs, like the Nalanda and Takshila, once did. Virtual Education if pursued properly with our ‘Indian Psyche’ has the definite potential to be the preferred destination across the globe. The classical Indian languages, philosophy social structures, the culture and traditions have the necessary potential to offer something to the world. For example, attempt can be made to make ‘Sanskrit’ as world language. Similarly, the Joint Family can be made a common norm across the world. The effort, required to put in is in the front of digging our past strengths and build courses and programmes for the International community of students. It is not running courses in Physics, Chemistry or Biology; it is all about offering courses in Indian Languages, Arts, History, Ayurveda, Yoga and many others. ‘Where there is a will, there is a way’ should be the motto. □

# Perspectives of Mathematical Problem Solving Ability

S Prabu Shankar\*

Mathematical problem solving ability is a complex mental process for many children. At the elementary levels the focus is more on the verbal learning that has concrete concepts which children find it easy to relate it to objects that are concrete in nature. Mathematical concepts are relatively different, since much of the concepts in mathematics right from the elementary level involve numerals, notations, symbols, structures, order of application, rules, signs, place values, decimals, fractions etc., most of the children find it difficult once they are reaching higher standards where the concepts are mostly abstract. Gresham (2008) opined that teacher's understanding of mathematics is as important as student's understanding of the subject, since a considerable number of teachers actively concentrate upon themselves more on how a problem to be solved, they are passive in understanding the comprehensive process of the children and how they perceive the mathematical content that is being taught. Therefore understanding on how a problem to be solved is important for the teachers as well the pupils (Dendane, 2008).

Further, research studies indicate developing knowledge as an important criterion in math learning. Studies carried out by NCTM (1989) represent that, by developing knowledge, the students are made to develop an understanding of, when it is appropriate to use specific problem solving strategies. Thus, the emphasis is laid on making the students more aware that problem solving is not a passive activity and it is an active and a highly conscientious process. To make the students more responsible for their own efforts to acquire problem solving skills is the primary task of any teacher and to understand how a problem can be solved depends only on creating an understanding on problem solving process rather than making problem solving as a mere mechanical task. To understand and to attempt to solve a problem there is always a considerable importance placed on exploratory activities, observation and discovery, and trial and error and the students are expected to develop their understanding on how a problem may be solved, test them, test the different methods taught to them, discard them if they are not

consistent, and try another method (Thompson, 1985). This paper focuses on the significance of understanding the mathematical problem solving ability, how to focus on it, the approaches to it and acquire it.

## The Rationale of Mathematical Problem Solving

Problem solving in mathematics is an important aspect of an academic endeavour, moreover merely putting mathematical problem solving as a skill; it may be viewed as visualization, systematic approach of conceptualizing, logically arriving at a conclusion and constructing an algorithmic sequence to arrive at a solution. Beyond the fact that mathematical problem solving is a process that depends on many skills and factors, the element that makes it complex to learn and to teach is that the nature of the subject.

When a concept is taught with words that hold a meaning and that provides a scope to relate it to a life situation or an object, knowledge is acquired thus by creating a conceptual understanding towards the meaning of it; since mathematics is a subject that widely deals with notations, symbols, structures, order of application, rules, signs, place values, decimals, fractions except at the elementary stages it poses as an abstract, purely to be visualized and conceptualized aspect that by which an understanding of the concepts becomes difficult for the students wherein majority of them find it difficult to acquire the skill.

Burton(2007) interpret that, problem solving may not always be taught only at the concrete levels but depends mostly abstract for which the concept formation at the early stages are to be widely carried out which is a tasking effort for the teachers to do, with the individual differences in math learning it is a difficult task. Lester et al., (1994), emphasized on the need to focus on teaching mathematical concepts through problem-solving and inquiry and practical oriented methods which are characterised by the teacher to help students to, 'construct a deep understanding of mathematical ideas and process by engaging them in doing mathematics: creating, conjecturing, exploring, testing and verifying'.

## Problem Solving: The Concept

Problem solving is the core characteristic of mathematics. Understanding a problem is dependent

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on many components, it may be viewed from the (i) problem solver perspective and the (ii) problem perspective. When viewed from the problem solver perspective, the primary cognitive components such as knowledge, understanding, application, analysis, synthesis and evaluation as proposed by Bloom (1956) may be cited as the basic functions apart from the many significant theoretical suppositions made by Bruner, Gagne and Piaget. The other perspective being the problem perspective designates understanding the vital structures and components of a problem. The significance of problem solving in mathematics classroom may be well defined by Reiss & Heinze (2005), 'Problems play a central role in the mathematics classroom and a huge amount of learning time is designated to mathematical problems'.

The subject discipline mathematics comprises problems based on many concepts, multiple structures, forms, aspects and dimensions. With each area spread with its own symbolism, variables and logics, problem solving remains core characteristic of any area in mathematics. Schoenfeld (1985) observed that, 'Problem solving presupposes that there are a starting point and a goal, which cannot be transformed into each other by procedures immediately identified by the problem solver'. In the context of the present study problem solving ability or to specifically define 'mathematical problem solving ability' focuses on, a set of logical functions that are performed based on the understanding of the concept emphasized in the given problem and the attempt to solve it by rationally deducing the problem step-by-step and arriving at a more logical or precise conclusion.

### **Studies on Mathematical Problem Solving**

Mathematical problem solving ability can be defined as students' ability to understand problems, plan problem solving strategies, carry out selected strategies of completion, and re-examine problem solving to subsequently make solutions in other ways or develop problem solving when students are dealing with mathematical problems (NRC, 2005).

Results of interviews with teachers stated that word problem in mathematics was very difficult for students. It was also found that many students did not like mathematics because mathematics was too difficult when it is presented in the abstract form irrespective of the levels (NCTM, 1989). Teachers should teach mathematics through a problem solving approach (NCTM, 1989; Schoenfeld, 1994).

Krulik and Rudnick (1989) defined problem solving as a process in which an individual uses previously acquired knowledge, skills, and understanding to satisfy the demands of an unfamiliar situation. Polya (1945), in his work '*how to solve it*' outlined a general problem solving strategy that consisted of (a) Understanding the problem; (b) Making a plan; (c) Carrying out the plan; and (d) Looking back.

It can be stated that Polya's steps for problem solving may act as a guide to students in solving unfamiliar mathematical tasks and is analogous to a scientific method for mathematical problem solving. Problem solving may be viewed as a scaffold of constructivist learning in mathematics, which is the idea that students learn best through constructing their own knowledge.

In the process of problem solving, experience towards problem solving may be provided through activity and participation, which authentically indicate that they are engaging in the process of constructing their own knowledge. Authentic problem solving in mathematics is the basis of reform and inquiry-based instruction in mathematics and problem solving can be viewed as critical and necessity basis for the mathematics classroom (Clark, 1997).

From the review of studies it can be noted that mathematical problem solving ability, though considered as important aspects representative of comprehensiveness, concept formation, numerical and manipulative skills, logical reasoning skills and altogether to put it in one single phrase the higher order thinking ability, is a vital and non-negotiable and essential skill to learn mathematics and achieve the mathematical skills, it can be seen from the review that mathematical problem solving ability is itself a crucial problem to be understood and to be solved. In view of this the author undertook a study on Perspectives of Mathematical Problem Solving as part of ICSSR IMPRESS research project the findings of which are discussed in this paper.

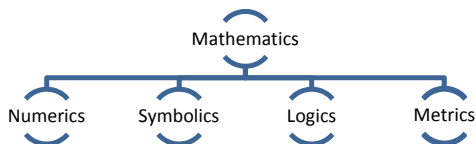
### **Typology of Problems**

The basis of understanding of a problem varies from individual to individual and the difficulty in understanding lies with the difference in concept formation for which the factors vary substantially. The perception of a problem depends on how well a concept is perceived and rationalized before it is generalized to apply in any circumstance, once this generalization

is achieved the problem solving ability is realized and if there is any difficulty in this process the problem solving ability remains unrealized.

Subject area variations may also be one of the fundamental reasons why the mathematical problem solving ability remains elusive to a large section of students. The subject area nature in mathematics may be largely categorized in to the dimensions as represented in Figure. 1.

Fig.1. Nature of Subject Areas in Mathematics Discipline



A brief classification of each of the major areas and their sub-areas are presented in Table:1 which the author of this paper conceptualizes in order to understand the problem solving ability of students that requires comprehension of tasks and abilities that are requisite for solving the problem.

**Table-1: Brief Classification of Areas in Mathematics based on Nature of Subject Areas**

<b>Numeric</b>	<b>Structures Symbolic</b>
Number Theory Arithmetic Elementary number theory - Analytic number theory -Algebraic number theory -Other number theory subfields: Geometric -Combinatorial, transcendental computational number theory Numerical analysis Computer algebra	Algebra Foundations set theory Order theory General algebraic systems Field theory and polynomials Commutative rings and algebras
<b>Logics</b>	<b>Metrics &amp; Geometry</b>
Mathematical logic Proof theory Constructive mathematics Model theory Mathematical programming Iterative methods and algorithms Operations research mathematical modeling statistical analysis mathematical optimization mathematical optimization History and biography Recreational Mathematics	Geometry and topology Convex geometry and discrete geometry Discrete or combinatorial geometry Differential geometry Algebraic geometry Arithmetic geometry Real algebraic geometry Topology General topology Algebraic topology Differential topology

The problems in mathematics may be categorized in to the following based on,

- (i) *Types*: Word descriptors, Numerical, Structures, Variables, Symbols, Spatial, Analogical etc.,
- (ii) *Scope*: Definite, Constructive, Concurrent, Proofs etc.,
- (iii) *Purpose*: Suppositions, Presumptions, Conclusion, Deductions etc.,
- (iii) *Difficulty*: Simple, Complex, Concrete, Abstract, Conceptual, Logical, Descriptive etc.,

### Scaffolding via Instructional Strategies

By bringing certain modifications in instructional strategies, one can scaffold the students to enhance their problem solving abilities. Some of them are:

- Establish specific and well-planned goals and objectives to focus on specific tasks;
- Diagnose the strengths and weaknesses based on the specific learning objectives expected of the minimum levels of learning;
- Individualizing instruction based on diagnosis will help understand the varied skills, abilities and difficulties of the individual;
- Focussing on specific areas where the individual repeatedly makes mistakes and providing a systematic instruction in that area will help them improve;
- Planning and providing them specific tasks intended towards improving mathematical problem solving will promote logical understanding, critical approach and reasoning;
- Effective teaching contributes to a step-by-step approach in problem understanding and arrives at varied solution strategies;
- Identifying areas to develop mathematical reasoning and deepen understanding about the varied concepts and procedures is an important task of the teacher;
- Creating rubrics that assist, provide directions and promote understanding about problem solving and learning progression is essential;
- Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments (NCTM, 1989);

- Productive and meaningful drill and practice develops student's conceptual understanding, increase in contextual understanding provides flexibility in approach, increases their confidence and nurtures their ability to solve problems; and
- Practical oriented teaching of mathematics serves as a basis of creating concrete understanding and provides visual experience of interpreting knowledge with concrete objects and provides a basis for better understanding.

### **Reasons for Difficulty in Mathematical Problem Solving Ability**

There are diverse reasons why each student faces difficulty at different stages of mathematical problem solving. Mathematical problem-solving process is a complex process for those who have developed negative learning in problem solving. Depending on the attitude that the student had possessed and the drill and practice that the individual has put it, the problem solving ability in mathematics is achieved. Based on the review of studies done both theoretical and experimental, following reasons can be attributed for difficulty in mathematical problem solving ability:

- Weak foundation/basis towards learning of mathematics; and
- Due importance not given to mathematics learning and practice;
- Non-identification of mathematical learning difficulty;
- Lack of conceptual understanding as a widening gap;
- Not exposed to a conscious mathematical problem solving processes;
- Difficulty in coherence and logical perception of the problem;
- Weak ability of the concept of prerequisites;
- Negligence on the part of mathematics teachers etc.,

### **Curriculum Influence on Problem Solving**

Curriculum plays a very important role in developing mathematical and problem solving abilities of students. Therefore, the significance and the role of curriculum in developing mathematical problem solving ability is to be thoroughly understood before placing the goals and objectives with regard to the general and specific learning outcomes precisely

at the schooling levels. This helps in developing problem solving ability with a right focus on attaining knowledge and skills. Mathematical problems have traditionally been a part of the mathematics curriculum. It has been only comparatively recently that problem solving has come to be regarded as an important medium for teaching and learning mathematics (Stanic and Kilpatrick, 1989).

A well planned and organized curriculum provides scope for developing all the comprehensive skills required for mathematical problem solving. Well-structured curriculum provides scope to improve the ability to develop critical understanding, thinking skills and reasoning, further it helps to gain deeper understanding of concepts, provides scope for visualization and thus enhances problem solving ability. In the words of National Council of Teachers of Mathematics (1989), 'The mathematics curriculum should be organized around problem solving, focusing on:

- developing skills and the ability to apply these skills to unfamiliar situations;
- gathering, organising, interpreting and communicating information;
- formulating key questions, analyzing and conceptualizing problems, defining problems and goals, discovering patterns and similarities, seeking out appropriate data, experimenting, transferring skills and strategies to new situations; and
- developing curiosity, confidence and open-mindedness.

### **Observations on Mathematical Problem Solving**

It may be summarized that characteristics of problem-solving approach is based on:

- a) Interaction between the teacher and the pupil (Van Zoest et al., 1994);
- b) On the meaningful and purposive efforts put forth by the teacher in order to emanate student skills through independent thinking (Beghetto, 2007);
- c) Significance of mathematics can only be felt when problems are solved by the students based on their own efforts after fully understanding the concepts involved in solving the problem (Fennell, 2001);
- d) When teachers know how to arrive at solving a problem through critical thinking, their teaching contributes in enhancing students problem solving ability (Monroe, 2006);

- e) Developing problem viewing perspectives among students help them solving the problem in a logical manner (Schoenfeld, 1994);
- f) Mathematical problem solving is purely dependent on the critical skills (Stacey, 2005);
- g) Problem solving ability in mathematics is largely dependent on a variety of mental processes that are logically sequenced (Gresham, 2008);
- h) Teacher's professional commitment and the methods of teaching largely contribute in developing problem solving skills among their students (NCTM, 2014);
- i) Students who are lacking in skills would definitely face problems in their successive classes (NCTM, 2014);
- j) Problem solving depends on the core understanding and sequencing, without which it may not be able for the teacher to develop the ability of problem solving in the children (Reiss, & Heinze, 2005); and
- k) Skill based training will serve as a functional basis in developing mathematical problem solving ability (Dendane, 2008).

### **Perspectives of Mathematical Problem Solving on the Basis of Findings of the Study**

Throughout the conduct of this study the researcher has observed that it is highly important for the teacher of mathematics to understand the mathematical problem solving ability from the students' perspective. As the individual capacities vary at large, their problem solving ability also varies. Right from understanding the problem, creating a mental set to solve the problem by analysing and synthesizing it each learner when keenly observed chooses their own patterns; even though the steps to solve a problem in mathematics was taught to them, the processes and efforts to solve a problem were mainly dependent on the foundation skills that they have acquired, their ability to solve it differs apart from the drill and practice the learner concentrates upon. The outcomes of the present study are summarized as follows:

- It was observed that there was a significant improvement in problem solving abilities among students when the content area was presented in a practical perspective.
- The problem solving ability of students who were categorized as considerably low showed significant improvement when the content was

presented to them in a more understandable way by use of simple models, by concentrating to teach them the concepts by practical means, particularly, it was observed that the problem solving ability of students with respect to few areas such as algebra, number system, set theory, trigonometry and statistics showed significant improvement.

- With regard to the word problems and illustrations, it was observed that student's consistent practice on problem variations showed significant improvement.
- Learners in most cases are made to follow the teaching which is not supported with students conceptual basis or the way in which student's logical sequencing/approach to arrive at the solution goes. This hinders their learning and also makes them dumb in thinking of alternative solutions to problems that have different problem structures other than what they have prepared.
- It was observed from the study that, within the groups, students had attempted to solve the problems by reading it several times, recalling the formulae or the steps involved in solving it, and except for a few cases the students have managed to solve the problem successfully.
- Attitudes of high ability students seemed to affect the process of recall, problem solving attempts and related behaviours of moderately achieving students, this observation is in coherence with the study done by (Gresham, 2008).
- Students are often found to get confused by mingling more than one conceptual approach and this shows that their relational understanding hurts their problem solving ability in mathematics.
- Pre-requisite concept formations were found to be an important criteria in solving problems at the high school level; students who had less pre-requisite concept formation achieved less score when compared to their counterparts.
- One important fact that the researcher of the present study had observed while identifying the learners who found it difficult to solve a problem is that, the figuring out a problem by pronouncing it verbally or to state simply, pronouncing the problem verbally to analyze its parts then understand the means to solve it was lacking with students and hence their mathematical problem solving ability was found to be less.

- The studies reviewed suggest that with each class, student's naturally improved their ability to understand the problems and the understanding over complex conceptual skills gets improved, based on this review it was observed that students were developing their problem solving skills consistently given that there should be a provision of a strong scaffolding system by means of individualized instruction, proper diagnosis and remediation etc.,
- In most cases the basic information with which a problem is given and the association thus provided with either a verbal content or with variables are not totally absorbed by the students. Krulik & Rudnick (1989) state that, 'Students are confused in determining with what is presented in the content by merely interpreting it with the formula or unable to abstract the matter into mathematical patterns and are unable to arrive at the solution.
- At all instances, teacher's efforts in introducing the students to various types of problem and demonstrate it likely relating the problem to a model or a real life instance, the problem solving ability of students have improved.
- During the conduct of the present study it was observed that the objective factors that affect the problem solving ability in mathematics of students are mental fatigue, boredom, automated practices like continuous copying of notes from the blackboard, listening to a monotonous lecture, lack of student's activity or participation etc.
- It was noted that, some students even felt that posing mathematics as a tough subject right from the beginning and is always projected as the subject is meant only for the bright had hindered their interests in learning the subject and had developed in them a sublime fear that a problem when attempted to solve may go wrong.
- It was observed that student's found it interesting to learn mathematics from an enthusiastic and an aspiring teacher whose problem solving ability inspires them. From the studies carried out by Lester et. al.(1994), it was observed that the content knowledge and the thoroughness of the teacher are linked to hold significant influence over the problem solving ability of the students.

## Conclusion

Understanding problem solving ability in mathematics opens up leading possibilities in

the teaching and learning process. Many aspects of mathematical problem solving ability are still unfamiliar to teachers and learners of mathematics. By recognizing the intricate, complex and convoluted process of problem solving ability in mathematics it may become a rewarding attempt to hone the problem solving ability skills of students who are struggling to improve. There is a vast scope for this study, as problem solving in mathematics has always remained a skill to achieve for a majority of student community around the world. It cannot be simply ascertained that problem solving ability as an unpretentious variable because each area of mathematics with its peculiar nature and logic requires differential abilities in problem solving, hence a deeper understanding on the nature and variability of mathematical problem solving ability will serve as a better tool to approach it. Apart from the basic strategies and methods applied to improve problem solving ability in mathematics it is pivotal for the teachers to understand its process from the students' perspective and approach it with diverse strategies.

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# Motivated Teachers for Quality Enhancement

Reddi Sekhar Reddy G\*

Education at the tertiary level has been reduced to rote learning because of overemphasis on performance in examination. Faculty teaching has become mere syllabus covering activity and teachers are busy just in syllabus completion. So they have very limited contribution towards quality education. If the learners are to be taken beyond rote learning to make them holistic learners faculty involvement in the learner development needs to be increased. Hence, there is a need for sensitized, motivated and inspiring teachers. Unless the teachers are capable to enrich the curriculum, facilitate the learners with innovative pedagogy there are no hopes of rejuvenating the English language learning. Great institutions are known by the teachers rather than the five star facilities. In the present era of artificial intelligence, the teacher should blend their teaching with technology. They should be self motivated by continuously developing their professional competencies. Until the teachers, who love their learners motivate them to be lifelong learners, education will be of little importance. The teacher should be a good researcher making his learner creative and critical thinkers. The learner should be good in English language skills along with core competencies. The faculty with interdisciplinary approach to their teaching and practicing disruptive evaluation systems to make the entire learning process pleasurable is the panacea to enhance the quality of English language learning in the tertiary education. There is dearth of such teachers amidst the problem of teacher vacancies due to strange policy matters. Teacher is a main stakeholder from supply side. If education is a commodity, teachers are the institutional brand ambassadors. Such teachers only can rejuvenate English language teaching and learning. Only involved and committed teachers can do this job. Technology can be supportive in English language teaching but learners' attitudinal change is very important. The qualities required in the teachers and education system which can rejuvenate Indian undergraduate institutions with qualitative English language teaching and learning are Discussed here.

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## Tertiary Education: A Pragmatic Perspective

As the performance of the learners in examinations has become the measuring scale in the education system; the learners, the teachers and the managements are concentrating on the examinations and it has turned education from learning to examination system. Learners need to be made aware that the real purpose of education is learning but not memorizing something for the examination and merely getting marks and ranks without proper command on the subject. As managements are concerned on the ranks and results, they pressurize the teachers to complete the syllabus and work with the examination as the ultimate goal. The teachers therefore teach in the examination point of view. Ultimately, it has become a circus around the examinations. No doubt examinations are important in education but they should not be treated as everything.

## Current English Language Learning Practices

In the present education system teachers are made busy in completing the targets of academic, non academic and administrative responsibilities. The real objective of teaching has been thrown into side track and just completing the given syllabus and concentrating on the administrative and non academic duties brought on to the main track. So the teachers are able to contribute a little to the quality of education. Bitter truth is that the education has become quantitative rather than qualitative. Using the teachers for the non academic works has its negative impacts and dilutes the quality of education, so the academicians are to be allowed to concentrate on academic and research activities to improve the quality of English language teaching in the tertiary level or any other level.

## Holistic Education

Holistic education is the ultimate aim of education; unfortunately it is not met with the desired outcome. Education in ancient days was able to provide the holistic education to the learners but the separation and segregation of programs, branches, courses, in the modern education system may provide the knowledge related to the limited subjects but not complete knowledge. So there is a big question

mark on the concept of holistic education. But along with subject expertise the learners are needed to be equipped with the required skills, professional values for their personality development which in turn enable them for their prosperity which is possible only with holistic education. Hence the teachers and managements have to take the responsibility to take their learners beyond the boundaries of rote learning to the holistic education. In the recent days as per the directions of AICTE and UGC many universities are framing syllabus and launching the special courses like Professional Ethics, Professional Values, and Holistic Education. For instance, Christ University, Bengaluru introduced this concept long back and rolling out successfully as 'Holistic Education' to the undergraduate and postgraduate learners of the university to ensure all-round development of the students. Further, the university has been striving continuously with a dedicated committee for holistic education to update the curriculum, pedagogy and teaching learning components and material as per the current needs and trends in the global perspective.

### **Teachers' Involvement the Greatest Requirement**

No doubt as a popular statement says; 'the teacher is the architect of the society'. The society will be built depending on the creativity and involvement of the teachers in teaching and training their learners. Possessing a degree, getting a job as a teacher and mere completion of the duties may not ensure the desired results in education. Teachers' creativity and involvement is the greatest requirement which plays a vital role in the quality enhancement in general and in particular the quality enhancement of English language teaching in the tertiary education. Regarding English language teaching, Peter Stevens remarked, "Language teaching is not an easy profession, but is a task in which intelligence, imagination, training, command of language, experience, a body of knowledge and the exercise of judgment and compassion are essential qualities, and in which high standards are imposed and maintained, on a worldwide basis by a particular branch of profession of education."

But how many teachers are committed, determined and have involvement to prove themselves as productive and qualitative teachers is a big question. So it is high time to identify and more importantly retain such teachers in spite of the egoistic politics of the administrators and train them for such qualities to

ensure quality in education.

### **Job Security for Teachers' Involvement**

Yes, job security is a significant requirement to ensure the teachers involvement for their learners' development. But unfortunately this job security has become an impediment for the teachers' involvement. Irrespective of public or private sector, majority numbers of teachers are not serious about the profession. It is due to the 'job security'. The phrase 'job security' has two dimensions; in the private sector it refers to precariousness or 'lack of job security' which makes them not to be serious as they don't know how long they can sustain in their job. Low salary, professional stress and lack of job security make them uninterested to involve in the profession for learners' development. In the public sector job of faculty is secured till retirement apart from regular service promotions and increments which makes them not to think about involvement for their learners' holistic development. But a few are truly professional and continuously striving for professional development and giving the best to their students with determination and involvement. The following pragmatic and popular statement says;

*All the teachers can teach*

*Many teachers can explain*

*Only a few teachers can inspire*

Hence, it is time for all the teachers to introspect themselves; are they teaching, explaining or inspiring? Today the educational institutions need dedicated and inspiring teachers.

### **Need of Sensitized and Motivated Teachers**

Quality enhancement in education is possible only with sensitized and motivated teachers. Just as; learners need motivation to excel in their learning; the teachers also need motivation and sensitization to be resourceful to their learners. Teachers can motivate learners but who can motivate teachers? None other than the individual teacher, himself or herself. Teacher should not only motivate oneself but needs to indoctrinate the attitude of self motivation among the learners. Yes, the teachers have to be sensitive to the challenges of their learners to help them to overcome. Further teachers have to motivate their learners to be lifelong learners otherwise education will have a little value. Richards and Rodgers asserted; "A third role for the teacher is that



of researcher and learner, with much to contribute in terms of appropriate knowledge and abilities, actual and observed experience of the nature of learning and organizational capacities.”

### Conclusion

Regarding the role of teachers, Jim Scrivener rightly points out, “As teachers, our major contribution to life and to education is to help others find their own way towards their own solution within their own lives.” The statement makes it clear that teachers should help the students to learn effective communication skills to find out their own solutions within their own careers and lives.

Thus, it is identified and understood that there is an insistent requirement for motivated and sensitized teachers to mould the characters and channelize the potentiality of the young learners towards the right direction for a better society. Hence, the teachers have to be committed, determined and rededicate themselves to the cause of qualitative development of education. Academic

freedom to the committed teachers certainly plays a key role here to enhance quality in tertiary education. So the administrators and rulers have to realize the pragmatic need and sustainability of truly passionate teachers for the enhancement of quality in tertiary education. However, in spite of all the challenges and issues, the teachers have to constantly realize their vital role, central responsibility and sincerely try to justify to their roles and responsibilities for quality enhancement in tertiary education.

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## COVID-19 CONCERN

### An Appeal to Readers

The outbreak of COVID-19 commonly known as Novel Corona Virus has engulfed the entire world. The pandemic has emerged as one of the biggest ever faced by the human race. With great concern, University News appeals to its subscribers and readers to stay alert and cooperate with the government in adhering to all the social and health advisories issued from time to time. By being careful and cautious, we can beat the virus by breaking the chain and prevent it from spreading further.

We wish all the citizens of India, our subscribers and readers the best of safety and health, and appeal to each one of us to show solidarity in this hour of adversity.

#LetsBeatCoronaTogether

Stay Alert, Stay Safe

EDITOR

# Teaching Language Across Curriculum: Status of Teacher Education Institutions

Jayantibhai V Patel\*

As we know that language is a very important component of our daily routine and of any curriculum across the world, it gives outline to our world. Learning in any subject is largely dependent upon language. Language plays an important role in the learning experience of the student. It enables student to form concepts, explore symbols, analyze a given problem, organize information and interact with the environment. Formally language is seen as the blend of a lexicon and a set of syntactic rules where it is systematically governed at the level of sounds, words, and sentences. The conceptual understanding of the various school subjects is also dependent on the learner's language ability such as listening, speaking, reading and writing abilities. These four basic skills of languages are the prerequisite for learner's engagement with all the subjects included in the curriculum. In a democratic and diversified country like India, students have very different language backgrounds in a normal classroom. In contemporary Indian society almost every individual is a multilingual in a wide sense. No matter what the subject, teaching and learning needs a language based environment. In such a situation, language focused teaching helps in learning of students. It is the main means of teaching and assessing in schools. So in educational context, for through understanding of the concept of language we need to observe it in a multi dimensional perspective, giving appropriate importance to its structural, sociological, literary, psychological, aesthetic and cultural aspects. As all school subjects are learnt through language, teachers as well as teacher educator need to develop a critical understanding of the nature and role of language in the context of the student, the curriculum and the subject knowledge.

These assumptions have prompted National Council for Teacher Education (NCTE) to include the course as 'Language across Curriculum' in its model curriculum framework for Teacher Education (NCFTE). NCTE emphasized that teaching and learning cannot take place in a language free environment. Assumptions

about the language and literacy background of students influence classroom interactions, pedagogical decisions and the nature of students' learning. Thus, it is important to understand their language background and know how oral and written language can be used in the classroom to ensure optimal learning of the subject area (NCTE, 2014). Language across curriculum is based on three basic tenets: (a) language is more than surface structure (b) the entire school as an environment influences the learners' language development and (c) language plays a key role in virtually all school learning (Fillion, 1979). Teachers need to be sensitive to the language diversity in Indian context which is prevailing in every classroom across the nation. Moreover, Language education is not restrained to the language classroom.

As suggested by MAK Halliday, the relationship between language and education can be divided into three heuristic categories: i. Learning Language ii. Learning Through Language iii. Learning about Language.

## ***Learning Language***

In their early years, children are learning both spoken and written language. They are developing use of complex grammatical structures and vocabulary, communicative competence, comprehension of spoken and written language and ways to express themselves.

## ***Learning Through Language***

Learning in classrooms is primarily accomplished through language. Teacher teach, ask questions and initiate discussions, assign reading and writing tasks. Students engage in academic tasks through reading, writing, exploring the Internet, giving verbal answers to the questions, listening to teacher lectures and student presentations, participating in whole-class and instructional peer group discussions, memorizing written text and vocabulary and so on.

## ***Learning about Language***

Perhaps the most apparent classroom practice for learning about language is through the study of grammar and spelling. As linguists point out, the

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grammar taught in school is a prescriptive grammar and is not a descriptive grammar. For those students who use Standard English, prescriptive grammar is often very close to the language they speak but for students who speak a variation of English other than Standard English the teaching and learning of prescriptive grammar does not necessarily related to the language they speak and thus they are learning about a language unlike from the language they speak.

### **NCTE Regulations, 2014**

To reorient the system of teacher education in accordance with the vision of Justice Verma Committee, the National Council for Teacher Education (NCTE) revisited its regulations and norms and standards for various teacher education programmes and notified new regulations on 1<sup>st</sup> December, 2014. As per the regulations the duration of the B.Ed. and M.Ed. programmes has been enhanced from 1 year to 2 years and the integrated B.A. B.Ed. / B.Sc. B.Ed. programme has been made a mainstream programme of teacher education. The NCTE Regulations, 2014 envisage that the curriculum of various teacher education programmes should comprise the following:

- (i) Perspectives in Education
- (ii) Curriculum and Pedagogic Studies
- (iii) Engagement with the Field/Practicum

Courses in Curriculum and Pedagogic studies shall include aspects of language across the curriculum and communication, understanding of a discipline, social history of a school subject and its pedagogical foundations with a focus on the learner and a course on the theoretical perspectives on assessment for learning.

Several studies have shown that Indian students perform weakly in reading comprehension (Sinha, 2000). This in itself should be a crucial concern of all teachers. Therefore student-teachers need to be familiar with theoretical issues and to develop competence in analyzing current school practices and coming up with appropriate alternatives. While teaching the subject, understanding the language background of student requires utmost sensitivity to the language diversity that exists in the classrooms.

### **National Council of Educational Research and Training Regulations**

In the light of the NCTE Regulations, 2014, the National Council of Educational Research and

Training (NCERT) decided to revisit the curriculum followed in the RIEs for which it set up a committee comprising the faculty of RIEs and eminent teacher educators. The Department of Teacher Education, NCERT New Delhi developed the Curriculum and syllabi of the programme. It focused on the need to understand that language education is not confined to the language classroom. A science, social science or mathematics class is *ipso facto* a language class. Learning the subject means learning the terminology, understanding the concepts and being able to discuss and write about them critically. Language is the medium for comprehending ideas, for reflection and thinking as well as for expression and communication. Enhancing one's ability in the language of instruction is thus a vital need of student-teachers, irrespective of the subject areas that they are going to teach.

Taking the Curriculum framework prepared by NCERT and NCTE under the norms and standards prescribed by regulation, all teacher education institutions in India have introduced a new paper entitled language across the curriculum in the new two years B.Ed. Syllabus. In India, language and literacy are generally seen as the concern of only the language teachers. However no matter what the subject, teaching cannot take place in a language free environment. Assumptions about the language and literacy background of students influence classroom interactions, pedagogical decisions and the nature of students' learning. Thus, it is important to understand their language background and know how oral and written language can be used in the classroom to ensure optimal learning of the subject area.

### **Basic Issues**

#### ***Lack of Theoretical Orientation of Curriculum Planners***

With respect to case of TEIs offering language across the curriculum in the curriculum of teacher education programmes, an analysis of the curriculum clearly depicts the points of difference among curriculum planners on different aspects with special reference to language teaching. It clearly reflects that curriculum planners of the university have different type of orientation while framing curriculum related to this paper. A look at the references or suggested readings also reflects that the transaction of syllabus is conceived differently by TEIs. No doubt that review of literature in the form of view of Kothari Commission (1964-66) on language policy, '*Languages and Media*

of *Instruction in Indian Schools*', one of the volumes of 3<sup>rd</sup> All India Educational Survey published by NCERT, New Delhi (1981) and NCTE position papers put light on the need and importance of language across the curriculum but it is not reflected in the curriculum. This may be due to lack of orientation of curriculum planners toward the true meaning and context of this course in B.Ed. curriculum.

### ***Lack of Theoretical Orientation of Teacher Educators***

As per NCERT (2006), "Language is best acquired through different meaningful contexts and hence all teaching is in a sense language teaching." It means Language education is not confined to the language classroom. A social science, mathematics or science class is also a part of language class. Learning the subject means learning the terminology, understanding the concepts and being able to discuss and write about them critically. Generally it is found that most of them are still thinking that language related paper is the work of language teachers only. They fail to understand the theoretical understanding of the basic concept of language across the curriculum when they teach mathematics or science or social science to their students.

### ***Low Quality Transactional Practices***

After framing this diversified curriculum for TEIs at the ground level, teachers and students in education colleges, authors of the textbooks, paper setters etc. are somewhat lacking with ability to comprehend theoretical and practical aspects of the course in transactional practices. Sometime due to unavailability of reliable and valid teaching learning material in the form of quality textbooks or lack of awareness on different sources related to this course, transactional practices are lacking quality inputs. Many TEIs are teaching the content to the students which is available on Google, written with diversified perspectives. Students are at the mercy of low quality transactional practices. Most of the teacher educators are not able to understand the basics of teaching this paper. As a result senior faculty members transfer the responsibility of teaching this paper to the less experienced colleagues. This practice also adversely affects the transactional practices to some extent. In some cases, teacher educators and student teachers do not have access to quality reference books or good reference books or they are not easily available to

them in college libraries or other sources. In such a situation, they are bound to take help of cheap notes, guide books etc. for teaching and learning of language across the curriculum.

### **Problems Related to Evaluation**

Evaluation of theory papers is missing any reliable and valid criteria because same topic is taught differently by using different sources to the students. Paper checker may or may not know the authenticity of the written material and source which results into subjectivity in evaluation. Evaluation of sessional work is also influenced by subjectivity due to lack of understanding of this course in different TEIs differently.

### **Suggestions**

Following are some of the suggestions to improve the status of teaching and learning of 'Language Across the Curriculum' paper in TEIs at local level and university department level:

1. Most of the students are not able to understand the purpose of inclusion of this course in the curriculum even after completing their course with good grades. Teaching of this paper should guide students to give special care at the time of gathering and processing of new information. There is a need to give special attention by developing objective criteria of assessment of students in this course.
2. Students tend to follow the wrong model of the teachers. Most of the teacher educators are not able to give clear instructions, as they lack authority in theoretical basis and transactional practices of this course. Universities should take initiatives to provide a platform in the form of conference or workshop to discuss key points and confusions related to the course in the curriculum. Proceedings/conclusions or outcomes of these activities need to be shared among all the TEIs.
3. Teacher educators need to think over their teaching style, teaching practices, evaluating how they have taught the content related to language and how their practices might be improved for good learning consequences. They should train their students to apply this strategy in their routine classroom.
4. There exist two types of classrooms across the nation, one with large quantity of IT gadgets and another one even lacking basic facilities. But both have some basic access to ICT/Mobiles. So they

need to use these basic ICT tools like mobiles in the field of teacher education judiciously for uplifting the quality of teaching learning process (Garcha, 2015). Teacher educators in various TEIs can use these ICT tools like different social media platforms i.e. Whats App, Twitter, Facebook etc. to discuss their problems and sharing their best practices. They can work together to develop good quality learning material for students. They can share good reference related to teaching of this course paper, which can help others to plan their teaching practices. These collaborative efforts among teacher educators of different universities can really play a significant role in understanding the basic purpose of teaching language across the curriculum.

5. Teachers and teacher educators should be sensitive to the language diversity that exists in the classrooms. Teachers and teacher educators need to read position paper of NCERT on language again and again to understand basics of language learning and teaching in Indian context. Language is not limited to the domain of social interaction, it is also a resource for student's thinking and reasoning. Therefore don't make the student a sufferer of the compartmentalization of our curriculum. All the teachers are equally responsible for presenting the language with its panoramic view before the inquisitive mind of the student.

### Conclusion

Teacher need to be reoriented to reflect and rethink on the interactions they have in their classroom. Teacher should know the level of literacy skills of students which are developed at home and

community. Each teacher should reflect on his/her teaching activities whether these activities provide appropriate environment to promote diversity of cultures and languages in the classroom. At the time of evaluation too cultural and linguistic factors should be taken care. Group work should be encouraged among students from different cultural backgrounds to share their experiences. Teachers across the curriculum can help their struggling students by providing additional support in learning academic language through their subject. Teachers and students need to come out of misconceptions that language skills is the responsibility and property of the Language teacher as truth is that language plays an important role in every subject area. Teaching mathematics involve so many basic components of language skills too. On the same lines each subject's content and its teaching is helpful in gaining language skills. Stakeholders of each TEIs should come forward with some innovative practices to overcome hurdles related to this important component of B.Ed. Curriculum.

### References

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### **International Seminar on Democracy and Public Policy in India**

A two-day International Seminar on 'Democracy and Public Policy in India: Choices and Outcomes' was organized by the Department of Political Science, Jamia Millia Islamia (JMI), New Delhi, commemorating 100 years of the university, recently. The event was organized under UGC-SAP-DRS-1, in which 40 papers were presented across seven technical sessions, including an International Session. The inaugural address was delivered by the Vice Chancellor JMI, Prof. Najma Akhtar who also released the Prelude Volume of the book 'Public Policy in India' based on seminar papers. The Chief Guest, Prof Richard J Cohen, University of Virginia, USA delivered the keynote address.

In the seminar, fifteen papers were presented across the three technical sessions on various themes i.e. Policy Studies as a Discipline: Theoretical Framework, The Policy-Making Process in Democracies: Advocacy Activism and Enactment and Public Policy in 21<sup>st</sup> Century India: The Vision, the Means and the Making of policy. The International paper presentations were organized through Skype. There were four papers presented under the theme 'Actors and Institutions Shaping Public Policy and Governance' in the international session by Dr Aroon Manoharan, University of Massachusetts, Boston, USA; Prof Alasdair Roberts, University of Massachusetts, Amherst; Dr Jeannine E. Relly, University of Arizona, USA; Dr Kim Moloney, Murdoch University, Australia.

The valedictory address was delivered by Prof Ramabrahmam, Vice Chancellor, Central University of Odisha and Vote of thanks was proposed by Prof Rumki Basu, Deputy Coordinator UGC SAP. A remarkably successful seminar highlighted the major theoretical frameworks, challenges and contemporary themes which are needed to shape Public Policy in India. The department envisions to organize many such events in the near future.

### **National Seminar on Revised Framework of NAAC**

A One-day National Seminar on 'Revised Assessment and Accreditation Framework of National

Assessment and Accreditation Council—An Approach' was organized by the Internal Quality Assurance Cell (IQAC), Saiva Bhanu Kshatriya College in Academic Collaboration with National Assessment and Accreditation Council (NAAC), recently. Thiru PVSMN Gnanasekaran presided over the Inaugural Ceremony of the Seminar. Dr N Muthuselvan, Principal delivered the welcome address. Dr. Syed Wajeed, Associate Professor, Department of Microbiology & Director-IQAC, St. Joseph's College, Bangalore delivered the Keynote address in the inaugural ceremony of the Seminar.

In the first technical session, Dr. Syed Wajeed, Associate Professor, Department of Microbiology & Director-IQAC, St. Joseph's College, Bangalore spoke on 'Benchmark for Quality Sustenance'. He insisted on the benefits of accreditation and the systematic process to sustain quality and how benchmarking should be integrated into the fundamental operations of the Institutions. He enumerated how to sustain quality in all the seven criteria.

Prof. S Sivasubramanian, Former Advisor, Research and Development, Vels University, Pallavaram, Former Vice Chancellor, Bharathiar University, Coimbatore and Noorul Islam University, Nagercoil delivered a lecture on 'NAAC—The New Format for Assessment—A Paradigm Shift'. He elaborated the Paradigm Shift in each criterion in both Autonomous and Affiliated institutions. He spoke on the need for innovation in curriculum design and listed the open educational e-resources which will enhance ICT learning process. He explained Methodological Innovation, Technological Innovation and insisted that mixed Methodology need to be adopted in Social Sciences. As biological hurricane sweeps across disciplines like Social Sciences and Digital hurricane sweeps across disciplines like Chemistry and Life Sciences leading to totally disruptive innovations. Hence the teachers should equip themselves to face this challenge. He enumerated the check list to be kept while SSR preparation and submission. He concluded that Superior grade in NAAC the Institution can proclaim its credentials to whole world.

In the Valedictory Function, Prof. Dr S Sivasubramanian, Former Advisor, Research and

Development, Vels University, Pallavaram, Former Vice Chancellor, Bharathiar University, Coimbatore and Noorul Islam University, Nagercoil delivered the valedictory address. Dr. N Muthuselvan, Principal distributed the certificate to the participants. Dr. D Jacqueline Perianayakam, Convener, Saiva Bhanu Kshatriya College proposed vote of thanks. Dr. A Baskar, Co-convener and the IQAC members made all the arrangements for the successful conduct of the Seminar.

### **National Seminar on Challenges and Remedies in Higher Educational Institutions**

A two-day National Seminar on 'Challenges and Remedies in Higher Educational Institution of Rural Areas in Karnataka' was organised by H K E Society's S S Margol College of Arts, Science and Commerce Shahabad, recently. Inaugural address was delivered by Dr. D Kamble, Assistant Advisor, NAAC. In his address, Dr. Kamble briefed on the importance of National Assessment and Accreditation Council (NAAC) in the present context and new methodology of NAAC. Dr. Vijaykumar D, IQAC Coordinator, Dr. Ambedkar Degree College, Kalaburagi was the Chairperson of the first technical session. Dr. D Kamble spoke on Registration of Higher Education Institutions on the NAAC Portal, IQA, Submission of AQAR, Submission of SSR, Data Validation and Verification (DVV) and Students Satisfactory Survey (SSS). Dr. T Gurubasappa, IQAC Coordinator, Government First Grade College, Kalaburagi was the chairperson of the second technical. Dr. Sabanna Talwar, Professor of Economics and IQAC Director, Rani Channamma University, Belagavi spoke on the Curricular Aspects and Research and Innovation and also how documentation to be done. Research is not major part of affiliated colleges but still the teachers can contribute towards it, she said.

Dr. Mahaveer B Kothale, NAAC Assessor and former Principal, KLE Society's, GI Bhagewadi College Nippani and Dr. Rajendra Konda, Associate Professor and IQAC Coordinator Smt. V.G Women's College, Kalaburagi were the speakers of third Technical Session. Dr. Mahaveer Kothale spoke on Criteria IV & V i.e. Infrastructure and Learning Resources and Student Support and Progression. Dr. Mallikarjun Hangargi, Vice Principal & IQAC

Coordinator, Karnataka College Bidar, and Dr. S B Gama, Vice Principal and IQAC Coordinator, B V B College, Bidar were in the session. He explained about documentation in respect of teaching such as commencement of classes, academic calendar of events, teaching plans, lessons and notes. Identification of slow learners and advanced learners, follow up programmes for slow learners, use of ICT as a tool for teaching and internal examination reforms and external evaluation work.

Prof. R L Raibagker, Professor of Electronics and IQAC Director, Gulbarga University Kalaburagi and Dr. Kaniz Fatima, IQAC Coordinator, Bibi Raza Women's Degree College, Kalburagi spoke on Institutional Values Best Practices – Criterion VII. He said generally we know about financial auditing but this is not sufficient, we have to have green auditing and green energy auditing. Total number of trees and plants, green carpet areas are to be specified under green auditing. Under energy auditing, the Institution must know a difference in use of tube lights, CFLs, bulbs when compared to LED lamps, solar power generation units.

Dr. Kashinath Birdar, Principal, Government First Grade College, Aland was the Chairperson of VI Technical Session. Shri Rajmohan Pardeshi, Assistant IQAC Coordinator, Karnataka College, Bidar was the speaker. He spoke on Criterion – VI Governance, Leadership and Management, where he explained various methodologies used in the governance of higher education Institutions. The institutions can bring good ambience by using NSS volunteers & NCC cadets he said, adding that a few members can change entire environment around us. Dr. Rajendra Konda, Smt. V.G. Women's College, Kalaburagi was Chairperson and Dr. Shrikantrao Biradar BVB College Bidar was the speaker of VII Technical Session. Dr. Balabheem P Sangli, Assistant Professor in English, Government First Grade College, Madanahipparga who presented a paper on Role of Teachers in Fostering Higher Education Institutions was awarded for best paper presentation. Dr. R L Raibagkar, Professor of Electronics and IQAC Director, Gulbarga University, Kalaburagi was the Chief Guest of the Valedictory Function and Dr. A R Koppalkar, Principal of the College presided over the function. □