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C Rangarajan
Need to Run Fast to Stay Where We Are
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Approaches in Accomplishing Quality in Indian Higher Education Institutions: Inside Out or Outside in?

Shankarashis Mukherjee* and Basab Chaudhuri**

When the COVID-19 pandemic is trying its best to raise its ugly head in India despite the administrations at all levels trying their best and citizenry bearing unprecedented misery and sufferings, the cyclonic storm Amphan affecting states like West Bengal severely, depression in human life and Bay of Bengal becoming too common and taking their respective toll, in recent past on successive days - on June 10 and 11, 2020 - two important Higher Education Institution (HEI) ranking results were declared - one international level by QS and the other national level by the then Ministry of Human Resource Development, Government of India, the purpose of both of which are in fact, initiatives at different levels to inculcate a culture of quality in HEI in India. In this context, an attempt is being made to present briefly the evolution of philosophy of quality, its management, and its applicability in Indian HEIs, the bottlenecks in achieving quality in letter and spirit in HEIs in India, and the possible approach in achieving quality in HEIs: whether inside out or outside in:

At the beginning, let us have a look at the purpose of higher education. It seeks to fulfill several purposes; including:

- making students ready for:
  - active citizenship, and
  - their future careers (contributing to their earning capacity and employability).
- supporting their personal life and development,
- creating a broad advanced knowledge base, and
- stimulating research and innovation.

Higher Education: The Present Scenario in India

Following points indicate the present higher education scenario in India

- There are 949 Universities in India as on June 1, 2020 as per UGC data, of which 412(43.4%) are state, 127 (13.3 %) are deemed to be, 54 (5.7%) are central, 356 (37.6%) are private (Figure 1).
- In last one year, the number of universities has increased by about 5% (949 from 903) and maximum increase has taken place in private university domain (by 7.8% from 330 to 356).
- Quality assessment could not be carried out in two third of the universities and there remains question mark over the state of

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quality culture in the universities having valid accreditation.

- To lessen the burden of older affiliating universities, new domain specific universities especially in the fields of engineering, law, medicine, education are being set up and in the process virtually challenging the concept of universities.
- Also again to off load the burden of large affiliating universities, new regions/ district specific universities with definite territorial jurisdiction are also being established.
- No single Indian HEI was visible among top 100 international HEIs.

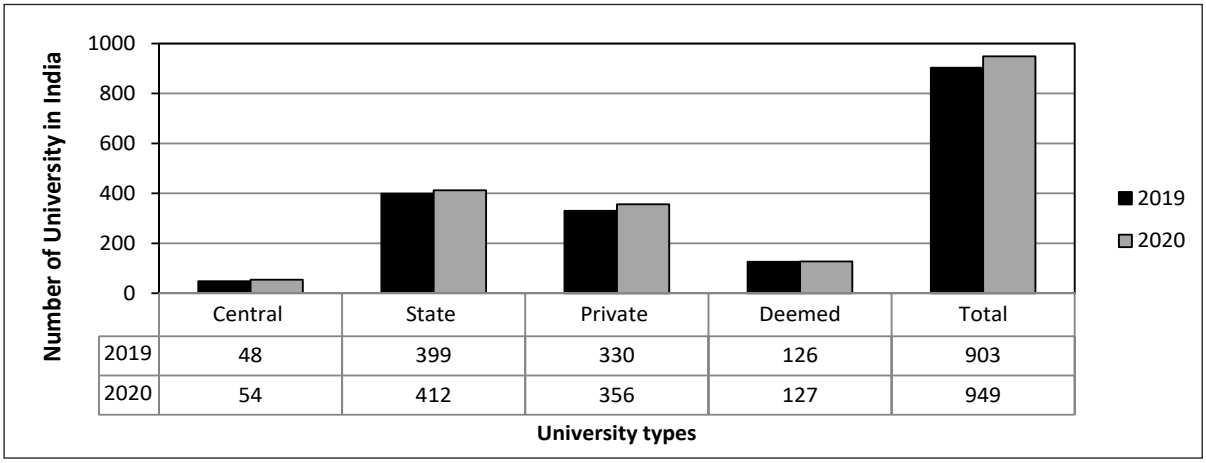
Quality and Quality Management: Its Evolution and Applicability in/ Linkages with HEIs in present Indian scenario

Industrial revolution (1780-1830) was followed by *laissez faire* and manufacturer's economy. We may be permitted to compare the manufacturer's economy scenario i.e. very less number of manufacturing units and customers getting very little or no option. But with increase in number of manufacturers and capital – labor conflict, gradually need for scientific management, as proposed by Frederick Taylor (1856 –1915), the father of Scientific Management, and quality in products manufactured and subsequently services offered were recognized. It can be compared with the fact that the first university in the Indian subcontinent was established only in 1857, that too for conducting examinations only, implying less of options.

Quality- Emergence of the Concept

Taylor, an American mechanical engineer by training, about a century back laid stress on quality inspection (are we getting some similarity with peer team visit, though it is strictly not an inspection process!) for pursuit of quality. Then the perspective about quality was limited to inspection i.e. screening out defects before customers could notice it. Feigenbaum (1920–2014) noted in 1960s that quality did not mean 'best' but 'best for the customer use and selling price' (per unit cost of education is being considered nowadays). In opinion of Philip Crosby (1926–2001), quality is to be defined as 'conformance to requirements' (1984); i.e. students, university products must be in a position to conform to industry requirements! May be for this reason we often find top industrialists heading the BoGs of IIMs for a proper industry –academia interface, or industry input being taken for curriculum framing in HEIs. Joseph Juran (1904 – 2008) pointed out that quality should be 'fitness for use'. He further mentioned that a product or service must be produced with the customers' need in mind; we often hear about learner centric curriculum, finishing school for making our graduates the products of the HEIs - industry ready. In the opinion of Peter Drucker (1909 – 2005), quality in product or service is not to be judged by what the suppliers have put in, it is to be assessed by what customers are getting in it (1989). We are living in age of feedback from students and perception of industry; virtually society at large is not interested in knowing how much effort, a member of the faculty is putting in the lecture room, they are interested

Figure 1: The number and types of Universities in India



	Central	State	Private	Deemed	Total
2019	48	399	330	126	903
2020	54	412	356	127	949

* as on June 01, 2020

in knowing whether students are receiving offer of placement and at the CTC! Whether it is right to have such an expectation from the HEI or its faculty members could well be the topic of another article; but the reality, possibly cannot be denied. Deming (1900 – 1993), trained in statistics, mentioned that quality referred to predictable degree of uniformity, dependability at low cost and tailored for market. The recruiters possibly from this perspective of predictable degree of uniformity i.e. quality, prefer visiting well known HEIs for campus recruitment purpose.

Quality Management - Concept and Evolution

Quality management has been defined (Wilkinson et al, 1997) as the overall management function:

- determining quality policy objectives and responsibilities, and
- implementing them by ways like:
    - quality planning,
    - quality control,
    - quality assurance, and
    - quality improvement within the quality system.

It has further been described as a managerial philosophy or an approach made up of a set of mutually reinforcing principles, each of which is supported by a set of practices, tools and techniques for enduring effectiveness and efficiency with respect to the systems and its performance. Quality inspection, i.e. screening out defects before customers could notice it (first two decades of twentieth century, 1900-1920) gradually paved the way for emergence of 'quality control' (QC) approach (1920-50). The feature of QC was a more systematic approach to not only just detecting but also solving the problems. Later it was realized that quality is something that can hardly be controlled. Thereafter emerged quality assurance (QA), that has been defined as a means to assure quality in product so that a customer can buy it with confidence and use it for a long period with confidence and satisfaction. It may be noted that we are at present having the quality assurance cells in HEIs in India in about last two decades. QA broadened the responsibility in quality domain for adding functions other than direct operations, such as HR, Marketing and like. QA also proposed increasing use of more sophisticated statistical quality techniques. QA was a proactive rather than the reactive approach as was there in the QC era. QA period (1950-80) may well be considered as the fulcrum in the formal development of quality management systems (QMS). The BS (British Standard) 5750 and International Standard Organisation (ISO) 9000 series were the formal quality systems that made a mark during the period. QA period was followed by TQC period continuing till 1990s. And, after that emerged TQM, which is an organizational strategy, not an intervention, with accompanying techniques seeking to deliver quality products and/or service to customers. TQM included most of the earlier approaches and also added its own unique themes, especially in its adoption of a more 'all-embracing' total approach. It is the way any institution e.g. a particular HEI should be managed, not just something in addition to everything. The total (T) component of TQM distinguished it from inspection, QC, QA approaches. It is an overall organizational strategy formulated at the top, and is diffused throughout the organization. Everyone from highest paid CEO (the Vice Chancellor in case of the HEIs) to the lowest paid person is to be involved. Quality (Q) is operationally defined as meeting or exceeding customer expectations, and quality is defined by the customer i.e. the student, industry and society and not the organization or the QA head. (We may be permitted to compare this external determination of quality with the definition of sexual harassment in workplace that includes HEIs also. The unwelcomeness is only to be decided by the women recipient of the behavior, even if debatable). It better explains why perception of outsiders is a component in NIRF ranking. The M dimension implies that it is a management approach and not just a QC or QA activity. The TQM change agent must understand the philosophy well, be a doer, be a person who believes in quality and also be a sound communicator and only report to the CEO i.e. the Vice Chancellor in case of a HEI.

The QA, the stage which the HEIs are focusing and the TQM what has been in practice throughout the world at present is compared in Table 1.

The Quality Bottle Necks in HEIs in India

- In the light of the what is mentioned herein before, it will not be possibly an over statement to note that there exists probably a lack of comprehensive understanding about the proper philosophy of quality, its management approaches and need for its applicability in HEIs among a large number of

Table 1: QA and TQM - A Comparison

	Quality Assurance(QA)	**Total Quality Management (TQM)**
Period	1950-80	1980 onwards
Status in HEIs in India	HEIs in India adopting in cosmetic manner	Not many have TQM
Focus	Process	HR in organization and all stakeholders
Improvement approach	Systematic but fragmented improvement	Systematic and habitual continual improvement
Style of action	Preventive Action	Habitual prevention and continual improvement
Standard conformance	Conformance to process standard in operations	Conformance to systematic improvement standard (Habitual)
Human resources	Multi-skilled HR	Multi-skilled cross - functional teams (Habitual)
Management orientation	Systematic documentation and review of • quality policies, • procedures and • responsibilities	Habitual use of tools and techniques facilitating objective/structured management
Customer connect	Understanding customers' requirements through capturing, documentation and review of customer requirements*	Customer delight in service dominant culture adding value to customers, business, life #
Leadership style	Systems and control	Attitude: Coherent leadership with excellence in mindset
Involvement	Controlled involvement	Habitual total involvement at all levels
Relationship management	Controlled partner relationships	Habitual total involvement of all stakeholders in continual improvement activities
Process management	Integrated process control	Processes are managed as an integrated system
Systems management	Understanding simple causes and effects in the process	Processes are managed as an integrated system
Systems	• Deming Model • BS 5750 Quality Management series • ISO 9000 Standards • Total Productive • Maintenance (TPM)	• Malcolm Baldrige Model • ISO 9001: 2015 (QMS) • ISO 14001:2015 (EMS) • ISO 31000: 2018 (Risk management Standard) • Lean Concept
Tools	• PDCA, Extend PDCA to Plan-Do-Study- Act (PDSA) • Cause and Effect Diagram • Failure Mode Effect Analysis (FMEA) • Reliability Engineering • Statistical Process Control (SPC) • Kaizen • Just-In-Time (JIT)	• Design of Experiments (DOE) • Six sigma • 5S • Seiri (Sort) • Seiton (Set in order) • Seisko (Shine) • Seiketsu (Standardize) • Shitsuke (Sustain)
Approach	* More comparable to outside in approach	# comparable to inside out approach

the learned stakeholders of HEIs; they are highly qualified in their respective domains but some of them may not be having exposure to theories and principles of quality issues. The all important IQAC which should serve as the change agent are often found to join the bandwagon, and are imitating each other in functioning with just an eye to get an improvement in NAAC score. It is becoming self – defeating possibly. The organization of large number of webinars during the present pandemic itself is a case in point. The knowledge deficit in understanding the minimum protocol in organization of an academic meet is palpable in many cases. What message are we providing to our students including the prospective ones? Quality has to be to there in every activity in the era of TQM.

Mind set wise a vast majority of stakeholders in Indian HEIs are followers rather than leaders, and thereby hindering innovation; the latter, when proactive, creates zeal to do experiment beyond the established. The spirit of trying to do something new and better, questioning the stereotype is the *sine qua non* of all research pursuits. Institutional leadership must break away from the conventional road and to quote Robert Frost, must take the road "less travelled by" and that might makes "all the difference". There should exist a correspondence between personal leadership and institutional leadership through which both an individual and an institution will rise. In this regard the IQAC has to play a pivotal role in functioning, truly as change agent in facilitating a developing and sustaining quality culture that seeks to incorporate quality in every activity as a habit. We all are aware about the spirit of successful international cricket squad that winning is habit! So the institutional leadership needs to resist the temptation, though extremely difficult, of taking the easiest much travelled path of not so ethical imitation of others.

- There have been numerous changes lacking a clear a continuity in policies with regard to recruitment and progression of members of the faculty in HEIs in India; one single example of number of amendments in relevant document within a short period of time with drastic changes only corroborate the point. Keeping and removing the clause of qualifying in NET from essential criteria of joining the faculty in HEIs at unfailing regularity in one hand confused the aspirants and on the other diluted the quality issue in the most important aspect of recruitment of faculty members in HEIs. The designations of faculty members and the upper limit of candidates that a university teacher could supervise in PhD programme were changed almost overnight. Teachers with 0-12/14 experience were allowed to supervise at the most 4 candidates instead of the then existing 8. The question that remained that how the numbers 4, 6 and 8 were decided and how faculty members with 0 and 12 years experience could be treated at par. Was it on the basis of a properly designed research study with findings getting published in a good peer reviewed journal or by just a thumb rule? Why should we need to ape the western model every time? Why cannot we innovate through a system something better? Why cannot we become first self reliant on thinking? Our thinking has become a function of googling. Designations of the faculty members were also hastily changed, but the suffix being earned by the incumbent remains greatly unknown and unused. Let us be honest in telling how many of us really know that those who were earlier referred to as Readers, are now should be described as Assistant Professor (Stage3). The funnier aspect is people adjudging the suitability are occupying the positions by not undergoing any national level quality checks that they are supposed to monitor being automatically re-designated on completion of certain stipulated duration of service. Adhocism and myopia have costly repercussion in attempts to inculcate quality in HEI.
- Coming up with a list of approved journals virtually resulted in endorsement of predatory journals and then the list was withdrawn. The plight of the mentor(s) and young researchers in PhD programme - who strictly discouraged her/ his candidates from publishing in trash so called journals when in the vicinity both the mentor and mentee would see overnight publication of plagiarized materials in so called approved journals - was never taken into consideration; the approved list forced many to communicate good quality works to these and again they were withdrawn; in the process irreparable damage was done to the budding researchers. Definitely inculcating quality in practices in HEI received a jolt with such knee-jerk policy changes!

- There is increasing mutual trust deficit between public funded university community and industry in India, not so respectful relationship between the line and staff functions in HEIs, particularly in some public funded HEIs. It is not facilitating quality in the institutes.
- Universities are products of legislative bodies with clearly mandated role as per the statute, and it is beyond their purview - though they are autonomous at least theoretically - to alter the legislative mandate thrust upon it, at times disproportionate to resources at its disposal like men, money, and other material resources like building, space, infrastructure and like. Instances are there when a new public funded university is to start its journey from a ramshackle building of an existing college or from few acres of disputed land. A decade is almost spent in construction of buildings, road, boundary wall for which naturally there is no point in assessment process; but will no one count the toil of the people at the helm! It only reminds of the hygiene factors in the Herzberg's theory of motivation! The criteria against which they are evaluated in quality assessment checks like NAAC process or NIRF ranking are also beyond their purview naturally. But the interesting point is that often the expectations as laid out in the statute at the time of establishment and expectations by agencies like NAAC and NIRF are often not in consonance. Neither this is helping the cause of quality.

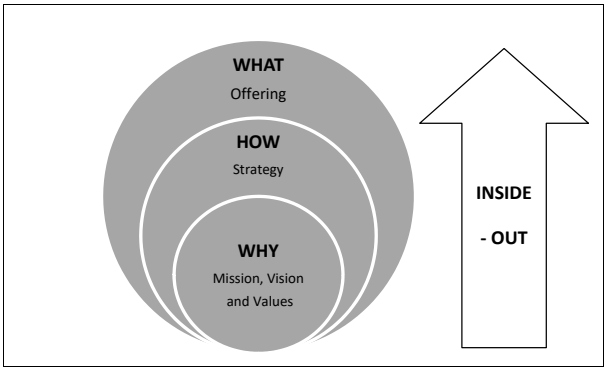
Discussion

It may be noted for the benefit of those skeptical about the applicability of hardcore quality management concepts in HEI domain, that already there was a mention about ISO 9000 series of quality management systems in NAAC assessment guidelines. And also an innocent query already exists in AISHE regarding disaster management practices in HEIs. TQM systems as mentioned in table 1 refer *inter alia* to these standards. We already find that large private schools (South Point School of the M P Birla group) in Kolkata managed by big corporate houses mentioning in their admission notification that the school has obtained the OHSAS 18001:2007 Occupational Health and Safety Management Certification from the British Standards Institution (BSI). There is a presence of increasingly large number of private universities (figure 1), many of them floated by large business houses of the country having their good presence in different other domains of business, and hence are more familiar with the management standards like ISO 9000, ISO 14000 and like. So days are not far off when conventional public funded resource constrained universities will have to compete with their private counter parts in respect of having these standards certifications eg ISO 9000 and like accreditations also; the competition is increasingly becoming one legged! We are living in the age of academic, environmental and energy audit in HEIs. The issue is not ending with just installation of solar power panels at HEIs, the community now expects HEIs to demonstrate a more matured behavior as the most responsible citizen. The point that may be noted in the context is that IIM Calcutta is set to become first net zero campus in the country with net zero energy, net zero discharge and net zero waste. With smart cities and green buildings becoming a talking point, can practice of sound environment management with ISO 14000 certification be far cry in HEIs?

Now the question that appears at the juncture is whether a particular HEI would wait till it is statutorily thrust with, or would do *suo motto* i.e. on its own in a proactive manner, take initiatives voluntarily, being the cradle of knowledge creation? Should it not try to inculcate quality in all its activities, and thereby seek to ensure delight in every transaction with all the customers including internal customers, demonstrate socially responsible organizational citizenship, incorporate concern for environment, go for OHS and risk proofing in all day to day activities without waiting for being forced or for allurement of having a point or score or rank in some processes. It should for continual improvement of its performance, go for ISO 9000, 14000, 31000, 45000 certifications gradually. That is why the *Inside Out* approach, which is guided by the belief that the inner strengths and capabilities of the organization will produce a sustainable future is preferred compared to the *Outside-In* approach which is guided by the belief that customer value creation is the key to success.

The Inside-out approach begins with its mission, vision and values i.e. the purpose for which the organization is existing and where does it seek to go in future? Its belief develops from there. Then the working strategy is chalked out. It

Figure 2: The Inside-Out Approach



starts offering its products and services. The inside out approach begins from WHY (rationale behind the institute's existence) and the answer to the all important questions provide the necessary adhesive by which all stakeholders subscribe to and share the super ordinate goals. It facilitates creation of shared values, whereby individual goal and institutional achievement, overall, match somewhere. Another relevant point at this juncture is collectivism, not in getting demands met, but in raising the standard of the institution through collective effort. Individual-centrism must make way for institution-centrism with differences properly respected and accommodated. Indian HEIs must learn to absorb more differences in the thought pattern of contributing individuals and allow them to be what they are, without sacrificing the overall institutional objectives and goal. Individuals also should try to get their interests married to the institutional interest. A synergistic relationship must be established for reaching a creative culture that slowly tries to take the HEI to the summit. Accountability as well remains very important. Hypothetically it may be explained further: If a HEI on one hand organizes seminars/webinars, publishes research papers on hazardous waste management and on animal welfare, but disposes ethydium bromide in its biotechnology laboratories down the ordinary drain, exposes its expectant post doctoral researchers to unacceptable level radiation or disposes its bio medical wastes in a not so proper manner, it is not at least setting a healthy precedent. It will demonstrate that what the HEI is preaching, it is not practising the same. Inner belief will be questioned, strengths will not develop and capabilities are not expected to grow, hence sustainability will remain a distant dream; even if it earns a few point here and there in some process, it will get exposed in no time, as it is happening in case unethical researches resulting in retractions.

Then what should be the approach? One can definitely dream and subsequently create a situation where in a first generation learner from a socially as well as economically challenged background entering into the precincts of a HEI does fulfill her higher educational aspiration, gradually earn a good PhD degree in the best possible ethical manner, settle well in all spheres of her life. And walks back again into the same HEI with her daughter some 18-21-24 years later with the opinion that the particular mentor at the HEI remained the best option even after two decades for her daughter to pursue her doctoral research. This may sound apparently unrealistic, but not absolutely improbable to achieve. If in the process, the institution also acquires SA 8000 or ISO 26000 standards on social responsibility; it is welcome with open arms, as it is based on inside out approach. For the skeptics, we may remind ourselves of the situation when we feel so reassured to take our children for admission to the same school or educational institution we once attended a couple of decades back, to the same Principal and to at least some of our highly rated, respected and revered teachers. This requires on the part of institution to have in one hand sound long term planning with sustainability factor kept in mind made on the basis of the organizational vision and mission, and a definite self belief, i.e. the inside out approach, and on the other, performing well ethically in a consistent manner for decades and centuries. Unethical conducts, short cuts and jugglery of figures possibly do not withstand the test of time. The going back to *alma matter*, brand loyalty in today's jargon, is only possible in HEIs if in the hypothetical example the learner, remained not only satisfied, but also delighted with everything in the mentoring system in the HEI in consonance with the quality concept. For those considering it absolutely unrealistic, it may be mentioned that there are large business houses in India, where still children of existing human resources are given offer of employment and the human resources working therein feel privileged to have their children joining the same organization. This is only possible when the internal customers i.e. the employees derive not only satisfaction but also delight from being an important stakeholder in the organization, in tune with the philosophy of quality. Dissatisfaction, satisfaction and delight are

in fact functions, mathematically, of the promises made and kept by the top level in the organization. If less promise is made and more delivered, then there is delight. The caveat for empty sloganeering especially in has its origin here.

When a young researcher begins her/his journey, is it possible that s/he works for the sake of getting the highest recognition? If s/he does her/his work in an ethical manner with self belief, there is a chance that they also get due recognition in some cases in due course. If a good quality-culture can be created, which is quite challenging, a good research may take place through following the path of discipline of selfless action as a way to perfection; it may result in a good publication that may receive good citation in course of time and bring laurels for the lab and the institute. If a good work is done, it could bring the desired outcome later. This is not at all to denounce the importance of a sound planning. But should or can we do research at the present for getting a mileage in assessment ranking or career progression of an individual? The question is raised for the learned readers, if any, to ponder over. Even in this pandemic situation, a HEI may not jump into the bandwagon of online mode; it may consider thinking differently. It can follow the model of IITs, ISI, IIEST, Shibpur or even Vidyasagar University, Midnapur, West Bengal, which have hostel facilities for research scholars and students and accommodation for faculty members. The HEI can allow, subject to permission from the competent authorities, all its willing stakeholders like the faculty members, research students, senior PG students to live in the campus and study and carry out research following our traditional *gurukul* system. The point is if the HEI's core strength is not digital competence right at the moment, still it can emerge victorious retaining its self belief, and gradually also it may acquire cost effective digital solutions. We need not think that the online teaching is panacea to all our problems. The teacher student and mentor scholar relationship should not perhaps be equated with an online money transfer! We must not give up our self belief.

The importance of 'outside in' approach is not denied i.e. going for customer value creation through asking what is needed by her. Once Henry Ford, the legendary automobile manufacturer opined that the customer might ask for a 'faster horse' on being asked about his need as horse is his reference point and, as s/he is unaware about the concept of motor cars. Even without sound inner belief, strength and capability, a good questionnaire or market survey instrument cannot be designed for customers to express their need which is a requirement in outside in mode. Similarly we cannot expect a fresh graduate to ask for a specific programme and /or curriculum from HEI that will be useful for her ten years into her professional life. The HEI will have to design keeping its core strength, capabilities, and self belief, a programme and curriculum that will be useful for the young inexperienced learner. It hence may not be an exaggeration to mention that even for success of outside in approach; we need to have a sound inside out approach. At the beginning of twentieth century, a prospective student, in today's jargon a likely customer of higher education, did not have much choice regarding where to study, comparable to a situation of manufacturer's economy and not a buyer's economy for the choice being limited. Even in the last decades of twentieth century, a good student with first class marks in UG Honors programme in eastern India could not fulfill her/his aspiration of pursuing PG education just for want of seats. It is almost impossible to visualize the scenario in 2020, as it is quite difficult to recollect that people used to wait for more than a year to get a land line telephone connection even in 1990s before the advent of mobile telephones. Now the number of HEIs increased with mushrooming of institutes. So the student customer has a lot of choice. Even over sea's institutes are permitted to operate in India. Hence for sheer survival and sustainability, the HEIs especially the public funded universities will have to take proactive innovative approach, design and offer new generation programs and courses in tune with its core strength, belief and capabilities in a future ready manner. It may not be out of context to refer that Steve Jobs in Apple could foresee what the prospective customers need and following self belief, designed and offered the product to the customers, who were delighted with the features; the organization could delight its customers and earn sustainability ultimately, even after facing hiccups. It was a victory of inside out strategy finally.

Before concluding it may be mentioned that the core of all QA actions are two important objectives: *accountability* and *enhancement*, synergistically they seek to create a sense of trust about the HEI and its performance. An effective QA system developed

and made functional, is able to give relevant correct data-based direction to assure the public, one of the important stakeholders about the quality of the HEI's activities (accountability) as well as provide advice and recommendations on how it might improve what it is doing (enhancement). The accountability factor is all the more important for the public funded HEIs. The stakeholders need to develop habit of check-cross-check-countercross-checks of one's own activities and progress keeping the overall organizational goal in mind. Quality assurance and quality enhancement are thus observed to be inter-dependent. They can support the development of a *quality culture* that could be embraced by all: from the students, researchers, faculty members, non teaching staff, support staff, to the institutional leadership and management. It is to be kept in mind that the world has moved from QA to TQM, where total, quality and management in true sense are considered pillars. We have to proactively, i.e. following inside out approach go for sound environment management (ISO 14000), adopt risk and disaster management (already an innocent question in AISHE) practices, go for ISO 45001:2018 to improve organizational OHS performance and also proactively adopt leaning, six sigma, 5S and like (table 1). Last but not the least, in the nomenclature of QA wing of HEIs there is mention of the term internal at the very beginning, is not it giving an indication that the we are to be driven internally, from within, listening to our inner voice, having self belief i.e. we may consider following the inside out approach? Once we have self belief, gradually a quality culture gets created over a period of time that foster a spirit of synergizing in a systematic manner the work and life, individual and organizational interests, which are so essential in our continual quest for excellence.

Conclusion

At the end it may mentioned that the HEIs in India at the moment can focus on the belief that the inner strengths and capabilities will produce a sustainable future i.e. they will continue to serve as a destination for students, aspirants to be faculty members, recruiters and society at large. It is not to say that they will not seek to create a customer value. The HEIs can very well seek to create customer value but by focusing and developing its core inner strengths.

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Research and Its Metrics: Impact Factor of Journals

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In 2020, the University Grants Commission (UGC), New Delhi, India, has released a landmark policy document entitled *Good Academic Research Practices*. When implemented fully, the document will immensely benefit faculty, research scholars, and post-graduate and undergraduate project students enrolled in Universities, colleges, and other higher educational institutions[1]. Definitely, there will be quality enhancement in research if all the guidelines are meticulously followed. Indeed, the policy is a part of the new initiatives to overhaul the educational system[2]. Generally, society perceives that the research conducted in universities and colleges in India is of little or no relevance. The public thinks that the government funding to promote research by faculty in universities and colleges is a non-merit subsidy. Evaluating the papers published in leading journals across disciplines shows that this scenario is largely true. Linking research output with schemes for promotion lead to indulgence in malpractices wherever possible or allowed. Over the years, faculty's research has become highly repetitive, cosmetic, and sadly plagiarized. In recent years, unchecked blatant plagiarism of research work done elsewhere without proper crediting lead to deterioration of standards of research output and quality of Ph.D. Strangely, till recently, research scholars were not even taught the practices to be adopted for conducting good research. The course correction is thus required at the very beginning of research career. To stem the rut set over decades, particularly in post-independence times, the UGC, in 2019, has approved a compulsory pre-registration two-credit course known as "Research and Publication Ethics (RPE)[3]". The course is compulsory for all research scholars and is of two-credits. Successful completion of this course is mandatory for the Ph.D. registration. Indeed, this course is a part of the total number of at least 14 credits that a student needs to earn before Ph.D. registration. Apart from the RPE course, the student needs to take and clear another compulsory four-credit course entitled "Research Methodology".

The RPE course of 30 hours duration has six units focusing on research philosophy, basics of research ethics, and publication of results. One of the objectives here is to create awareness among research scholars on the ethics one should follow while publishing research output. The research scholar must exhibit integrity while identifying the research problem, its execution, interpretation of results, and publication of results. Pedagogy of the course includes classroom teaching, group discussions, and hands-on practical sessions. The course has a hands-on-experience component. Indexing, citation, databases, open-access journals, and avoiding predatory journals are a part of the practical training.

The course includes modules on Philosophy and Ethics (4 h), Scientific Conduct (4 h), Publication Ethics (7 h), Open Access 4 Publishing (4 h), Publication Misconduct (4 h), Databases & Research Metrics (7 h). The module on Databases & Research Metrics has two sub-units; one on Databases (4 h) and the other on Research Metrics (3 h). The sub-unit Research Metrics includes three hours of teaching and hands-on training on several topics. Topics include "Impact Factor of Journals as per journal citation report, Source Normalized Impact per Paper (SNIP), SCImago Journal Rank (SJR), Impact per Publication (IPP), and Cite Score". Furthermore, the course includes topics on metrics like "h-index, g-index, i10 index, and almetrics to evaluate the impact of the journals and individuals".

Every researcher should ask the question, "Why to publish and where to publish?". Researchers in higher educational institutions generally publish articles/ papers in the public domain. Such articles facilitate the peers to understand the new knowledge generated from the researcher's research work. The articles delineate the advancement of knowledge in the selected areas/ fields. The publication also places the work in right perspective so that peers may take up further research on the topic. Professor White of Harvard University states that publication is a natural consequence of research. If the work is not published, then why do it in the first place, he asks[4]. He states that writing a research article should be an integral part of the work itself, not a different activity. The focus of research should be on gathering the information required for the publication of the work. Researchers publish articles in journals devoted to research field, meant for enlightened readers, and not intended for the public. On the other hand, the public gets to know of knowledge advancements through popular media like magazines, radio, T.V., and newspapers, most often written in the

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journalistic language. Before publication, editors of the journals send the manuscript for peer review. Peers, in turn, bring their perspective on the research work done and suggest improvements and corrections be made so that the readers will get appropriate and accurate information.

Traditionally, journals were printed and circulated among researchers for reading and utilization of the knowledge. There were no publication charges. Readers, on the other hand, pay to sustain the journal and the publishing house. However, in recent years, due to massive advancement of information and communication technology (ICT), online journals have proliferated. Consequently, print versions of journals have almost disappeared. Number of journals and papers that appear in the journals in each field of research nowadays is enormous. It has become impossible for researchers to go through all the journals in their field of study to perform a literature survey.

To facilitate researchers, leading publishing houses pull out indicative contents of the journal papers and place them in their databases for ready reference. The databases have information on the paper indictors like title, year of publication, volume, page numbers, abstract, keywords, etc. Science Citation Index (SCI) of Web of Science (WOS), and Scopus of Elsevier's Abstract and Citation Service are the most comprehensive and reliable databases. Researchers, however, have to pay to access them. Besides these two giant publishing houses, Google Scholar and Microsoft Academic provide vital and information on the title, abstract, year of publication, the journal's volume, page numbers, and links. The information however, is cluttered. Although above free-to-use resources are beneficial, no filtration occurs at the source, and hence the reader has to navigate to get useful information. In India, abstracting service like J-Gate is popular, but the database is not exhaustive. In addition to the above, UGC in collaboration with the University of Pune, maintains a list of standard and non-predatory journals called CARE Journals (Care is an acronym for Consortium for Academic and Research Ethics). The CARE list includes all the journals abstracted in Scopus and SCI databases. Besides some standard journals, Care list includes the journals related to Indian culture and milieu. Generally, Scopus and SCI databases do not abstract papers from India specific journals.

The question that confronts any researcher is "how good is the journal and how to assess?[5]" The earliest answer to this question on Research Metrics was Journal Impact Factor (JIF). In the recent past, many modifications of the JIF made it more accurate and correct.

Journal Impact Factor (JIF)

To put it simply, the JIF of a journal is the impact it makes on its readers. E. E. Garfield (1925-2017), the famous bibliographer, is originator of the JIF. He introduced JIF while working at the Institute for Scientific Information (ISI), the Science Division of the Thomson Reuters, a leading publishing house. He introduced the metrics like Citation Index for the authors and JIF for the journal. Even today, despite many deficiencies, JIF is a barometer for the reputation of a journal. Most researchers accept JIF as a fair indicator for how good a journal was in a given year. In a way, JIF is quantification of the importance of the journal.

The JIF in a year is calculated based on the citation of the papers published in the journal in any WoS indexed journals of the previous two consecutive years. For example, the JIF for a given journal in 2019 is worked out as follows. Let **A** be the number of times the articles published in 2017 and 2018 have been cited by WoS indexed journals during 2019, and B be the total number of papers/articles published in 2017 and 2018 in the journal. Then IF for 2019 for the journal = A/B.

Although JIF is famous and used extensively by researchers all over the world, it has many limitations. P. O. Seglen, working at Institute for Studies in Higher Education, Oslo, Norway, pointed out several deficiencies in JIF[6]. The JIF reflects the importance or lack of it for all the articles taken together. That is, JIF does not reflect the relevance of individual articles. Moreover, journals that publish review articles garner more citations. Self-citations of the articles are not corrected while calculating IF. Generally, authors look to publish in journals that specialize in their chosen fields but not generic journals. Consequently, generic journals may lose in citations. Lengthy articles have more citations and thus tend to increase citations of the journal which specialize publication of such articles. The JIF released by Thomson Reuters has English language bias. Hence, articles written in English and published in journals published in the English language get more citations. In corollary, journals that publish articles written in non-English languages get lower IF. Since the USA and U.K. use only English as a medium of communication, journals published from these countries tend to have higher IF. The number of

citations in some fields such as Mathematics is low. Consequently, IF of the journals that specialize in Mathematics have lower JIF. Since most of the papers in Mathematics are individually written, number of papers is also low. On the other hand, citations in some fields like Life Sciences tend to be large, and hence IF of journals that publish papers in Life Science tend to be higher. Finally, citations given in books and monographs are not taken into account while calculating JIF. Hence, such authors lose in citation count. Ankur V. Desai, from the Department of Conservative Dentistry, Vaidik Dental College and Research Centre, Daman, India, also came out with similar observations[7]. Although useful, the IF does not address many issues about the journal's reach out to its intended readers.

To address several issues with IF as listed above, the Web of Science (WoS), now managed by Clarivate Incorporation, USA, and its competitor, SCOPUS by Elsevier came out Journal Citation Reports (JCR) and Cite Score, respectively.

Journal Citation Reports (JCR)

Web of Science (WoS) introduced Journal Citation Reports (JCR) in 2010[8]. It is an annual free-publication; released each mid-year. It gives a ranking for journals in the areas of science, technology, and social sciences. The WoS collates information on twenty-eight evaluation criteria from its database. Citation and Article Count, Impact factor, Immediacy Index, Cited half-life, Citing Half-life, Source data listing, Citing journal listing, Subject categories, and Publisher Information are among them. The data is analyzed and published as JCR. Within JCR, one can search by journal title or by subject. The output is downloadable and storable. The information, however, is limited to the citation data of the journals indexed in WoS. Though WoS indexes over 12,170 journals and conference proceedings in arts, humanities, sciences, and social sciences published from 83 countries, it does not cover many more. Indeed, the database is highly selective and does not include many reputed journals, particularly new ones and those that fall in the interdisciplinary areas. For example, journals on spirituality or those from vernacular languages do not find a place in WoS. The WoS database currently covers 9,370 Science, 3,486 Social Science, 7,487 hybrid, and 1,658 Open Access journals. The WoS is known for rigorous quality control. For example, it suppressed information from 33 journals in 2020 due to evidence of excessive self-citation or citation stacking. However, WoS is attempting to increase its reach every year while keeping up quality. For example, it added 351 journals in 2020. Over 9000 institutions worldwide subscribe the database. The academic community generally perceives that the WoS covers only the standard journals. Conversely, non-WoS journals are of lower quality.

Although very famous and respected, the JCR has some issues. For example, JCR does not normalize citations; hence, it does not truly reflect importance of a journal. Indeed, it is best to compare one journal with another in the same category. To determine the IF of a particular journal, one should select a JCR edition (Science/Social Science), year, and categories, seen on the left of the screen in Clarivate Incorporation's website. One can scroll the list to find the required journal.

The Output of JCR includes (i) the average number of article citations in the year of publication, (ii) impact of the journal without self-citations in the same journal, (iii) half-Life of the citations in the journal, (iv) the half-life of the articles published in the journal, and (v) Eigenfactor Score.

Eigenfactor scores for the journal measures journal's prestige (its usage). The concept of Eigenfactor was introduced in 2007 by Professors Carl Bergstrom and Jevin West from the University of Washington[9]. The value reflects how frequently an average researcher would access content from that journal. Eignenfactor scores, which are free, can be accessed in the JCR or at eigenfactor.org. Presently Eigenfactor is restricted to Science-based WoS journals. It endeavours to map journals' influence per published article over the previous five years. In a way, Eignefactor is an extended version of JIF. The Eigenfactor score is scaled such that the sum of all journals covered is 100. The journal is given its share in the score as a percentage contribution amongst all the indexed journals. For example, "Nature" has a score of about 2.0, which incidentally is the highest among all the scientific journals. In a way, the score shows that 2% of all citations (excluding self-citations) are from Nature, and this journal has the most significant influence, prestige, and quality.

The web site *eigenfactor.org* also provides data on Article Influence Score (AIS). This information is a measure of the influence, per article, of the papers published in a journal. Divison of the Eigenfactor by the number of articles published in the journal gives the score. The mean Article Influence Score is 1.00. An Article Influence Score greater than 1.00 indicates that the articles in the journal have an above-average influence.

Disadvantages of Eigenfactor/Article Influence Score include (i) restricted to science subjects, (ii) each journal is assigned to a single category, even though the journal may have published articles from several interdisciplinary areas. Comparison of articles in different fields of research is challenging.

Scimago Journal Rank (SJR) and Source Normalized Impact per Paper (SNIP)

As an alternative to the JIF of WoS, in 2010, Elsevier introduced a new journal ranking system by utilizing vast data accrued from inception[10]. Elsevier endorsed the journal ranking system called 'Scimago Journal Rank' (SJR) developed by SCImago Research Group headed by Professor Felix de Moya in Spain, and 'Source Normalized Impact per Paper' (SNIP) developed by Professor Anthony van Raan and Professor Henk F. Moedand in the Netherlands[11]. Both the groups were working in partnership with Elsevier, a journal-publishing house with a global reach. The SJR and SNIP ~~m~~etrics are calculated by using the Elsevier database and are displayed in SCOPUS. Unlike JIF of WoS, which considers two years for calculating the impact of a journal, SJR and SNIP consider three years, thereby increasing the impact evaluation's accuracy.

While the IF introduced by WoS treated all journals and papers as equal, which they are not, SJR considers the journal rank (prestige) in calculating the impact that an article makes. A journal, which may have lower citations but belongs to a higher rank is also considered. Thus, SJR makes a distinction between popularity and prestige.

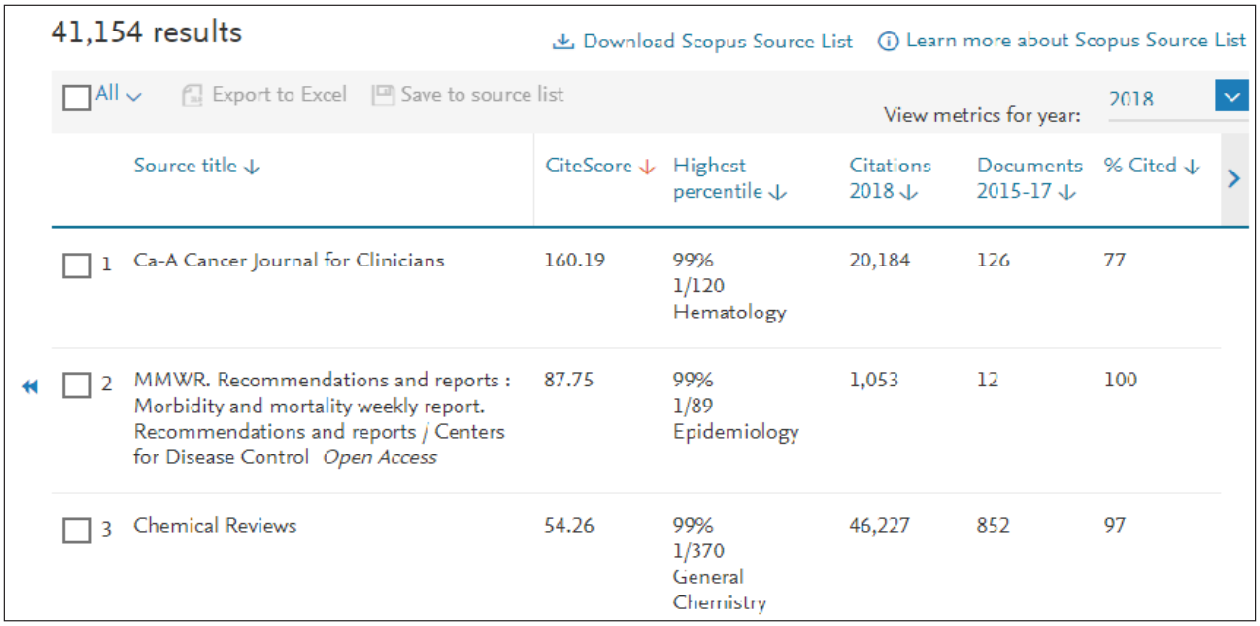
Source Normalized Impact per Paper (SNIP) is a method developed for topicality corrections: citation potential between journals catering to different subjects. It measures contextual citation impact by weighting citations based on the total number of citations in a subject field[12]. It is a ratio of the journal citation impact to that of the topicality of the subject field. The impact of a citation is given higher value in subject areas where citations are less likely. For example, citations in the journals that cater to the individual-oriented research field like Mathematics are low; however, importance could be high, in contrast to life-science-oriented journals. Citations in life-science-oriented journals are high, and the research is mostly a collaborative effort. SNIP corrects such differences in citation patterns through normalization at the source. Unlike the well-known JIF, SNIP corrects differences in citation practices between scientific fields. Thus it allows a more accurate comparison of citation impact between different fields.

The SCImago Journal and Country Rank portal is a free online resource. In addition to journal and article impact, the portal provides journal rankings by country of origin. Furthermore, the site also provides visual representations of the data.

Comparison between JCR and SNIP

The significant differences between the indicators

Figure 1: CiteScore 2018 results downloaded from SCOPUS source maintained by Elsevier (https://www.scopus.com/sources)



provided by the IPP and SNIP and the JIF are summarized below:

- Scopus gives IPP and SNIP, whereas WoS gives JIF.
- SNIP does corrections in different fields, and JIF does not.
- IPP and SNIP are for three years, and JIF is for two years.

CiteScore

CiteScore is a recent addition to Elsevier's journal metrics and available for free on the Scopus site. It includes data on SNIP, SJR, citation count, percentage of citation, and document count[13]. The score provides insight into the citation impact of over 22,220 journals indexed in Scopus. The method offers the most accurate indication of a journal's impact.

The method for calculating Citescore is by calculating the citations' ratio from all documents in the year to all documents published in the prior three years. For example, to calculate the 2015 CiteScore, consider the citations in 2015 for the documents published in 2012, 2013, and 2014—(A). Divide this number by the number of documents published in 2012, 2013, and 2014—(B). Then CiteScore = A/B.

The calculation of CiteScore is straightforward with no secret algorithms or hidden details. Advantages of CiteScore include (i) three-year citation window, (ii) CiteScore's numerator and denominator include all document types, (iii) CiteScore is essentially the average citations per document that a journal received over three years. (iv) Done annually, with built-in monthly impact.

The page downloaded from the CiteScore site[14] for 2018 is given in Figure 1. The figure shows that *Cancer Journal for Clinicians* has a cite score of 160 and is the most popular journal in its field. More papers in the sub-field Hematology have been cited more than in any other sub-field during the previous three years, between 2015-2017. The total number of citations for the journal in 2018 was 20,184, and the journal published 126 papers during 2015-2017. Out of those 126 papers, 97 papers (77%) attracted citations.

Conclusion

Both Journal Citation Reports and CiteScore provide scientific analysis of the impact, importance, and relevance of the journals and the individual papers. There are many more issues yet to be addressed for the quality enhancement of these analyses and metrics. For example, taking two/three of publishing for calculation is arbitrary. The citation itself is more or less a prerogative of the researcher. Some researchers deliberately do not cite relevant articles and get away when their article passes through referees. Malpractices like targeted citation, group citation, and non-citation are prevalent. Researchers also should be aware of dubious impact factors declared by the predatory journals. Such issues, one hopes, will be addressed to make impact analysis more accurate.

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Good Practices in Virtual Presentations for Higher Education[#]

Pranita Gopal*

The COVID pandemic has forced educators tap into the potential of technology. On the face of it, technology appears to be quite useful in breaking the barriers of location and time but it steals away the infectious enthusiasm that one experiences in a live classroom. Educators today are relying heavily on virtual modes of presentation to help students and colleagues around move past these strange times. This paper attempts to understand virtual presentations and how educators can benefit from delivering engaging virtual presentations for their students.

Purpose of a Presentation

All presentations fall into three categories:

- *Inspirational:* The best example to illustrate an inspirational presentation is to think of TED Talks (www.ted.com). The inspirational presentations focus on certain problems and thereafter leave the audience with ideas and questions to think and ponder about. Using the audience's emotions and intellect, inspirational presentations put forth viewpoints that have the ability to inspire.
- *Informative:* Informative presentations on the other hand aim at sharing information – they are expected to communicate instructions, or deliver a point or share a research or simply educate the audience regarding areas of interest to either the organization (business or institution) or the audience. Educative presentations, training presentations could fall under this category.
- *Influential:* These presentations could also be called persuasive presentations where the presenter expects to the audience to accept the proposal or idea at hand or accept the solution presented to a particular problem. Sales pitch or business proposals could be an example of an influential presentation.

In education, the presentations draw heavily from the genres of inspirational to the informative presentation.

In higher education we have another lens to view a presentation. Presentations could be considered as opportunities:

- *to contribute*: where the presenter has the ability to contribute towards a discussion or a problem-solving process or the learning journey of a fellow learner.
- *to connect*: where the presenter has the ability to make connections with others present. It helps the presenter network with like-minded people and grow in their respective fields.
- *to change*: the perception of the audience towards issues or problems.

Face to Face Presentations Vs Virtual Presentations

Gendelman (2010) explains the difference between face to face presentations and virtual presentations under the following four heads:

- *Location & Time*: In face to face presentation, the location and time are fixed and the audience and the presenter are expected to be at a certain physical location at the same time, while in the case of a virtual presentation there are opportunities for the presentation to be happening synchronously (where the audience and the presenter are present virtually at the same virtual place & at the same time (irrespective of the time zones) or asynchronously (where the audience and the presenter can break away from the barriers of time and place).
- *Size of the audience*: Face to face presentations have a physical limitation with regard to the size of the audience and the logistics involved thereafter. In virtual presentations, the size of the audience is not gauged by the physical constraints of space but that of the internet bandwidth and technological platform.
- *Content delivery tools*: Often in face to face presentation, presenters are limited by the tools they can use to deliver the content (projector, LCD, video projector) as often it is difficult to create a complete multimedia experience in all presentation venues. With virtual presentations the choice of content delivery tools increases with options of screen sharing and using the internet simultaneously within the presentation. Using break-out rooms within the presentation framework allows for short group discussions without disturbing the entire group.

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- *Modes of Communication*: In face to face presentation, the mode of communication is mostly audio, that can create accessibility issues. Using closed captions in a virtual presentation can help break down the accessibility barriers.

Challenges in a Virtual Presentation in Higher Education

In spite of having advantages like, inclusion of large number of participants, lower economic costs for organizers, virtual presentations come with their own challenges. Gendelman (2010) list down the following challenges:

- *Absence of visual/ facial cues*: As a face to face presenter, we all rely on facial cues to give us reinforcements while we are presenting. In the world of virtual presentation, there is generally a lack of visual cues with regard to the audiences' mood and receptivity and these effects the enthusiasm of the presenter.
- *Struggle in building rapport with the audience:* Virtual presenters often struggle in building rapport with their audience due to internet bandwidth issues visible via the poor-quality audio or video transmission.
- *Internal distractions:* As virtual presentations are conducted using the laptop or mobile device, the presenters are always facing challenges of participants getting distracted by the emails or chats or other websites.
- *External distractions:* The audience of virtual presentations could be either logging in from their homes or office spaces where simultaneously other activities could created is tractions for the presenter and the audience. Also, another example of an external distraction could stem from the unmuting of the audio function in the device leading to distractions from the barking of pets to squabbles amongst family members.
- *Struggle in encouraging students:* In face to face presentations, the presenter can use visual cues and facial expressions to create a rapport with the participants. In a virtual world, often the audience has the ability to login to a presentation and switch off the video feed, leaving very little room for the presenter to engage with such participants.

Minimizing the Challenges while Presenting Virtually

These challenges could affect the communication channel, but with a bit of planning and conscious efforts, one can overcome the challenges, like for example:

- *Keeping the presentation short*: Unlike face to face presentations that could go on for an hour or more, virtual presentations need to be short with ample room for interaction. Although there is no fixed formula to ensure the distribution of presentation time vis a vis the question-and- answer time, a general rule of thumb followed by good presenters is to use only 60 per cent of the allotted time for presenting and the rest 40 per cent of the time for questions.
- *Using a brisk pace*: Unlike face to face presentations, in the virtual presentation, maintaining a brisk pace ensures the presentation reflects the enthusiasm of the presenter. A brisk pace doesn't mean to speak fast, instead it means that the presenter should be so well versed with the content that the presentation flows like an oft repeated story.
- *Keeping the interaction alive during presentation*: Interactivity is a key element to create memorable virtual presentations. Interaction keeps the audience actively engaged away from the various distractions.
- *Using more visuals than texts*: Using more visuals than texts helps keep the attention of the students. They ensure the presentation doesn't become dull. Free copy right images and images licensed under the creative commons can be found in sites like Unsplash, Pixabay, Wikicommons.
- *Add FIRES to the presentation:* Virtual presentations that have the necessary FIRES (F-Fresh, I – Informative, R- Relevant, E – Enthusiastic, S-Story) have the ability to engage the participants. In the case of higher education, the presenter can mix and match audio and visual clips to add freshness to the topics.

Planning & Delivering a Virtual Presentation

Every presentation has a certain purpose and that purpose is built on understanding the elements of a good presentation. Research has shown there are four elements to effective presentation:

- *Understanding the audience*: Concepts across disciplines and grade levels often overlap. Understanding the audience – both students and teachers- includes understanding the age, the role of the audience, socio-economic background, linguistic diversity, technological capability, accessibility issues etc. Understanding the audience provides the presenter a perspective to deal with the content and leads to the next important element of the presentation.

- *Preparing the content*: If we wish that our presentation is interesting and our audience is attentive during our presentation, the content needs to mirror audience needs and interests, along with the coherence of content. Students have access to all material that is available on the internet, what they lack is the ability to string the content into a tapestry that is meaningful and age appropriate.
- *Delivering confidently*: Confidently delivered presentation have "hooks" that engage the participants and create room for inter activity between the students and the teacher. One of the hallmarks of a confidently delivered presentation is linking what is being discussed to the larger context of the subject and demonstrating how small pieces of concepts have shaped the domain knowledge.
- *Controlling the environment*: Creating ground rules for the presentation, giving clear instructions on acceptable behaviors in an online environment, letting the participants know when their questions would be answered are some ways in which the presenter can control the presenting environment.

Durate (2012) describes three phases of planning and delivering a presentation. This holds true for even virtual presentations.

Phase I: Conceiving the presentation: Conceiving a presentation includes finding answers to the following questions:

- Who is the audience?
- What do I want the audience to know after hearing the presentation?
- What do I want the audience to do after hearing the presentation?
- What do I want the audience to feel after hearing the presentation?
- How does the presentation answer the question of "*WIFM – What's in it for me*?" for the audience?
- How does the presentation organize the content? Does it follow a chronological order or causal-effect or does it build on research or does it present a logical argument?
- Does the presentation flow like a story?
- What are the media modes that have been chosen for communicating the message?
- Are there alternatives for images so that accessibility issues in the audience is catered for?

Phase II: Visualizing the presentation: It is in this stage the presentation takes the form of a narrative with the help of slides or any presentation modes. While visualizing the presentation it is useful to plan answer the following questions:

- Are the visuals used free from cultural, gender or socio-economic barriers?
- Are the visuals such that they easily convey the point that the presenter is trying to make?
- Does the image help to make the presentation memorable?
- Does the image supplement the content and the topic that is being presented?
- Are the visuals too bulky in terms of their size?

It is important to remember that unlike face to face presentations, in virtual presentations, the presenter has to plan for more slides so as to keep the audience engaged.

Phase III: Delivering the presentation: There are two aspects that Durate (2012) suggests we consider at this stage – one pertains to delivery and the second pertains to the impact of the presentation. It is important to consider the following points while delivering the presentation:

- Is there enthusiasm in the presentation?
- Is the voice modulated for driving the maximum impact?
- Depending on the content and audience is the presenter's voice communicating assertiveness or caution or is it critical or is it motivational?
- Is there a way to measure the impact of the presentation?

Virtual Presentation-Good Practices for Higher Education

There is an analogy that one often reads about when a presenter's face to face and virtual presentation skills are compared. The analogy comes from the world of aviation – where pilots are not only trained but expected to have dual proficiency – first is the proficiency to fly with sight and what is visible in front of them (akin to face to face presentations where the audience is visible) and the second is the proficiency to fly with just the instruments in the cockpit – that is without any visibility of the world outside (akin to virtual presentations – where the presenter is facing just a camera and the computer screen). And therefore, like how pilots gain competency and dual proficiency following certain good practices can help a presenter

gain proficiency in presenting virtually as well as in face to face environments.

- *Have a wingman*: A wingman is a supporter; a person who will assist the presenter in many ways – like to present the introduction, to monitor the chat, to monitor the questions, to steer the flow of questions to the presenter, to be have a copy of the presentation. The wingman can also keep providing useful summaries at the end of each section, giving the presenter a break from continuous speaking. If the planned presentation is of a longer duration, then the wingman can help break the monotony of a single presenter.
- Giving students the opportunity to be a wingman during the presentation, helps boost the student's confidence and creates a sense of responsibility within the student towards her learning.
- *Understand the audience*: A good practice to deliver effective virtual presentations revolves around understanding the audience composition – which institutes they belong to, what is their educational background, what is their work experience – all this information can be obtained when the audience registers for the presentation. This information also helps the presenter plan and share specific examples pertaining to certain specific areas of interests of the audience – automatically increasing the interaction amongst the participants.
- *Create a presentation title & description that will intrigue/ appeal the audience*: Presenters need to plan their topic to center around areas of interest of the audience or current need. Like for example, in today's pandemic times, any presentation that helps final year students increase their chances of getting employed will automatically appeal to a large majority of the students. In the same manner, presentations that deal with the mental health issues that students undergo due to lockdown will help students cope better as human beings.
- *Understand the presenting environment*: Virtual presenting environments have the following common features: a *presentation area* (where the presentation is available for display to the audience) , a *picture area* (where the presenter's video feed is available), a *chat area (*where the audience can chat either with the presenter or amongst themselves), a *break-out room (*where the larger groups can be broken into smaller groups for small group interactions), a *polling area (*where the presenter can create polls to understand the audience), a *screensharing area* (where the presenter can share the computer screen – this area could be overlapping with the presentation area), a *whiteboard* (which can be used during the presentation), the *audio/ video controller (*which is used to control the audio levels and the video clarity of the presentation.) With so many areas under one screen, it is important to understand the presentation environment as all apps and products have the same functions in different areas of the screen. \
- *Test the platform once before going live*: As presentation environments could vary across operating systems and amongst themselves, it is a good practice to test the presentation on any new platform before the final presentation. Also, when the presentation is tested before the final presentation, the presenter is able to gauge how the presentation fonts and images will be visible when the final presentation is screened across devices. When a presenter tests the presentation before delivering, it displays professionalism and behaviors that we wish the next generation imbibes.
- *Remember -Lag time*: Due to the internet bandwidth issues a virtual presenter needs to be aware of the lag time that could occur while presenting. The lag time is often witnessed by the audience as a slow-motion picture.
- *Avoid scroll quickly*: As many times, a lag time occurs during virtual presentations, it is important to remember that while viewing websites or programs via screen sharing, one must not scroll through the page quickly.
- *Avoid Animations*: In face to face presentations, animations if used correctly can help hold the attention of the audience. In a virtual presentation, they generally do not provide the same assistance as they could add to the lag during the presentation. Animations during virtual presentations could create unwanted distractions while moving between slides.
- *Present information in short logical chunks*: Presenting information in short logical chunks will help the presenter maintain the momentum of the presentation. It will assist the presenter move from one topic to another with confidence and agility that are hallmarks of a good presentation.
- *Using visuals*: The visuals in the presentations act as anchors that help the presenter and the audience. In a virtual world, the images help carry the talk forward. Visuals are great tools for creating transitions within the presentation topic and help the presenter support learners with diverse learning styles.

- *Promote interaction*: Polls are very useful tools to promote interaction. Polling tools can also transform into tools for checking the perception of the audience, understand the conceptual clarity of a topic. These questions can then be used as hooks to grab the attention of the audience.

  The wing man can also play an important role in adding to the interaction of the presentation by asking planned questions that help propel the discussion/ presentation ahead.

  Integrating live results or direct poling sites within a presentation can also help add to the inter activity within the presentation.

  The polling option can also be used as a tool to see the perception of the audience before and after the presentation.
- *Answer questions*: A good practice is to clearly set the stage as to when the questions would be answered. Many presenters prefer the questions are answered at the end of the presentation. Also, another good practice is to repeat the question and the name of the person who asked the question to help others understand the question in perspective. At times to add to the interactivity within the presentation, a good idea could also to be ask leading / investigative questions to the audience and then break them into smaller groups to think about the answer.
- *Keep a glass of water handy*: Like all presentations, when the speaker speaks for a longer duration, having a sip of water helps maintain the clarity of speech.
- *Do some vocal exercises*: In Julian Treasure's TED Talk (How to speak so that people want to listen) there are some exercises that help the speaker warm up her voice. These simple exercises add to the clarity of speech that helps the speaker keep the attention of the listener.
- *Reboot the computer*: Often we do not realize the number of background activities that take place in the computer and many at times the computer could update itself and start rebooting right when the presentation is on. Therefore, it is generally suggested that the computer/laptop be rebooted once before a presentation.
- *Upload supporting material*: It is also recommended not to share the presentation handouts before the presentation, instead the material shared once the presentation is over. Many presenters also share the presentation handouts/ supporting material once the presentation is over but the question and answer session is still on, giving the audience and students an opportunity to ask their questions before the event is wrapped up.
- *Gather feedback*: In the face to face situations, one is able to gather feedback based on the interaction after the presentation is over. In virtual presentations, the presenter has the provision to solicit specific feedback via forms and questionnaires. The feedback always assists the presenter in either collaborating with other like-minded colleagues or helps improve on their own presentation.

To Sum Up

In the UGC Guidelines on Examinations and Academic Calendar for the Universities in View of COVID-19 Pandemic and Subsequent Lockdown, issued in April 2020 a case for blended learning model has been put forward. The guideline also emphasizes that the responsibility of the teacher doesn't end by just sharing the e-content, instead it lays emphasis for interaction with the students.

Presenting in the virtual world and working with students and colleagues via a virtual medium necessitates that interactivity and engagement are deeply rooted within all presentations and discussions. With adequate planning and following the good practices from world over virtual presentations can be a great scaffold for in the learning journey of individuals.

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Resources and Services for Disabled Users: A Study of Libraries of Central Universities

Deepa Singhal* and Praveen Babel**

According to the 2011 census, out of the (121 Cr) total population, 2.68 Cr ie. 2.21 per cent population in India are disabled with impairments like visually or hearing problem, disability in movement or physically disabled etc. There are 56 per cent (1.5 Cr) males and 44 per cent (1.18 Cr) females among the disabled population. Approximately 67 per cent of the total disabled persons are literate and are located in urban areas and 49 per cent are located in rural areas. Some of the types of disabilities in human beings are visual Impairment, Hearing Impairment, Locomotor impairment; Cerebral Palsy, Mental Retardation and Mental Illness, Learning Disabilities.

When a person lacks intellectual, mental, physical or developmental form then it is a condition of disability. It can be due to some illness or from birth or from accident. The Americans with Disabilities Act (ADA) enacted in 1990 defines a person with a disability as, "a person who has a physical or mental impairment that substantially limits one or more major life activities. This includes people who have a record of such impairment, even if they do not currently have a disability. It also includes individuals who do not have a disability but are regarded as having a disability. The ADA also makes it unlawful to discriminate against a person based on that person's association with a person with a disability." In India, as per the Rights of Persons With Disabilities Act, 2016, "Person with a disability means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others."

Education is an important weapon for the disabled students to get equal status in the society and to build self confidence in them, and the library has an important role in it, as the libraries accommodate all the resources and services to meet the demand for information of the disabled students. But it is said that in the educational institutions, disabled students face many difficulties in pursuing their studies, research etc. An inclusive environment therefore needs to be provided for the disabled students in educational institutions so that they can develop a feeling of equality. Higher education enhances the possibility of employment affirming new policies and programmes in India to provide a respectable life to all the physically disabled persons. According to article 49 of 'The Rights of Persons with Disabilities Act, 2016,', all educational institutions have some duties towards students with disabilities. If the government provides inclusive education for such challenged people, it will increase their scope for employment and they will be economically capable and thus, dignified lives can be facilitated for the disabled. Government is very keen to remove discrimination between common users and disabled users. Therefore, every academic institution has been directed to implement all the policies framed by the government in the interest of physically challenged. Libraries are the places in the educational institutions, particularly the universities which provide opportunity to the students to refer to the study material of their use. It is therefore very important that the libraries create an inclusive environment where the disabled students can feel comfortable; an effective communication and understanding is developed between library professionals and disabled users. For this, the library professionals should be sympathetic and have patience; they should have knowledge of the software(s) and tools, which are used by Libraries to facilitate disabled users. Keeping this in view, a Study has been conducted on central universities located in Delhi to assess whether their libraries are meeting these requirements or not. The objectives of the study were to assess:

- How the library provides information to its special users;
- How library will train its library staff to serve better to its special users;

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- Which software(s) are used for supplying information;
- Which type of infrastructure is used for better services to disabled;
- Opinion of special users towards library.

A similar study was conducted by Bhardwaj (2018) on five universities in Delhi to reflect the information access mechanism for visually impaired students in these universities. In this study, the availability of information and communication technology (ICT) infrastructure in five major universities has been detected where it was found that facilities for visually impaired students in the higher educational institutions are very basic and for the visually impaired students, it is very difficult to study and research with existing ICT Infrastructure. Universities need improvement and development of existing ICT infrastructures. Bonela (2014) in his study on accessibility of higher education to students with disabilities compared 170 such students in higher education institutions in Andhra Pradesh with 156 students without disabilities for formal achievements and overall participation in higher education. The study concluded that it creates unique challenges for the inclusive education movement in India.

As mentioned earlier, the scope of this paper is to study the university libraries of India's most reputed three central universities i.e Jawaharlal Nehru University, University of Delhi and Jamia Milia Islamia University located in Delhi in view of their suitability to disabled users. These libraries are very prominent in higher education since their inception. There are many assistive tools that are available to facilitate disabled users in the higher education. This study will also focus on the availability of information and communication technologies (ICT) infrastructure in the libraries of these three universities which have special significance for providing services to the disabled users of the library.

For the study primary data was collected from the libraries of three central universities, located in Delhi i.e Jawaharlal Nehru University, University of Delhi and Jamia Milia Islamia University. A questionnaire was administered which included several multiple choice and questions on different aspects related to the availability and utilization of services to disabled users. Apart from the questionnaire, interaction was done with the disabled users directly in order to ascertain their view point regarding their needs and expectations. The data have been analyzed with the help of statistical software SPSS (statistical package for social science) to find out the results. In the questionnaire, questions rendered to the services to all types of disabilities including visual impairments, hearing and speech impairments, cognitive disability, etc. A set of questions regarding the use of information technology, services and resources have been asked in the questionnaire. The following questions were framed to meet the objectives of the study:

- Does your library provide services for special users?
- Is your library website user-friendly for visually impaired users?
- Please mention the name of library Software which you are currently using for differently-abled ?
- ***How do you provide information for special users?***
- How do you train your library staff for providing the services to the special users?
- Are you able to providing the facilities in the library for special users?
- Please explain if there is any other facility in your library for special users?
- What is the opinion about the library staff ?

When the respondents were asked about providing services to their special users, all the respondents said yes, which means that the central library of the three major universities are providing services for special users. The Delhi University has a separate library for visually impaired users, known as the Braille Library, it was established in the second half of the 70s and there is also an Equal Opportunity Cell (EOC), and it is both equipped with all kinds of the assistive technologies to help in providing the services for special users. The JNU Central Library has Helen Keller unit for visually impaired users with all assistive technologies. Jamia Millia Islamia University Library has Learning Center for Disabled (LCD), a separate unit for visually impaired users. Through the use of all assistive technologies in this center, there is facility to provide access to learning resources for visually impaired students.

In response to the second question on whether the library website was user-friendly for visually impaired users, all respondents said yes. Their library websites are user-friendly for visually impaired users as well as for normal users. To reach these materials, students need to register themselves as a library member and obtain a login ID and password.

In response to this question library Software which they are currently using for differently-abled, it has come out that all the libraries are using assistive software(s), with the help of which visually impaired users get the right information retrieve at the right time. Thesesoftware(s) have special significance for providing services to normal students as well as to the blind students in libraries of any higher educational institution. There are only fourassistive software(s) available in the JNU, including the JAWS screen reader, Kurzweil, Magic Pro, Lex Cam scanner. In DU total five assistive software(s), OBI DAISY, Hindi OCR, OBR Braille scanning, NDVA and JAWS screen reader are used. The highest number of assistive software (s) is used at Jamia Millia Islamia University, Infty Reader & Chatty Infty, JAWS screen reader, Magic Pro, Open Book, Read Easy+, SAFA Reader, Talking Typing Teacher, Vaachak.

In response to this question how they are providing information to the Special Users, the libraries of all central university libraries said that different types of disabled users come here such as visually impaired, deaf and hearing impaired, people reading difficulties, cognitively disabled, and they provide them information according to their convenience because all the contents of the library should be accessible to users and its various ways. As shown in the table 1, as provided by the blind user, his information is provided by large print, DAISY (Digital Accessible Information System) books, Braille etc. The Deaf and hearing impaired user is provided with information via video with subtitles and sign language and easy-to-read. Tick means yes, information is being provided through it and cross is not meant to be provided by it. JNU is the most leading university in providing information to Special Users. It provides 9 services out of the 10 listed services. JMI University is the second leading university, it provides 7 services out of the 10 listed services and Delhi University provides only 5 services to Special Users.

Regarding training the library staff for providing the services to the special users, the respondents said that all the library staff is well trained to access of assistive technologies for providing best services to their special users and they can understand how to deal with special users. That mean in all three university employees are trained.

This question on providing the facilities in the library for special users was taken in this research so that it can be ascertained whether university libraries are easily accessible to the user. Because special users should be easily accessed to libraries and library materials. Developed by the IFLA Standing Committee - A checklist has been prepared in the form of a practical tool for all types of libraries (public, academic, school, special) in which the estimates of existing levels of access to buildings, services and

Table1: Provide Information for Special Users

Information Provided by	DU	JNU	JMI
Large Print	✓	✓	×
Tape/Daisy Books	✓	✓	✓
Braille	✓	✓	×
Website	✓	✓	✓
Videos with subtitles &sign language	×	✓	✓
Text telephone	×	×	✓
Easy-to-Read	✓	✓	✓
Talking Books, Newspapers and Periodicals	×	✓	✓
E-Books	✓	✓	✓
Tactile Picture Books	×	✓	×

materials are pointed out [8]. In this question, some fundamental questions related to facilities have been focused, such that there is enough space for easily move of wheelchairs at the entrance of the library. Have automatic doors, so that the wheelchair can be easily brought. Shelves should be accessible from wheelchairs, etc. Out of 10 facilities, JNU Library is providing maximum 7 facilities after library 4 of Delhi University and only 3 facilities are providing JMI Library. The table 2 shows that the meaning of the tick is yes, the library is being provided facilities through it and cross means does not have the facilities provided by it.

When the respondents were asked whether other than the questions asked in the questionnaire, they provide any other facility to their special users. All said that yes, apart from this, special users are provided so that they can get their information easily without any interruption. Library of Delhi University said that there are some volunteers who help them to use the library and reading material to help the special users, provide selective dissemination of information and document delivery services and there are three sound-proof studios. JNU Library is distributed ANGLE DAISY Player (Digital Voice Recorder) to record the lectures of its class for special users. Library has subscribed to bookshare.org so that to provide the relevant collections in different formats to facilitate blind students. All three libraries, DU, JMI and JNU are provide free Wi-Fi services, wheelchairs for physically challenged scholars, prepare e-resources to meet the information requirement of the visually-challenged students as per their need. The JNU Library conducts an orientation program from time to time for the awareness about assistive software, technologies and library resources and services only for the visually impaired. While in Delhi University and JMI University libraries do not conduct this type of orientation program.

Two questions related to the staff of the library were whether the Library staff able to provide proper technical guidance to the special users and second question is the Library staff enough trained to assists special users. In response, the users expressed different views by different university, i.e. some users of Delhi University said that the staff are capable of instructing the latest technologies but not at that extend, and some users said that the staff is not aware about the latest technologies and in response to the second question some users were extremely satisfied and some users were satisfied to little extent. Similarly in response to first question few users from JNU and JMI are extremely satisfied with the library staff and some are satisfied to a little extent. In response to the second question for JNU and JMI students, mostly are satisfied to some extent.

Conclusions

Education is an important weapon for the disabled students to get equal status in the society and to build self confidence in them, and the library has an important role in it, as the libraries accommodate all the resources and services to meet the demand for information of the disabled students. This study concludes that all universities are providing services to students with disabilities, but

Table 2. Facilities in the Library for Special Users

Facilities	DU	JNU	JMI
A sufficient space in front of the door allows a wheelchair to be folded around	✓	✓	✓
Automatic door open able reachable by a person in a wheelchair	×	×	×
Glass doors marked to warn visually impaired persons	×	✓	×
Security checkpoints possible to pass through with a wheelchair/walker or other mobility aides	✓	✓	✓
Clear and easy-to-read signs with pictograms	✓	✓	✓
Shelves reachable form a wheelchair	×	✓	×
Reading and computer tables of varying heights throughout the library	×	✓	×
Circulation desk adjustable	✓	×	×
Induction loop system for hearing impaired persons	×	✓	×
Accessible self-service circulation stations	×	×	×

full satisfaction is not available in all universities. JMI is found in the leading university which uses eight assistive software(s), after which DU uses five assistive software(s) and JNU uses onlyfour assistive software(s). It is clear from the fact that due to the lack of equality in the use of software (S) in all universities, there is no uniformity in the information retrieval in universities. JNU's leading role is to provide information to different types of disabled users. In JNU, the most effective way to provide information to specialusers is, it provides information in nine ways out of the ten ways given in the list, and then in seven ways at JMI University, and Delhi University Library provides information in only five ways for special users. All universities provide information to special users through the website, but they are not very updated and the JMI University website provides the less information than JNU and DU website. This study shows that all university libraries provide training to their employees from time to time, but after discussions with the users I found that they were satisfied with the staff, but not too much because some library professionals did not know about the use of latest technologies. This study reflects the lack of providing services and the lack user's satisfaction level to special users. This study has shown that only DU facilitates volunteer readers for its students. There are no such services in the other two universities, it clarifies that the other two universities fail to co-ordinate with the general students to help the students with disabilities which makes it difficult for special user to socialize. The use of libraries should be accessible to any disabled student, so that more and more disabled students can easily access the building and library material without the help of any person, for which the It was found that JNU is the highest number of provide seven facilities out of the total listed. The rest of the two universities do not get so much facility.

Suggestions

- The libraries should update the website from time to time and should provide digital reference services 'ask the librarian' through a website for visually impaired students.
- Periodically, all libraries should conduct an orientation program for the awareness of assistive software, technologies and library resources and services for special users.
- From time to time, the staff of the library should be sent on training for technical knowledge and upgrades.
- Resources should be shared to libraries, to better utilize the resources of the library and to fulfill users' rights.

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Need to Run Fast to Stay Where We Are

C Rangarajan, Former Chairman, Economic Advisory Council to the Prime Minister and Former Governor, Reserve Bank of India delivered the Convocation Address at the 10th Convocation of The ICFAI Foundation for Higher Education, Hyderabad on 10th March, 2021. He said, "Universities are not only centres of learning but are incubators of new ideas. That is why our universities must always remain as arenas for discussion and debate. It is this that will lead to creativity. The right to express oneself freely must not be compromised under any circumstance. Let the spirit of enquiry burn bright in our campuses. That is the essence of true education." Excerpts

It gives me great pleasure to be in your midst this morning not only to preside but also to deliver the Tenth Convocation Address of this University. It is indeed very heartening to listen to the Report of the Vice Chancellor. I congratulate the University on the progress it has made and the initiatives it has taken to make the programmes at the University both relevant and meaningful. The students who graduate from the university must not only have adequate knowledge in the disciplines they have chosen to study but also be creative enough to apply that knowledge to solve the problems that confront the nation. To be bold and innovative is the need of the hour.

Let me congratulate all of you who are graduating today. Let me add a word of special appreciation to those who are receiving medals and awards. This is an occasion for celebration for all of you, as your academic efforts have come to a successful fruition. As you enter a new stage in your life, your future is intertwined with the future of this country. But, at the same time, you have the opportunity to shape it. Youth is full of idealism and ambition. Idealism without ambition may not achieve much. On the other hand, ambition without idealism may be dangerous. May you combine the two in the right proportion!

We are at the threshold of sweeping changes in Higher Education in India. The three dimensions of the reform of higher education have to be access, equity and quality. Broadening the access is extremely important when we see the gross enrolment ratio well below that of the developed countries. Equity is vital in order to ensure that under-privileged communities share the benefits of education. Equally important is the promotion of quality. I do hope that the new arrangements that are put in place give enough freedom and space to individual universities to experiment and innovate on their own.

Thirty Years of Reform

With the arrival of 2021, the liberalization regime launched in 1991 completes thirty years. 1991 is an important landmark in the post Independence economic history of our country. The country then faced an acute economic crisis triggered by a severe balance of payments problem. The crisis, however, was converted into an opportunity to bring about some fundamental changes in India's economic policy. It was marked by three important breaks with the past. One was to dismantle the vast network of controls and permits that dominated the economic system; second was to redefine the role of the state and the third was to move away from a regime of import substitution and to integrate fully with the global trading system. The new regime gave us a much faster rate of growth, even though there is concern with the recent decline in growth rate.

Current Crisis

We have another crisis today. In recent memory, this is the first economic crisis that has been driven by a non-economic factor – a pandemic. The various measures taken to prevent the spread of the virus and most importantly the lockdown have brought to a grinding halt the wheels of economic activity. It is only with the relaxation of constraints that the economy has started moving. In the first half of 2020-21, the economy shrank by 15.7 per cent. There will be some pick up in the second half. Most analysts now think that the economy will shrink by 8 percent for the year as a whole. The latest estimate of CSO is (-) 7.7 per cent. If only the Indian economy grows at 8.7 per cent in 2021-22, will we be compensating for the decline in 2020-21. We will then be where we were at the end of 2019-20. As the sayings goes 'we need to run fast to stay where we are'. The recent Budget has projected the growth rate for 2021-22 at

10.5 per cent. It sounds a little optimistic. Even then we have note that the two years taken together the growth rate will be 2.8 per cent, an annual average of 1.4 per cent. We as a nation really needs to organize ourselves to get back to the high growth path as early as possible.

Expenditure Trends

In a situation where the economy is stuck because of the weakening of demand, the standard advice is to raise government expenditures which will not only push up the economy directly but also act as a stimulant to the private sector. The earlier analysts did not make a distinction between one type of government expenditure and another. That is how the term 'digging holes and filling them' became popular. Analysts now however believe that capital expenditures, i.e. those which create assets, are preferable as the fiscal multiplier is larger.

In this context the emphasis in the recent Budget on capital expenditure is welcome. Relative to GDP, capital expenditure is expected to increase from 1.6 per cent in 2019-20 to 2.3 per cent in 2021 and 2.5 per cent in 2021-22, signaling a change in priority.

The budgeted increase in capital outlay would provide central government's share to the National Infrastructure Pipeline. However, success of the infrastructure expansion plan would depend on other stakeholders of the Pipeline playing their due role. These include state governments and their public sector enterprises and the private sector.

Revenue Augmentation

Government's ability to spend according to the budget depends on the ability to raise the necessary revenue. For 2021-22, the budgeted increase in centre's gross tax revenues is dependent on nominal GDP growth of 14.4% with a buoyancy of 1.6 for direct taxes and 0.8 for indirect taxes. The assumed high buoyancy of direct taxes appears optimistic although there would be a positive base effect. The nominal income growth projected may also be optimistic.

Significant increases are planned in non-tax revenues and non-debt capital receipts. From a contraction of (-)35.6% in 2020-21 (RE), non-tax revenues are budgeted to grow by 15.4% in 2021-22. This increase is mainly predicated on higher dividends from non-departmental undertakings and spectrum sales. In the case of non-debt capital receipts, mainly covering disinvestment, a budgeted growth of 304.3% in 2021-22 stands in contrast with the contraction of (-)32.2% in 2020-21 (RE). Disinvestment initiatives have so far yielded minimal results.

An important initiative pertains to the launching of a National Monetization Pipeline. This would be the first practical step towards asset monetization. The Pipeline may eventually start yielding revenues, but the time lags involved remain unpredictable because of various potential disputes and claims associated particularly with government-owned land. A transparent auction process requires to be set up to facilitate suitable price discovery. Slippage in revenue estimates may not be ruled out on account of realization of lower than anticipated increases in nominal GDP growth, direct tax buoyancy, and disinvestment targets.

Role of Reforms

In accelerating growth, the reform agenda is important. The reform agenda released post 1991 had an enormous impact. It released the energies of entrepreneurs to build a strong economy. But that reform agenda constituted a paradigm shift. Today we don't need a paradigm shift. We need to look at individual sectors and see which one of these needs reforms in terms of creating a competitive environment and improving efficiency. That should be the approach of the reform agenda.

Reforms do attract criticism. The 1991 reforms were dubbed by some as dictated by the IMF and World Bank. Some criticized some of the reforms such as the repeal of the MRTP Act as a sellout to capitalists. Under the shadow of a crisis, some of the reforms in 1991 could be pushed. But today this is no longer possible. Power sector, the financial system, governance and even agricultural marketing need reforms. The reform measures mentioned in the recent Budget such as those relating to the financial sector and strategy of disinvestment in select sectors are in the right direction. But we need a lot more discussions and consensus building before action is taken. Timing and sequencing are also critically important. Looking at the recent discussions on agricultural marketing reforms, the best course of action for the central government now may be to leave to each state to decide whether they want these measures or not. That will set the stage for experimental economics and farmers themselves will be able to see the best possible course of action with respect to agricultural marketing reforms.

Fiscal Prudence

The Union Budget for 2021-22 has provided for a sharp relaxation of central government's fiscal deficit to 9.5 percent in 2020-21 and 6.8 percent of GDP in 2021-22. The combined fiscal deficit and debt of the centre and states may be much higher in 2020-21 at about 14 and 90 percent of GDP. These levels, exceed the current FRBM norms of 6 and 60 percent by wide margins and these have been justified as a countercyclical response to the Covid crisis. Now, the issue is how to guide these back to levels consistent with debt sustainability.

Countercyclical Departure

The Economic Survey 2021 has argued the case for raising the fiscal deficit on the basis of a positive growth-interest rate differential. The Survey has contended that the line of causation runs from higher growth to debt sustainability rather than vice versa and that the higher the excess of growth rate over interest rate, the higher could be the primary deficit to GDP ratio consistent with debt sustainability. The Survey, however, did not indicate a steady state or long-term combination of the levels combined debt and fiscal deficit relative to GDP, if the present FRBMA is to be amended.

Average and Marginal Interest Rates

For deriving a steady state, the focus should be on potential growth rate and the long-term interest rate. The relevant interest rate in the derivation of debt sustainability condition is the average interest rate on government debt. This is also indicated in the Economic Survey where the applicable nominal interest rate is derived by dividing interest payment in a given year by the outstanding debt at the end of previous period *(Volume 1, Chapter 2)*. This is a weighted sum of the contracted interest rates on past debts. This should be distinguished from the interest rate at which current borrowing can be done which may be referred to as the marginal interest rate. If the marginal interest rate falls, the average interest rate would also fall but at a lower pace. This is reflected in the movement of the effective interest rate obtained by dividing combined interest payments by combined debt. During FY16 to FY20, this interest rate has fallen only from 7.4 percent to around to 7.0 percent. By pumping in additional liquidity, the current nominal interest rate can be driven down. But this may raise the inflation rate above the policy target rate and may well reduce the real interest rate, having an adverse impact on the overall savings rate. Such a policy can only lead to financial repression with all the attendant problems. Asset mispricing will also be a consequence which can have serious implications. Thus, the maintainable longer term nominal interest rate for government debt may have to be close to 7 percent, derived by combining a CPI inflation rate of about 4 percent and real interest rate of 3 percent.

India's Potential Growth Rate

For assessing India's potential growth rate, we may juxtapose India's falling investment rate since 2011-12 with India's rising capital-output ratio in recent years. The real investment (gross fixed capital formation) rate, at 2011-12 prices, has fallen from 34.3 percent in 2011-12 to 32.5 percent in 2019-20. The incremental capital output ratio (ICOR) estimated on trend basis has been in the range of 5.4-5.9 during 2015-16 to 2019-20. Taking an ICOR value of 5.5, the potential real GDP growth may be estimated at 6.0 percent. Earlier, Rangarajan and Srivastava (2017) had estimated India's potential GDP growth rate, based on a sector-wise decomposition of the ICORs, at 8 percent plus. It has now come down due to a fall in the investment rate and increase in the ICOR. In order to derive the corresponding nominal growth rate, we need to add an Implicit Price Deflator based inflation rate of 3 percent. Combining 6 percent and 3 percent, we get a nominal GDP growth of 9 percent. Thus, in the medium term, the growth rate-interest rate differential may be about 2 percentage points. Clearly, a high primary deficit relative to GDP can only be created temporarily by raising the fiscal deficit well above its steady state path but it cannot be sustained. The average primary deficit over the last five years has been 0.7 percent of GDP for the centre and 1.8 percent for the central and state governments together. A study by us shows that between 1955-56 and 2000-01 the rise of debt to GDP ratio was due only to primary deficit. Of course, its impact was substantially reduced by growth rate – interest differential. The growth rate – interest rate comparison has the implicit assumption that the current level of debt-GDP ratio is appropriate and keeping it at that level is the desired criterion of sustainability. If in fact it is felt

that this ratio needs to be brought down as the N K Singh committee proposed, there has to be primary account surplus.

Arguments are also being advanced that many developed and emerging market economies have a relatively high debt-GDP ratio (See Table 1). But it should be noted that in these and many other developed countries, the average and marginal interest rates have been close to zero for some years and their ratio of interest payment to revenue receipts is also very low. In contrast, in India, the average interest rate is still above 7 percent. More importantly revenue receipts to GDP ratio is quite high in the countries with high debt to GDP ratio. Consequently, interest payments to revenue receipts ratio is low in these countries and high in India. Therefore lowering this ratio is an important consideration.

Table1: Fiscal Parameters for General Government (Percent)

Countries	Revenue receipts/ GDP	Interest payments/ Revenue receipts	Debt/ GDP
India	18.1	25.8	72.4
US	29.5	13.8	108.7
UK	36.6	5.6	85.4
Japan	35.0	4.7	238.0
Data pertains to 2019-20 for India. For UK, USA, and Japan data for revenue receipts pertain to 2018 and for interest payments and debt to 2019.			

The broad conclusion is that the leeway provided by excess of potential growth rate over average interest rate is limited. The ratio of interest payments to revenue receipts is high. It needs to be brought down to enable larger percentage of revenue receipts is available to government for other expenditures. There is need to lower the debt-GDP ratio. All this will happen if the current norm of 3 per cent of GDP as fiscal deficit is pursued. It is a good guide over the medium term. This current year and the coming year are exceptionally difficult good years. A departure from the norm is justified. But that cannot be a rule.

A few years ago, there was the hope that India would become a $5 trillion strong economy by 2025. But that has become impossible. India's economy was $2.7 trillion strong in 2018. To go from $2.7 trillion to $ 5 trillion, it requires the economy to grow at 9 percent for 5 consecutive years. We must also note that India's per capita income after reaching $ 5 trillion will be only $ 3,500. We will still be classified as a middle income country. Growth is the answer to many of our socioeconomic problems. Growth should become the undivided concern of the govt. This can be best achieved by focusing on the economy, creating better and fairer conditions for doing business, building a consensus on economic policies, and avoiding socially divisive actions.

Let me end on one note. Universities are not only centres of learning but are incubators of new ideas. That is why our universities must always remain as arenas for discussion and debate. It is this that will lead to creativity. The right to express oneself freely must not be compromised under any circumstance. Let the spirit of enquiry burn bright in our campuses. That is the essence of true education.

Once again let me wish you all the very best. ❑

Webinar on Role of Teachers in Implementation of National Education Policy

One-day Webinar on 'Role of Teachers in Implementation of National Education Policy: Awareness, Orientation, Challenges and Responses' was organized by the University of Science and Technology, Meghalaya, (USTM) in collaboration with Bharatiya Shishan Mandal (BSM) and NITI Aayog, Govt. of India, recently. Prof. Kuldeep Chand Agnihotri, Vice Chancellor, Central University of Himachal Pradesh, and Prof. Raghvendra Prasad Tiwari, Vice Chancellor, Central University of Punjab graced the inaugural session. During his Keynote Address, Prof. Agihotri expressed his love towards the beauty and diversity of the native languages of the north-eastern region. He also pointed out the reason of few languages that are dying off, and how to preserve and conserve these languages under the provision of the New Education Policy.

The Chief Guest, Prof. Tiwari delivered his lecture on 'Cutting-edge Technologies, specially emphasizing on Technological Strategies for Sustainable Livelihood. He mentioned how technology supports the communication, education, and continuity of developments even at the time of pandemic. He also mentioned about the tremendous effort of Indian scientists towards developing the vaccine against COVID-19.

The Welcome Address was delivered by Dr. R K Sharma, Advisor, USTM. Dr. Ajmal Hussain Barbhuiya, Academic Registrar, USTM introduced the participants about the importance and motivation behind the event. The webinar was coordinated by Dr. Nitu Borgohain, Assistant Professor, Department of Physics and Dr. Saru Joshi, Associate Professor, Department of Education, USTM.

Prof. G D Sharma, Vice Chancellor, USTM, in his presidential remark, expressed his view how we can re-develop our ancient, community involved, value based system of learning, which can create human resources be responsible for their societal growth.

The breakout session was segregated into 6 different tracks; each track was consisting of number of participants and a track leader. The track leaders headed the deliberation of NEP challenges and their resolutions on 6 different topics. In Valedictory Session, the summary of discussions of each track was presented by the respective track leaders.

Certificate Course on Basic Network Administration with Switching and Routing

A four-day Certificate Course on 'Basic Network Administration with Switching and Routing' is being organised by the Computer and Information Technology Centre, Indian Institute of Technology, Indore (Madhya Pradesh) during April 21-24, 2021. The fresh engineering graduates, diploma holders aspiring for a career in computer network management, students of CSE or IT who are in 3rd and final year of their degree programme having passion for networking, IT professionals working in industries, etc. may participate in the event.

With the increased reliance on Internet for various day-to-day activities, it becomes essential to manage networks effectively without downtime and issues. An integral part of network administration is configuring, managing various network equipment like Switches and Routers. This certificate course will introduce and give necessary hands-on experience of Switching and Routing. The Topics of the Course are:

- Understanding basic concepts and functions of network components (Routers, L2 and L3 switches, next-generation firewalls, access points, wireless Controllers). Overview of switching, local area network, virtual LAN.
- Creating a LAN with layer 2 switches (different topologies), demonstration of various commands used to configure layer 2 switches. Demonstration of virtual LAN creation, working of spanning tree protocol.
- Switching fabric, ternary content addressable memory, types of switches (ethernet, fiber optic) and ports, optical fiber communication.
- Demonstration of different types of ports in switches. optical transceiver (small form factor).

- Overview of routing, subnetting and supernetting, private and public IP addresses, network address translation, routing algorithms, distance vector routing.
- Configuring a subnet network, verifying the routing table, basic router configuration.
- Routing information protocol, overview of OSPF, overview of BGP.
- Implementing NAT with a router, implementing basic access control list with router.

For further details, contact Course Coordinator, Dr. Neminath Hubballi, Computer and Information Technology Center, Indian Institute of Technology, Khandwa Road, Simrol, Indore-453552, (Madhya Pradesh), E-mail: *computer.center@iiti.ac.in.* For updates, log on to: *www.iiti.ac.in.*

Virtual International Conference on Advances in Mechanical Engineering Design

A two-day Virtual International Conference on 'Advances in Mechanical Engineering Design' is being organized by the Design Division, Department of Mechanical Engineering, College of Engineering Technology, SRM Institute of Science and Technology, Kattankulathur Campus, Chengalpattu, (Tamil Nadu) during May 03-04, 2021.

Engineering Design in Mechanical Engineering is advancing at a rapid pace due to rapid growth of technologies in various related fields including computer science which has revolutionized the way in which the information is processed, shared and inferred. One of the main purpose of engineering design is to provide a solution to a problem by applying scientific knowledge and in doing so it also becomes important for the design to have an aesthetic look with an enhanced product life. For any design engineer it becomes necessary to look into the need of the design, research the possible designs, selecting the most promising design, evaluating the design, communicating the design and re-design if required. The conference will focus on the recent topics of design engineering where various sessions will be conducted on recent topics ranging from designing concept to simulation of concepts further digging into enhancing the product life. The topics of the event are:

- Finite Element Methods.
- Experimental Mechanics.
- Biomechanics and Ergonomics/Bio Medical and Image Processing.
- Modelling and Simulation.
- Optimization Techniques.
- AI / ML Applications.
- Collaborative Design.
- Design of Experiments.
- Design for Manufacture.
- Vibration and Noise.
- Condition Monitoring and Signal Processing.
- Fracture Mechanics.
- Rapid Prototyping/ 3Dprinting.
- Virtual and Augmented Reality.
- Product Design and Reliability.
- Rotor Dynamics.
- Tribology Multi-body Dynamics.
- Nonlinear Mechanics.

For further details, contact Co-convenors, Dr. E Vijayaragavan / Dr. Sandipan Roy, Department of Mechanical Engineering, College of Engineering Technology, SRM Institute of Science and Technology, Kattankulathur Campus, Chengalpattu-603023 (Tamil Nadu), Mobile: 09884214710 / 08584966296, *Email: icamed2021@srmist.edu.in* For updates, log on to: *https://www.srmist.edu.in/icamed-2021/*

AIU NEWS

96th Foundation Day Celebrations at Association of Indian Universities

Association of Indian Universities celebrated its 96th Foundation Day Function on 23rd March, 2021. It was a day long function where there was bounty of events which included both virtual as well as physical activities.

At AIU House, the Headquarter of AIU, there was a get-together of the Officers and Staff and other fun and frolic. It was coordinated by Dr Alok Mishra, Joint Secretary, AIU. As virtual event, there was an Interaction Session of Vice Chancellors. Dr Rajiv Kumar, Vice Chairman, NITI Ayog was the Chief Guest of the Interaction Session. While appreciating its initiatives and activities, Dr Rajiv Kumar wished AIU for its successful and sustained future. The other dignitaries who spoke in the virtual Interaction Session were Prof Bhushan Patwardhan, Former Vice Chairman, University Grants Commission; Prof C Raj Kumar, Vice Chancellor, Jindal Global Open University, Sonepat; Prof P B Sharma, Vice Chancellor Amity University and Former President AIU; Prof Mehrajuddin Mir, Vice Chancellor, Kashmir University; Prof Debkumar Mukhopadhyay, Panchanan Barma University, Cooch Behar; Prof (Dr.) Balvinder Shukla, Vice Chancellor, Amity University, Noida; Dr Upinder Dhar, Vice Chancellor, Shri Vaisnav Vidyapith, Indore; Dr Rajni Gupte, Vice Chancellor, Symbiosis International University, Pune; Dr Mrinalini Fadnavis, Vice Chancellor, Punyashlok Ahilyadevi Holkar University, Solapur; Dr Suchitangshu Chatterji, Vice Chancellor, RKDF University, Ranchi. All the speakers greeted and complimented AIU and gave many suggestions and recommendations for making AIU more relevant and useful for the stakeholders of higher education. Prof Tej Partap, President AIU delivered the Presidential Address and Dr Pankaj Mittal, Secretary General AIU convened the Interaction Session. The Virtual Interactive Session was hosted by Babasaheb Ambedkar Open University, Ahmedabad. Dr. Ami Upadhyay, Vice Chancellor, Babasaheb Ambedkar University, Ahmedabad graced the occasion and addressed the audience. The session was compered by Ms Ranjana Parihar, D S Finance, AIU and Vote of Thanks was proposed by Dr S Rama Devi Pani, Editor, University News.

Association of Indian Universities (AIU) is one of the premier apex higher education institutions of the Country established in 1925. It is a research-based policy advice institution to the Government of India in the field of Higher Education, Sports and Culture. Since its inception, it has been playing a vital role in shaping Indian higher education. Most importantly, AIU is vested with the power of according equivalence to Degrees/Qualifications offered by the universities across the world with those offered in India. Being an apex institution, it constitutes an integral part of all major decision-making Committees and Commissions in the country. As a representative body of Indian universities, it facilitates cooperation and coordination among Indian universities and liaises between the universities and the Government (Central as well as the State Governments) and also national and International bodies of higher education in other countries in the matters of common interest.

AIU is a think tank body with the responsibility of undertaking academic activities such as: conducting Research Studies in higher education; act as bureau of information on higher education; liaise with international bodies and universities for internationalization of Indian higher education among many others. AIU conducts inter-university sports and cultural events at national and international level. As a National Sports Promotion Organization (NSPO) it promotes sports among Member-Universities and maintain the standards in sports.

The Vision of AIU is to emerge as a dynamic service and advisory apex organization in India by undertaking such initiatives and programmes which could strengthen and popularize Indian higher education as leading-edge system in the world and promote greater national and international collaboration in Higher Education, Research and Extension, Sports, Youth and Cultural Activities.

Its Mission is to promote and represent the higher education system and Indian Universities through strong liaison with the government and National/International organizations of higher education, sister associations world over and establish liaison between/among universities through active support, cooperation and coordination among the member universities and all its stakeholders for

quality education, research and other academics and extension activities.

Dr. Sarvepalli Radhakrishnan, Dr Zakir Hussain, Dr. Syama Prasad Mukherjee, Dr K L Shrimali A.L Mudaliar, Dr Akbar Hydary, Prof A C Woolner, Pandit Amarnath Jha, Sir Maurice Gwyer, Dr K L Shrimali, Prof Shiv Mangal Singh Singh 'Suman' , Prof M S Gore, Prof M S Adiseshiah, Prof M S Valiathan are among some of the stalwarts who served AIU as its presidents.

Whereas, all the Indian universities benefit out of its contribution, at present it has membership of about 808 Indian universities and 17 universities from other countries viz. Bhutan, UAE, Kazakhstan, Mauritius, Malaysia Nepal, as Associate Members.

National Seminar on New Dimensions of Women Empowerment

A two-day National Seminar on the theme 'New Dimensions of Women Empowerment' was organized by the Association of Indian Universities (AIU), New Delhi in collaboration with Dr D Y Patil Vidyapeeth, Pune, Maharashtra during January 17-18, 2020. Dr S Rama Devi Pani, Editor, University News, Association of Indian Universities was the Convener of the Seminar and it was coordinated by Dr Usha Rai Negi, Assistant Director, Research Division, AIU, New Delhi. The Seminar witnessed overwhelming response from participants across the states of India inclusive of representation from young scholars to seasoned academics. Dr Veena Bhalla, former Joint Secretary (SIS), Association of Indian Universities, New Delhi and presently Consultant, Dr. D Y Patil Vidyapeeth, Pune attended the Inaugural Function. The main objective of the Seminar was to explore new dimensions of women empowerment and particularly to create awareness on women's rights, safety and their place in society and their contribution in the socio-economic development.

Dr S Rama Devi Pani in her welcome speech briefed the audience about the initiatives taken by AIU for the cause of higher education in the country. She also mentioned about the women Seminar and other events initiated by her at AIU for boosting women empowerment, more particularly to take up the issues of women working in the field of Higher Education. Ms. Shobha Dhariwal, Founder of R M Dhariwal Foundation was the Chief Guest for the inaugural function. While speaking on the occasion Ms. Dhariwal said that in the early days the life was much difficult for women as they were not considered at par with men in this patriarchal society. Women were forbidden to come out of their houses to work. She spoke about how she along with her husband broke many barriers of society to progress in their business. She also mentioned how women need to keep themselves abreast with the changes in the society and focus towards their goals for progress.

The Keynote Address was delivered by the Guest of Honor, Dr. Geetali V M, Founder, Member and Adviser of *Nari Samata Manch*. She spoke on 'Women Empowerment' and about men in general, stating that often men do not get opportunity to voice their emotions as they are expected to be bold. She stated that men should also be taught to express their feelings without being emasculated or embarrassed. She also mentioned about her magazine, where there is a provision for men to voice and share their problems. She believed that if men voice their emotions, they can be at par with women and help in the development of woman empowerment.

Dr. Smita Jadhav, Trustee of Dr. D Y Patil Vidyapeeth, Pune encouraged the participants to stand on their own feet and bring change in the society. She promised that DPU will take steps which will bring out the latent abilities and talents of each and every women employee working in the Institute. On the first day of the event, there were eight presenters who presented papers on following topics:

- Dimensions of Women Empowerment: Opportunities and Challenges, which discussed the women's basic rights and education that women deserve.
- An Analysis of Perceptions Regarding Research Opportunities among Women, which discussed the status of women in the research field.
- Self Respect and Self Confidence: Tools for Empowerment, which discussed the concept of respecting one's self and having confidence in the growth of women empowerment.
- A Study on Context and Application of Women Empowerment in Today's World, which discussed women empowerment in the context of need and applicability.
- Usage of Social Media by Women Entrepreneurs for Doing Business, which discussed the use of modern technology and social media for setting up businesses for women entrepreneurs.

- Indian Women in Oral and Maxillofacial Surgery, which discussed the participation of women in the field of oral and maxillofacial surgery.
- Empowering Women through Education, which discussed the need and role of education for women empowerment.
- Legal Empowerment as Self-Empowerment: An Analytical View, which discussed the legal aspects available to women for their rights and protection in general and at workplaces.

In the Session on Women Entrepreneurship, Dr. Sayalee Gankar, Director of MITSOM spoke on women entrepreneurship and the availability of best trainers to develop women's skills in entrepreneurship. She further spoke about her accomplishments in the field of entrepreneurship and on the development of research over time. Dr Lakshmi from Tata Institute of Social Sciences deliberated on different aspects of women empowerment and entrepreneurship. The papers presented in the session were on :

- Women Entrepreneurship: Possibilities, Challenges, and Government Initiatives, which discussed the types of women entrepreneurship, traits needed for entrepreneurship, limitation in entrepreneurship, and different government schemes for entrepreneurs.
- Ayurvedic Interventions for Women Empowerment, which discussed the role of Ayurveda for women empowerment. It discussed how Ayurveda plays an important role in the mental and physical growth of women.
- A System Dynamic Approach to Mitigate Problems of Women Entrepreneurship in India, which discussed the problems faced by women entrepreneurs and how education helps women empowerment. They also discussed how their university works at the grass-root level by selling rural materials to promote women entrepreneurship.
- Higher Education in Rural Area, which discussed the limitations that women face regarding higher education and the solutions on how to promote higher education to women.
- A study on the Status of Women Empowerment in Modern India, which discussed the need for women empowerment, factors influencing women's empowerment, various programs implemented for women empowerment, and valuable suggestions for women empowerment.

In the Session on 'Role of Judiciary in Empowering Women in India', the papers presented were:

- Role of Judiciary in Empowering Women in India, which discussed the topic of domestic violence, the role of the judiciary for providing equal status to women, the role of the court in protecting victims of crimes, and the different laws protecting women's rights.
- A Qualitative Study of Women's Economic Empowerment and Social Protection 'Grihini – A Case Study', which determine whether the welfare society such as 'Grihini' has been able to contribute towards women's economic empowerment and social protection. Further, the paper discusses how *Grihini* was established by Tata Motors.

After completion of paper presentations, the perspectives were put to discussion and several plausible suggestions and solutions have been proposed for concerned authorities to take up. During the Valedictory Session, Dr. Shruti Tambe spoke about toxic masculinity and patriarchial society where women fail to thrive for their upliftment. She also discussed how caste in many rural areas determine how a woman should be in society. She informed about the work done by her for the upliftment of women. Dr. Renu Nanda, Professor, University of Jammu, Chairperson spoke how Article 35A at Jammu & Kashmir High Court affected the fundamental rights of women. She spoke how Article 35A encroached upon the fundamental rights guaranteed under Articles 14, 19, and 21 of the Constitution of India. Further, Dr. Renu Nanda discussed how Article 35A was anti-women and how she was victimized because of that and how she continues to fight for women's rights.

In her concluding speech, Dr. S Rama Devi Pani expressed her happiness about the successful completion of the seminar and mentioned that there was no repetition of topics during the presentation and all the topics were unique in their way. She spoke about how gender stereotyping affect both men and women equally. She ended the speech by saying, "Sheroes are coming up."

The Vote of Thanks was proposed by Dr. Safia Farooqui, Director, Institute of Distance Learning, Dr. D Y Patil Vidyapeeth, Pune. ❑

THESES OF THE MONTH

SCIENCE & TECHNOLOGY
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of January-February, 2021)

Agricultural Engineering

1. Jadhav, Sumant Baburao. **Precision fertigation management for cabbage (*Brassica oleracea var capitata*) under semi-arid tropic of Maharashtra**. (Dr. U M Khodke), Department of Agricultural Engineering, Vasantrao Naik Marathwada Agricultural University, Parbhani.

Agronomy

1. Sherasiya, Usmangani Ahmadbhai. **A study on bio-organic and chemicals based farming methods in rural area of Rajkot District**. (Dr. D C Patel), Department of Agronomy, Saurashtra University, Rajkot.

Forestry

1. Aditya Kumar. **Assessment of genetic diversity among different half sib families of *Melia dubia* cav using biometrical and microsatellite approaches**. (Dr. Sanjay Singh), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

2. Edwin Murmu. **Traditional Ecological Knowledge (TEK) of Santhal Tribe with special reference to biodiversity conservation and natural resource management in Jharkhand and West Bengal**. (Dr. H B Vasistha and Dr. B S Adhikari), Department of Forest Ecology and Environment, Forest Research Institute, Dehradun.

3. Jyoti Rani. **Variations in propagule production of selected genotypes of *Dendrocalamus strictus* (Roxb) Nees via ex vitro and in vitro approaches**. (Dr. Meena Bakshi), Department of Forest Botany, Forest Research Institute, Dehradun.

4. Meena, Desha. **Genetic diversity in the selected populations of *Tecomella Undulata* using RAPD and ISSR markers**. (Dr. Tarun Kant), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

5. Meena, Rajendra Kumar. **Molecular phylogeny of genus Dendrocalamus and analysis of genetic diversity in *Dendrocalamus hamiltonii***. (Dr. H S Ginwal and Dr. Santan Barthwal), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

6. Mungi, Ninad Avinash. **Modelling plant invasions in tropical forest of India**. (Prof. Qamar Qureshi and Dr. Y V Jhala), Department of Forest Geoinformatics, Forest Research Institute, Dehradun.

7. Neethu, R S. **Regional differences in phenotypic and phytochemical profiles of selected medicinal plants in Kerala**. (Dr. T V Sajeev and Dr. P Sujanapal), Department of Forest Botany, Forest Research Institute, Dehradun.

8. Nuzhat Bano. **Investigation on sequence variability and association mapping of some lignin synthesis genes with wood specific gravity in teak (*Tectona grandis L f*)**. (Dr. S A Ansari), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

9. Pandey, Vijay Vardhan. **Identification of high lovastatin producing basidiomycetous fungal species and development of culture protocol**. (Dr. Amit Pandey and Dr. V k Varshney), Department of Forest Pathology, Forest Research Institute, Dehradun.

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11. Rajneesh Kumar. **Studies on micropropagation of two Mangrove species-*Heritiera fomes* Buch-Ham and *Aegiceras corniculatum* L**. (Dr. Animesh Sinha), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

12. Saha, Romeet. **Clonal variations in rooting dynamics and root architecture of Eucalyptus tereticornis and *Eucalyptus camaldulensis***. (Dr. Santan Barthwal, Dr. H S Ginwal and Dr. Girish Chandra), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

13. Saini, Lovelesh Singh. **Optimization of non-destructive harvesting of oleo-gum-resin in *Commiphora wightii* (Arnott) Bhandari**. (Dr. U K Tomar), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

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15. Shukla, Shikhar. **Photo-degradation effects on water and organic solvent based finishes on wood substrate**. (Dr. Kishan Kumar V S and Dr. K K Pandey), Department of Wood Science and Technology, Forest Research Institute, Dehradun.

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Genetics & Plant Breeding

1. Sharma, Shailja. **Introgression of cercospora leaf spot resistance into urdbean (*Vigna mungo L hepper*) employing various hybridization strategies by involving V radiate, V umbellate and V angularis**. (Dr. R K Mittal), Department of Genetics and Plant Breeding, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

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Horticulture

1. Chavan, Dnyaneshwar Laxman. **Heterosis and combining ability studies in newly developed hybrids of chilli (*Capsicum annuum L*)**. (Dr. D P Waskar), Faculty of Agriculture, Vasantrao Naik Marathwada Agricultural University, Parbhani.

Soil Science

1. Singh, Sagolshem Kalidas. **Evaluation of soil carbon, nitrogen and phosphorus in traditional and alder-based *Jhum agro*-ecosystem**. (Dr. Indarani P Bora), Department of Soil Science, Forest Research Institute, Dehradun.

2. Sivaranjani, S. **Carbon dioxide emission, carbon sequestration and nutrient return in the soils under different vegetation covers**. (Dr. V P Panwar), Department of Soil Science, Forest Research Institute, Dehradun.

BIOLOGICAL SCIENCES

Biotechnology

1. Sateesh Babu, D. **Development of new validated RP-HPLC methods for simultaneous determination of some anti retroviral drugs in combined tablet dosage forms by using QbD principles**. (Prof. J V L N Seshagiri Rao), Department of Biotechnology, Acharya Nagarjuna University, Nagarjuna Nagar.

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1. Reena. **Phytochemical, antimicrobial, antixidant and prebiotic potential of some weeds belonging to lamiaceae family**. (Dr. Pushpa Dahiya), Department of Botany, Maharshi Dayanand University, Rohtak.

Zoology

1. Shelly. **Improved enzyme based nanosensor for detection of nitrate**. (Dr. Minakshi Sharma), Department of Zoology, Maharshi Dayanand University, Rohtak.

2. Sushila Kumari. **Modelling of blood flow in stenosed arteries in the presence of magnetic field**. (Dr. Jagdish Nandal), Department of Zoology, Maharshi Dayanand University, Rohtak.

EARTH SYSTEM SCIENCES

Geology

1. Pant, Swati. **Microstructures and their implications on the genesis of uranium mineralization in the central sector of the Singhbhum Shear Zone, Jharkhand, Eastern India**. (Prof. Sahendra Singh and Prof. P R Sahoo), Department of Applied Geology, Indian Institute of Technology, Dhanbad.

Geophysics

1. Sahadev Kumar. **Combined self-potential magnetic and electrical resistivity methods for characterization of coal mine fires in parts of Jharia Coalfields, India**. (Prof. Sanjit Kumar Pal and Prof. Shalivahan), Department of Applied Geophysics, Indian Institute of Technology, Dhanbad.

ENGINEERING SCIENCES

Civil Engineering

1. Kumara, S R Shashi. **Investigation of polymer modified hybrid fiber reinforced concrete**. (Dr. B C Udayashankar and Dr. D L Venkatesh Babu), Department of Civil Engineering, Visvesvaraya Technological University, Belagavi.

Computer Science & Engineering

1. Amandeep Kaur. **Designing and developing a machine learning based code smell detection technique**. (Dr. Sushma Jain and Dr. Shivani Goel), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.

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Electrical & Electronics Engineering

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Electronics & Communication Engineering

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Fuel & Mineral Engineering

1. Asnani, C K. **Recovery of placer heavy minerals from Badlands of Odisha and its value addition in strategic applications**. (Prof. N R Mandre), Department of Fuel, Mineral & Metallurgical Engineering, Indian Institute of Technology, Dhanbad.

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Mechanical Engineering

1. Jagadesh Kumar, J. **Fatigue analysis of friction welded notched marine steels**. (Dr. G Diwakar and Dr. V V Satyanarayana), Department of Mechanical Engineering, Koneru Lakshmaiah Education Foundation, Guntur.

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MATHEMATICAL SCIENCES

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2. Sinojia, Narendrakumar Chakubhai. **Construction of incomplete block designs and missing plot techniques**. (Dr. D K Ghosh), Department of Statistics, Saurashtra University, Rajkot.

MEDICAL SCIENCES

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1. Jose, Greeny Treesa. **Effectiveness of psychosocial intervention training for the caregivers on caring the mental health needs of inmates of selected relief and rehabilitation centres of Karnataka**. (Dr. V V Mohan Chandran), Department of Nursing, Yenepoya (Deemed to be University), Mangaluru.

Pharmaceutical Science

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1. Gurjit Kaur. **Decay patterns and related dynamical aspects of superheavy nuclear systems**. (Dr. Manoj K Sharma), School of Physics and Material Sciences, Thapar Institute of Engineering and Technology, Patiala.

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1. Ajudiya, Yogesh Mohanbhai. **Studies and biological evaluation of some heterocyclic compounds of medicinal interest**. (Dr. J J Upadhyay), Department of Chemistry, Saurashtra University, Rajkot.

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3	**Assistant Professor in Visistadvaita Vedanta**	01	-	-	01	-	-	-	Level-10
4	**Assistant Professor in Sahitya**	01	01	-	-	-	-	-	Level-10
5	**Assistant Professor in Sanskrit Education** (Sanskrit Teaching Methodology)	01	01	-	-	-	-	-	Level-10

Non-Teaching Posts

S. No.	Name of the Post	No. of Posts Vacant	No. of Posts & Reserved categories						Level in Pay Matrix (7th CPC)
			SC	ST	OBC	PwD	EwS	UR	
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2	**Lower Division Clerk**	03	01	-	-	-	01	01	Level-02

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*The candidates who have already applied for the post of **Private Secretary (OBC and EWS)** against this office notifications Advt. No. RSV/Estt./NT/2020 dated 19.02.2020 and Advt. No. NSKTU/Estt/NT/2020 dated 14.10.2020 **need not apply** again and their applications will be processed as per the present notification/ prospectus. However, they may furnish additional information, if any, in support of their applications.

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A. **CASH DEPOSIT**: The required amount could be remitted directly to our Saving Account in any branches of Canara Bank from places other than Delhi & NCR Area.

B. **DEMAND DRAFT ONLY** : Such instrument is required to be prepared be in the name of **"ASSOCIATION OF INDIAN UNIVERSITIES" (payable at New Delhi), preferably from the Nationalised Banks ONLY.**

C. **CHEQUES OF ANY KIND ARE NOT ACCEPTABLE.**

D. The **requisite amount could also be transferred for its direct remittance to our Saving Account via NEFT/RTGS using the following details :**

1	**Bank Account No.**	**0158101000975 (Saving)**
2	Beneficiary Name	**Association of Indian Universities**
3	Address	16, Comrade Indrajit Gupta Marg New Delhi – 110 002
4	Bank & Branch Name	CANARA BANK, DDU MARG
5	Bank's Address	"URDU GHAR" 212, Deen Dayal Upadhayaya Marg New Delhi – 110 002
6	MICR Code	110015005
7	Branch Code	0158
8	IFSC Code	CNRB 0000158
9	PAN NO.	AAATA0407F
10	Contact No.& E-mail ID	(011) 23230059 Extn. 208/213 **(M)** 09818621761 **E-Mail ID : publicationsales@aiu.ac.in**

NOTE : In case of **Cash Deposit** and **Transfer via NEFT/RTGS/ECS**, the proof of payment in the form **Counterfoil of the Cash Deposit Slip** and the **NEFT UTR Number** may be communicated IMMEDIATELY BY MAIL for linking and crediting of the same against the respective Order/ Bill, please.

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