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Factors Responsible for Deficiency of Quality in Indian Higher Education

Reena Agarwal* and Priyanka Maurya**

In ancient times, India was a '*Viswaguru*' and was a unique hub of higher education. Takshila and Nalanda and many other higher education institutions were the epitome of quality higher education. Their fame attracted foreign scholars from China, Korea, Japan, Persia and Indonesia etc. it produced eminent scholars like Charak and Susruta, Aryabhatta, Kautilya and many more who are known for their immense contribution in the field of knowledge. Today, India has third largest higher education system after USA and China but the reputation of it is deteriorating day by day. It is deviating from its initial enriched path. There are many factors which are responsible for this deterioration of quality in higher education in India.

Quantity *Vs* Quality

There is a dramatic increase in growth of higher education institutions. According to All India Survey on Higher Education (AISHE) 2018-19 Report, Gross Enrolment Ratio (GER) in higher education has been increased from 25.8 per cent in 2017-18 to 26.3 per cent in 2018-19. This data shows the achievement in quantity (numbers) of students and institutions of higher education but when it comes to quality it goes down. Quality of higher education reflects from the qualification of faculty, mode of teaching-learning, quality of research and the knowledge, skills and attitude attained by the pass-out students.

The quality of faculty members depends on the recruitment process. Though there is a minimum qualification set by the Government for the selections of teachers at higher level, yet higher education is not meant for minimum. It is for excellence or for one who can contribute to the institutions in some authentic way. It has been observed that candidates having minimum qualification get selected for the job through interview. No need to mention that the recruitment has been changed by the Government from time to time to maintain quality, still it needs some attention to pay. In Government and aided colleges teachers are selected through written examination followed by interview but in universities, recruitment of teachers is completely based on interviews which raises a question about transparency of the selection procedure. In private colleges the recruitment norms follow but selected teachers do not engage in work. This is another perspective which affects the quality of higher education adversely.

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Despite various innovative approaches to teaching and learning such as cooperative learning, blended learning and massive increase in Information and Communication Technology (ICT) the higher educational institutions are still adhering to the traditional methods of teaching-learning. It is observed that the teachers are either not acquainted with the use of these new approaches and ICTs or lack motivation to use them. Another fact is observed that the innovative approaches in curriculum (specially the curriculum of teachers' training) are not implemented. At present the new approach to curriculum transaction is learner centred. This approach involves self-regulation on the part of the learner and as a support system on the part of teacher. At higher level students are mature enough and one is supposed to possess higher mental abilities, so they require new approaches to learning where peer interaction and mental activity is involved. Only then, their higher mental abilities get exploited.

As far as quality of research is concerned an article entitled 'Indian research quality lags quantity' (economictimes.indiatimes.com) stated that there is an increase in the number of articles from India in peer-reviewed science and engineering (S&E) journals…….India accounted for 5.3 per cent (2018) of the global share of S&E articles up from 2 per cent in 2008. The quantitative increase is good but what matters most is its impact measured by the numbers of times an article has been cited and referred to. India's impact was about 1 per cent only. The factors responsible for low quality of research might be poor labs and equipment, poor library, availability of lots of sub-standard journals, focus on getting Ph.D. degree i.e. lack of motivation towards knowledge and innovation, lack of poor guidance etc.

One of the important aims of higher education is to prepare a workforce which is highly equipped with the upgraded knowledge, contemporary skills and favourable attitude so that they may contribute towards knowledge generation, creating innovation and rapid industrialization of the economy. It can also be said that higher education is responsible for enhancing higher mental abilities of students that make them capable to confront all the situations with relative ease. But the present situation is quite different. Kritika Sharma (2019) reported that by 2030 only 47 per cent of Indian school graduates will have the basic skills to be employable (as per UNICEF report titled GBC-Education 2030 skills score card). Again, the main reasons behind this situation are lack of quality faculty, rigid curricula, lack of field work knowledge, less emphasis on entrepreneurship, lack of exchange programs of students and lack of motivation in teachers as well as in students. Overall, there is more emphasis on documentation and decoration and less emphasis on teaching-learning. Teaching-learning has to be improved be bring desirable changes in terms of knowledge, skills and attitude.

Non-Academic *Vs* Academic Works

Academic and non-academic works are the essential part and parcel for the smooth regulation of any higher education institution. Any discrepancy may lead to chaotic situation. It requires an appropriate distribution of these works. There are separate staff specially appointed for academic and non- academic-works respectively. Teaching faculty appointed is responsible for academic activities like teaching-learning, evaluation, curriculum construction and its upgradation, research and extension work etc. Non teaching staff like Registrars, Controller of Examination Finance Officer etc are responsible for non-academic activities like admission, conduct of examination, declaration of results, finance etc. At present, higher education institutions appoint various teachers as coordinators and OSD (Officer on Special Duty) for admission and conduct of examination. It is observed that due to semester system and availability of variety of courses, the admission and examination work is going on throughout the year.

One important fact here is that University Grants Commission (UGC) has defined API (Academic Performance Index) scores for the recruitment and promotion of teachers at higher level. The guidelines for API have been issued by the Government of India as the Gazette of India on 18 July, 2018. As per guidelines, there are two categories. First category involves two types of work: one, teaching and the other is involvement in university/college students related activities/ research activities, etc. In the second category there are five types of works. First is research and paper publication; Second is publication of books/ translation of work in Indian or foreign languages; Third is creation of ICT mediated teaching-learning pedagogy and content/ development of new courses; Fourth is research supervision, research projects, consultancy; Fifth is patenting. Overall, there is more emphasis on academic work in comparison to non-academic work. Some teachers are permanently

involved in non-academic activities. This adversely affects the organisational climate of the educational institutions.

An organizational culture has decisive influence for the survival or fall of the organization (Hofstede, G. (1998). It is a primary component of functional decision making and it also determines employee's behaviour. In order to reach academic excellence, it is important for administrators (leaders), faculty and staff to understand the impact of prevailing assumptions and core values on departmental practices, cultural norms and outcomes (Saba Hussain & Dr. Parikrit Joshi, 2017). It is observed that the organizational culture of our higher education institutions is not much appealing. There prevails stress and unhealthy relationships among administrators, faculty members and non-teaching staff. There exists lack of co-ordination among these people. Colleagues manipulate each other. Very few are involved in decision making. Classes are not running properly. Rules are not followed strictly. All these things contribute to the deterioration of the quality of department and directly affects the objectives of higher education. Shahid Jameel (2018) stated that an academic culture thrives in an academic freedom and autonomy, excellence and meritocracy, academic conversations and strong respect for peer review. Most of these are missing in higher education institutions. The organisational culture of the educational institutions should be of equals and not hierarchical.

Theoretical Aspects *Vs* Practical Aspects

According to National Education Policy (2019) the main aim of higher education is to prepare a workforce which is equipped with, and capable of generating and promoting innovative ideas and work that enlighten individuals and help propel the country forward socially, culturally, artistically, scientifically technologically and economically. This aim can only be achieved if and only if emphasis is given on practical aspects of learned content equally. Sometimes the practical aspects get sufficient weightage in the syllabus along with the theoretical one. But it is not handled or transacted properly. Sometimes practical aspects and theoretical aspects are handled as they are separate entities and, in some cases, practical aspects are also treated as theory. So, the learner do get not benefitted. It has also been observed that students are acquainted with theoretical knowledge of concerned curriculum and show inadequacy in using this knowledge in practical situation which undoubtedly increased educated unemployment. The Employability Survey Report 2019 by Aspiring Minds revealed that 80 per cent of the Indian engineers are not fit for any job in the knowledge economy and only 25 per cent of them possesses tech-skills (by m.BusinessToday.in on 25 March, 2019). This report clearly represents the negligence of practical aspects of curriculum done in higher education institutions and their impact on attainment of objectives of higher education. Therefore, theory and practice should go side-by- side. More emphasis on any one aspect may not bring desired change in the learners. Theoretical and practical aspects should be knitted in the syllabus in such a way that while handling it can't be separated .It is quite unfortunate that at higher level most teachers consider taeching and research as separate entities and they do not practice their research findings while teaching.

Traditional *VS* Innovative Approach

In India, the higher education system follows the traditional approach to curriculum, methods of teaching and evaluation as well. As far as curriculum is concerned it is same as twenty years back. It emphasized mostly on theoretical knowledge. whatever practical aspects are there, it is just for formality and are of less relevance (ex- in teachers training programmes microteaching still exists though the new approaches to teaching-learning have emphasis on Constructivist Approach). Present curriculum intended to develop among learners the Knowledge domain and it less facilitate the Psychomotor and Affective domain. Provision of value education is there, but no good outcomes is seen. Though various options/ choices exist in curriculum but practically it is forced type i.e. one curriculum for all students. Extra-curricular activities are not much valued in the sense that they get no weightage in evaluation process, so the students don't take it seriously. The curriculum lacks interdisciplinary approach due to some administrative difficulties. Innovation in curriculum means that it must be designed in such a way that it empowers the students to confront the present as well as future circumstances. It must build competencies in students rather than making them as rote-learners.

The success of curriculum depends on the method of teaching adopted by the teachers and learners. Still higher education teachers follow teacher-centred

approach. Mostly lecture method is used which involves one-way interaction. Students remain passive. There is less emphasis on the individual differences among students. More emphasis is on completion of syllabus. Students abilities, previous knowledge is not valued. Innovative method of teaching-learning means that transaction of knowledge in such a way that it reaches to every student of the class. Higher education institutions do not have sufficient time and man-power to bring change in each and every student because they are more focussed on admission and examination

The present examination system is based on judging the rote memory of students and students are more emphasised on getting degrees. Evaluation system should be changed to assess the learner as a whole. Therefore, wholistic approach to evaluation such as formative-summative, continuous and comprehensive evaluation, self-evaluation plus teachers' evaluation, internal as well as external evaluation should be integral part of the higher education system.

Local *Vs* Global

Shahid Jameel (2018) in his article '*India's Universities are Feebling Away'* stated that the purpose of a university goes beyond the narrow idea of preparing one for employment. It prepares young men and women to meet life challenges, of which earning a livelihood is one. With the nature of work changing faster than ever before, universities must teach people to think, innovate and solve problems. Are Indian universities doing that? The answer is tilted heavily towards the negative. This statement clearly expresses that our Indian higher education system somewhere is not much capable of making human capital acquainted with global competencies. It is not that our institutions are not doing well but the effort needed in this area is not much commendable. Indian IITs, IIMs and other institutes of national importance are doing great job in this direction but what about the rest? There is silence all around. Students are not much updated with contemporary things in their respective fields around the world. Field based work is not given much importance and hence not able to develop qualities to handle real life challenges. Students are lacking creativity and problem-solving skills. Less co-ordination between institutions and industries. Students-exchange programmes are very limited etc. These problems can be handled effectively by proper use of Public Private partnership model. As it is known to all, most of the government institutions are always afflicted with financial problems and on the other hand, most of the private institutions are well equipped with basic infrastructure required for maintaining the quality of education but don't have great exposure and qualified faculty. If they cooperate and serve each other with their bests, many difficulties lying in the way of getting quality higher education can be removed to a great extent. Also, if different universities collaborate and promote the faculty exchange programmes then students will be able to get the knowledge of contemporary world and may be able to update themselves as per the global needs. But it is a matter of great despair that unclear strategies, lack of transparency, mismanagement and trust issues between public and private sector are the factors that weakens the idea of Public Private Partnership model.

Technical Skills *Vs* Soft Skills

Higher education produces experts in each area like--- medical, teaching, engineering, agriculture, etc. equipped with technical skills necessary to perform a specific job. Higher education system emphasizes more on technical skills than developing soft skills like--- good communication skills, critical thinking, creativity, decision-making, leadership skills, problem solving skills, etc. which turns students merely into machines with no feelings, which are necessary for the well-being of human society. Less development of soft skills in a student make them unfit for the society.

Teacher *Vs* Students (Ratio and Relationship)

The enrolment number has grown markedly during the last five years, which has increased from 3,42,11,673 in 2014-15 to 3,73,99,388 in 2018-19. The overall growth is 9.3per cent (p-33, AISHE 2018-19). It is obvious that number of students have been increased in higher education institutions but the number of teachers in these institutions are not much as required. As per AISHE 2018-19 report, Pupil-Teacher Ratio (PTR) in universities and colleges is 29 where regular mode enrolment is considered whereas PTR for universities and its constituent units is 18 for regular mode (p-iii, AISHE 2018-19). Economic Times in its article on 14 July,2019 reports that India's student ratio has turned out to be the lowest against Sweden's 12:1, Britain's 16:1, Russia's 10:1 and Canada's 9:1 (India's higher education student teacher ratio lower than Brazil, China by IANS, 14July, 2019,

m.economictimes.com). Faculty vacancies in public higher education remain high. Status of permanent faculty members are not adequate, most of the seats are vacant (Vikas Gupta, Dave Noone, Mahesh Kelkar and Neha Malik, 2019,). Due to the lack of permanent and well qualified teachers, students have to suffer a lot. Their classes are not being managed properly, practical and other activities are not properly executed which hinders the learning outcomes. Also, in private institutions, teachers are appointed on very low wages without fulfilling the criteria/norms for appointment of teachers which results in low quality teaching.

On the other hand, if one looks upon the teacher student relationship, it is not much cordial as before. Teachers work for salary and students study for degrees. Teachers works on a superficial level only and assume that syllabus completion is their only task whereas students think that they paid the fees and hence getting education/ degree is their right.

Infrastructure *Vs* Curriculum

Infrastructure is equally important as curriculum. Without having proper classrooms, laboratories, activity areas, playground etc. it is hardly possible to transact curriculum to the students in a real manner. AISHE 2018-19 (p-25) shows that 88 per cent of universities, 92 per cent of colleges and 90 per cent of stand-alone institution are maintaining playground. 94 per cent of universities, 98 per cent of colleges and 98 per cent standalone institution have library facility. 84 per cent, 81 per cent and 93 per cent are per cent ages of university, college and stand-alone institution that have facility of laboratory. In addition to this, health centre, computer centre, auditorium, conference hall etc. are also in place with most of the universities, colleges and stand-alone institutions. This reveals that most of the higher education institutions are well-equipped with infrastructure, but laying more emphasis on good infrastructure only and not on updating the curriculum as per global needs and requirement is not good for Indian higher education system. Insights from the 2019 Deloitte Dean's Summit report states that 64per cent of the Deans in our survey think that the absence of fresh curriculum is the challenge for Indian higher education system. This indicates the clear gap between the curricula of higher education and market demands which result in broad skills-gap in the students.

No need to mention again that curriculum which is being followed in higher education is same as twenty years back with a few minor amendments. In curriculum too, there are many flaws. N.K. Ahuja (2018) in his article pointed out that the syllabus of higher education courses in India is not able to give a clear picture of goals, purpose, human values and ethics. As a result, students are subjected to face problems like---lack of direction, contradiction in real life, conflict, insincerity, trust issues, stress, exploitations, violence etc. All these shortcomings of curriculum lead to an incompetent manpower that has degree only, not a good job, values, skills and innovative power.

Professional Ethics *Vs* Materialism

Professional ethics is associated with each profession through which one is able to differentiate between desirable and undesirable professional conduct and behaviour. It maintains the dignity of each profession. If the profession is related to education system then it bears a lot of responsibilities. But, in this era of modernization and globalization value system has changed a lot, people adopted materialistic approach neglecting the ethical practices related to their profession. Administrator at higher education institutions are not much concerned and aware with the issues related to the examinations, peaceful learning environment, appropriate playground, canteen, promotion of teachers and other staff etc. Teacher limit their duties with cognitive development only and don't show interest in all-round development of students which affect the quality of higher education.

Conclusion

Higher education system of a country plays a major role in deciding the status of nation at global level because they are much dependent on the qualities and capacities of students which are being produced by them. By 2030, India will have the largest workforce. In order to leverage the workforce, it is inevitable to minify the problems prevailing in higher education system of India. Government, policy makers, teachers, students and other stakeholders of higher education have to come together to make higher education system of India free of flaws and of high quality.

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Strategies to Unlock and Reopen Schools and Colleges in India Amidst the Pandemic: An Appraisal

Manoj Kumar* and Narinder K Sharma**

There's an utter need to devise some strategies to unlock and reopen schools and colleges in India. In other words, we need to charter an action plan to scientifically ensure the well-being and safety of the students while they attend their schools/colleges in the near future. What we need is a procedural mechanism (SoPs) that are crafted to the perfection for resuming operations in the educational institutions.

The COVID-19 pandemic has altered our way of living in this world, and it manifests a change that is sudden, gigantic, and pervasive. These are the testing times in the sense that the traditional ways of existing/thinking apparently mean less under the present circumstances. Accordingly, it has fuelled a lot of debate especially in the context of having a new model of living that is capable of winning over the challenges posed by the post-COVID world.

Emerging Scenario in Online Teaching Learning and Pedagogical Issues

Augmenting such a context into a debate that is currently dominating the Indian academic demography relates to a few serious questions:

I. Can education be automated in the country vis-à-vis the socio-economic fabric of the Indian society?
II. Are digital ways of teaching capable of substituting the age-old teaching-learning practices having a proven track record?

These are a few of the many questions that concern our stakeholders the most, especially the parents; therefore, sound analysis is of paramount importance *provided* we are able to come up with certain potent strategies to leverage the silver lining that lies eclipsed for the time being!

Indisputably, academia holds the key to cause a metamorphosis by re-configuring the available ways and means to cope with the challenges and also to create a blueprint for exploiting the latent opportunities. Society can never afford academia to stay dysfunctional or stagnant, and if it happens, it is likely to have a long-time catastrophic effect for society on the whole. The closure of schools/colleges is testing educational system's readiness and capacity to maintain student engagement and learning[1]. Therefore, academia must keep pulsating, and act as a resource for society under the prevailing circumstances.

It is pertinent to dismantle binary of conflicting views so as to develop a viable and pragmatic framework. We need an approach that is equally removed from two opposite extremes (traditional methods of teaching vs. digital ways of teaching) and offers *a middle path*. Interestingly, this middle path entails that automation of education has not to be at the cost of the quintessential modes of teaching-learning process; therefore, it is imperative that the educational institutions need to unlock and reopen so that a productive confluence of traditional and ultra-modern teaching practices may be established in the best interests of the Indian students. If the pandemic proves anything, it is that we need to abandon these false dichotomies and embrace a vision of higher education that takes advantage of all the ways students can learn[2].

It is worth re-iterating that automation cannot replace teachers, and it is perhaps somewhat reductionist and restrictive, if we think otherwise on the issue. Online classes have dominated during lockdown, but they certainly have some limitations and cannot substitute the classroom experience. We need to factor in subtle nuances of human connectivity—a fundamental feature of learning—signifying a mutuality of the teaching-learning experience for the tutor and student, besides receiving practical knowledge. Observation, experience, direct/immediate situatedness in the learning environment are some of the hallmarks of quality education in the Indian context. There's no denying the fact that technology can prove to be a great facilitator for the purpose; however, it shouldn't be viewed as a replacement of

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the institutionalized ways of teaching and learning. Furthermore, it is perhaps somewhat utopian to think that all students have their own e-gadgets with an uninterrupted access to broadband/mobile internet.

Strategies to Safely Reopen School & Colleges

It is imperative that education providers must gear up now, and start thinking innovatively. The parents shouldn't be paranoid about reopening educational institutions, but rather work constructively with government and academia to ensure that these institutions are supported in the best possible manner during these testing times. We all need to be on the same page in order to save our education system from the deadly virus, lest it may not infect us beyond repair!

It is an established fact that discipline is a defining trait of schools and colleges, and thus these institutions can definitely work with a reliable preparedness to deal with the post-COVID situation. Having said that, the key idea is preparedness and this is what we need to concentrate on at the moment.

What we need is a procedural mechanism (SoPs) that is crafted to the perfection for resuming operations in the educational institutions. As our thoughts move towards recovering from COVID-19, we must create a more resilient system that that ensures the health and safety of all people. We must make sure that we are stronger in the face of the challenges to come[3].The following points highlight some of the salient features of such a scientific mechanism:

a. Safety for self/family at home, during transit, and the institutions are the fundamental tenets to beat the virus, and to make possible the dissemination of quality education. Physical distancing and personal/collective hygiene must command the contemporary lifestyle. The students/employees must prepare a personal hygiene kit before they step out which must include a face cover, hand sanitizer, hand soap, gloves, toilet seat sanitizer and tissue papers and water bottle. Water and hygiene facilities will be a crucial part of schools reopening safely. Administrators should look at opportunities to improve hygiene measures, including hand-washing, respiratory etiquette (i.e. coughing and sneezing into the elbow), physical distancing measures, cleaning procedures for facilities and safe food preparation practices[4].

b. To ensure physical distancing norms, the institutions shall work in shifts, split the classroom (odd-even classes) with the provisions of face to face (F2F) and technology-enabled teaching practices (online and offline classrooms) on alternate days so that both the methods benefit students in the best possible manner. Fixed classroom seating should be used to avoid the sharing of physical space in a class room environment with the peer students. Institutions should also facilitate physical distancing along other areas in the premises viz. entry gate, reception, admission desk, labs, library, hostels, canteen, mess, etc.

c. The teachers and staff must be tested for COVID-19 and only staff with the negative test should be allowed to enter. Aarogya Setu app is of pivotal importance for screening and monitoring of staff and student's health. The institutions may develop an in-house app or means to track and record movement of the all stakeholders as well as regular visitors.

d. Non-contact body temperature scanning be made mandatory coupled with the provisions of hand sanitization at the entry gate using a sensor based tap/elbow-pressed liquid soap holder. Infrared forehead thermometers may be provided at each hostel entrance and resident students be checked while entering and going out without fail. In addition, there must be a provision of placing sanitization mats at the entrance to disinfect the shoe soles of the students/employees/visitors. There must be regular sanitization of all common areas and touch-prone areas in the campus. In fact microbial films and coatings can be used which don't allow any bacteria or viruses to infect. Further, the stakeholders must wear three layered/ standard face masks in the campus.

e. Employees may be divided in shifts using alternate day rosters with staggered shift start-end timings with no overlap between shifts providing a cushion of an hour for disinfection, and there should be decontamination of common use areas in every shift.

f. Use of self-transport should be encouraged and the students/employees may be asked to avoid bike/ car-pooling. Accordingly, students/employees be motivated to avoid public transport/physical meetings. If unavoidable, attendees must follow social distancing norms and keep sanitizing/ washing their hands every few hours.

g. Air Conditioners may be used with the temperature range of 24-30°C with the humidity level between 40-70 per cent , keeping at least one window open for proper ventilation.

h. The educational institutions must review, update, and implement emergency operations plans (EOPs) in collaboration with local public health departments, the affiliating university system, and other regulating agencies. Further, the students with history of chronic diseases need to be identified and be exempted from physical attendance.

i. It is imperative to implement social distancing strategies inside the classrooms and Labs by way of increasing the space between desks to maximize gap between students. It is important to turn desks to face in the same direction (rather than facing each other) to reduce transmission caused from virus-containing droplets. Fixed sitting arrangement of the students be practiced to ensure well-being and safety of the students.

j. The institutions need to develop a clear visitor policy containing some rigid conditions. The intuitions shouldn't allow meetings in personal cabins; rather, conference halls or larger places may be used for the purpose. All visitors must follow the guidelines on physical distancing and personal hygiene; they must be thermally screened and sanitized at the entrance. They must provide information regarding their medical history, contact details, and a reason for visiting the campus.

k. The intuitions must not risk coming in contact with papers that other people may have handled. It is better to scan and send important documents instead of moving files manually. Further, there must be a well-defined mechanism for undertaking sanitization audit on periodic basis.

Conclusion

The preceding discussion highlights that schools and colleges are the spine of our societies and economies in the sense that without educational institutions, parents can't work and children are being denied a precious learning time and, ultimately, a piece of their future. Students need to go back to classrooms and life must go on. The educational institutions must fulfill their important role in changing the foundations of society and the economy[5]. Therefore, it is imperative that the education institutions must unlock and reopen so that a productive confluence of traditional and ultra-modern teaching practices may be established in the best interests of our students and society.

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National Education Policy–2020: Providing Roots and Wings to Indian Education System

Akshita Bahuguna*

We have been hearing the glitzy vocabulary like innovation, design thinking, multidisciplinary approach, flattened system of subject choice and many more. While presenting research papers we have all these in the presentation but when it comes to ground zero there is actually a vacuum. Neither trained teachers nor pedagogy, neither curriculum nor ecosystem substantiate the research or the presentations so made. If we try to go beyond school education into other arenas, especially professional education, the situation is not better even there. Rather, it has been worse. The National Education Policy(NEP) 2020 tried to address all these issues and many more.

It takes grit to put a policy document in public domain and explore the opinions of all the stake holders. The design thinking approach has been applied to collect the inputs for designing the final layout of the National Education Policy(NEP) 2020. As a result of this industrious work of gathering the inputs from ground zero, the Policy has become the most democratic policy incorporating all the essential points keeping in view the needs of all.

The extensive exercise by the Education Ministry (Erstwhile Ministry of Human Resource Development) to invite recommendations on draft NEP-- 2019 resulted in formulation of a policy that provides wings to fly high in this scientifically and technologically interconnected world. World that claims to be liberal and integrated in terms of science, society and economics. The NEP has left no stone unturned to provide academic, social, psychological and cultural roots for the holistic development. Foundational Literacy and numeracy tries to provide academic roots. Social and cultural roots are also covered by working on promotion of Indian Languages, Arts and Culture. This involves establishment of academies for each language, Indian Institute of Translation and Interpretation (IITI), scholarships for young people to study Indian Languages, Arts, and Culture.

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The National Education Policy (NEP2020) endeavours to touch all the stakeholders of education in different stages of education. Whether school education, or higher education; whether administration or regulation; research or teaching, all are covered in these five pillars ---Access, Equity, Quality, Affordability and Accountability ---- envisioned in the policy. These five pillars embrace all stakeholders and provide solutions to the issues of each of them with equal emphasis and responsibility. The vision with which school system is redesigned from 10+2 to 5+3+3+4 system, which is more conducive to psycho-academic growth of a child is much appreciated. The prominence on foundational literacy and numeracy is complimented with broadening of research based education and inclusion of research in four year undergraduate program. Further multidisciplinary approach in education and Integration of value based education with 21st century skills strengthened the value system and endeavours to shrink the stress of living and earning the living in the VUCA world (VUCA is an acronym used for volatility, uncertainty, complexity and ambiguity).

NEP facilitates holistic life to the students by providing the wings of requisite modern skills of 21st century right from class 6th. The inclusion of skills like machine learning and artificial intelligence would definitely equip students with tools of myriad skills to combat VUCA world and be prepared with certainty for uncertainty. This will definitely prepare entrepreneurial mind-set and set the grounds for opting or reduce the risk of opting entrepreneurship in future. This is a step in the direction leading to *Atmnirbhar* Bharat or self-reliant Bharat. *Atmnirbhar* Bharat is a scheme of capacity building to develop tools and techniques for socio-economic growth and scientific and technological ecosystem in a holistic manner where India will not depend on other nations for physical products or processes. The approach where India is self sufficient in terms of raw material, technology, and finished products. It resonates with Gandhi ji's self-sufficient village economy where he believed that self-sufficient village will give rise to self-sufficient state

that would eventually make self-reliant nation. NEP replants the vision of self-sufficiency and would assist unemployed youth to find employment through a self-sustained skill-based model through professional and skill based education.

The allegation on education system that it promotes and supports only rote learning and does not recognizing the vivid learner who reads and learns beyond school curriculum will definitely be pushed back into times by the introduction of Academic Bank of Credit (ABC). ABC would be advantageous for self-learners and true hard workers will stand out in their relevant fields of interest. Not only would this help them get credits in their degree but also implement these for livelyhood.

Unidirectional approach of Internationalization of education where Indian students went to study abroad has also been focussed in the Policy and a multidirectional approach of inviting students from abroad to study in India and letting global universities to establish their campuses in India has also been mooted. Besides these, the collaborative research and faculty exchange programmes would help student's get international environment and exposure in native land and grow as global citizens within the premises of our own motherland.

Dropout rate is yet another pain in the system that we have been trying to work on. The ambitious programme to assist them come back to education system by improving infrastructure and pedagogy is also expected to provide wings to many who couldn't continue education due to myriad socio-economic or learning related reasons. The effort to improve Gross Enrolment Ration (GER) containing dropout, emphasis on multidimensional approach in higher education and innovative research will lead towards boosting the national economy.

Stringent rules and multiple affiliating systems was again an issue raised by administrators and management of education system. The affiliations, assessments, accreditations or recognitions have been more input based (based on infrastructure, number of faculty, enrolments, etc). The 'Light but tight ' regulatory system is expected to be more of output based and will not let educational institutions play with it, ensuring quality education. The quality education system comprises of roots of learner centric education system providing value along with wings of efficiency that would prepare the future citizen of the country. Rashtriya Mulyankan Kendra which will provide a common assessment system across all boards will set equality of learning outcomes and remove the hesitation of village students or tribal students or students of socio economic and disadvantaged groups. These initiatives go along achieving the 17 sustainable goals defined by United Nations. Goal—4 to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, seems to be envisioned in the policy and the NEP seems to reflect the commitment of Indian Government to achieve these goals by 2030.

The narrow approach of streams within education and consideration of science as best, divides the students into segments of more and less intelligence where Arts students feel inferior to science students in the same grade. Flexibility in the choice of subjects and elimination of streams will not only build the intelligence and confidence of non-science students but also reduce the stress of board examinations. The biannual boards will definitely build the stress free educational ecosystem.

The country with population greater than 1.3 billion looks like an ocean of people . It has many islands of excellences. The need for creating Archipelagos of Excellence is well addressed in the policy that envisages to invite volunteers from the community, make cluster of schools, special educational zones in difficult areas, etc. The participation of the community in the educational ecosystem is predicted to strengthen the cultural roots of education and developing values in Education. The policy is trying to meet the needs and fill the gap caused by declining traditional value system and emotional quotient in this direction.

Technology has gradually entered our life to a great extent. Yet, a few gaps are seen when it comes to education sector as technology was less explored and lesser implemented in teaching. Though a few areas of administration were partially converted to technology enabled but 100% acceptance is missing. The unprecedented uncertainty caused by COVID 19 looked like blessing in disguise for enabling and accepting technology as the only option for education. Right from digital libraries, digital content, digital pedagogy and classrooms and online teaching and

learning and even assessment all became online during this period. Besides these, the full-fledged use of technology in every stage of working of education system i.e. Education Planning, Teaching, Learning & Assessment, Administration & Management and Regulation - Self Disclosure & Minimum Human Interface will bring acceleration and efficiency in terms of time, energy and money yet maintaining the quality of education while ensuring access and inclusion for *Divyang* and disadvantage group.

To bring the best minds to the field of teaching motivation has been missing all these days as the opinion of people for teaching was not so good. Viewpoints like 'Good for women', 'half days work', 'nothing but just teaching, 'any body can teach' make teaching a lesser important profession. NEP tried to elevate the level of profession of teaching. NEP has widened the scope of Teacher Education by bring it under the domain of higher education. Leadership training for teachers is yet one more motivation that would bring the respect and trust for teachers and motivation to opt teaching as a career option. Finally, the gradual phase-wise elimination of standalone Teacher Education colleges and conversion to multidisciplinary colleges is definitely going to boost the career from vocation to profession.

The Policy will fructify with proper planning and implementation at the ground zero level. This will be possible only with the cooperation and collaboration of all. ❑

Indira Gandhi National Open University: Its ICT Based Library and Information Services

Chinmay Mukhopadhyay* and Sougata Chattopadhyay**

In higher education system library plays a vital role in disseminating information and knowledge to the user community – be it traditional teaching learning mode or distance mode. In the present day context of rapid growth of Information and Communication Technology (ICT) libraries of higher learning institutions are delivering more and more web based services to its clientele than before.

The higher education system in India has encountered a paradigm shift during last three decades what can be seen through its mode of delivery system. Earlier this higher education system was totally confined only within on-campus basis. Now it is within the reach of the pupils who are not capable of following on campus system. With the introduction of the off-campus based learning system the higher education is now free to access for a vast community of learners. Obviously ICT plays a vital role in distributing learning materials to the learners. Library and information system should also accept this ICT privilege in dissemination of knowledge.

Distance Education Bureau (DEB), however stresses on sufficient building space for housing library materials, its storage and dispatch for the use of the learners and counsellors. With the technological growth, the concept of physical and tangible presence of library materials has been changed; it is now a feature of every open and distance learning institution to provide its users paperless library services in an efficient and attractive way.

IGNOU was established by an Act of Parliament in Sep 1985. IGNOU has twin roles of being a National Open University and an apex body for the initiation and advancement of open universities and distance education systems in India. The present paper deals with information and communication technology based innovative library services of Indira Gandhi National Open University (IGNOU).

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Impact of ICT on Library Services in ODL System

The impact of implementing ICT in library services for ODL system is perceived greater than in library services for conventional teaching learning system because of user's far-off access feature. To save valuable time and to perform various library related works within a limited period, the advent of ICT is the most effective tool. With the use of ICT service delivery process of library resources are very fast, they can reduce the physical and spatial barriers to library and information services. Recently almost all the libraries are using electronic communication technology as the gateway to contact with students. Distant library users are able to access online public access catalogue (OPAC), full text database and many more digital services. Librarians working in ODLIs can easily satisfy the need of distance learners and also other academic fraternity of such institutes.

Major Library Services using ICT provided in Open and Distance Learning System are as follows:

- Digital Reference Services
- Bibliographic services through Web OPAC and Single Window Search facility
- Gateway to institutional repositories
- Database of TEE (Term End Exam) Papers
- Document Delivery services
- Library Website based services
- Access to full text e-journal, databases and electronic resources
- ILL facilities
- Web-based tutorials
- M-Library Services
- Social networking based service
- SDI services, Content Alert Services (CAS)

IGNOU Library and Documentation Division (LDD)

IGNOU serves the educational objectives of more than thirty lakh learners in India and abroad through 21 Schools of Studies and 67 Regional Centers around 2,667 Learner Support Centers and 29 Partner

Institutions in abroad. Library and Documentation Division has a hierarchical set up having the Central Library at the top with Regional Centre libraries and Study Centres in the subsequent flow.

IGNOU Library has the largest volume of resources in India for distance education arena. The library collection includes 1,43,981 books, 260 theses, 2,443 course materials, 4,160 CD-ROMS, 17,757 microforms. 12,284 bound journals etc (as on 31st March 2017) The Central Library offers facilities like: Digital Reference Service, Circulation Services, User Guidance and Awareness service, Online Public Access Catalogue, Online Database, E-Journal access facility.

IGNOU Library subscribes to a number of e-resources. The major e-journals and databases are from ACM Digital Library, EBSCO, JSTOR, Nature, OUP, Sage Journals, ProQuest, Springer, J-Gate, IEE e-books etc. The library also provides remote access to its e-resources for students, faculty and academic staff members.

ICT Based Library Services Provided by IGNOU Library

M-Library Services

The IGNOU Library is offering provisions for m-library services such as Web OPAC, RSS feeds, m-Blogs, login facilities to institutional repositories, e-resources etc at the reach of its user community.

National Open Distance Learners' Library and Information Network

National Open and Distance Learners' Library and Information Network (NODLINET), an IGNOU endeavour, has a nationwide coverage for distance learning libraries. It helps in sharing resources. The network is available 24 X 7 to facilitate access to online electronic resources for authorized members of the NODLINET network.

Remote Access to E-Resources (RATE Service)

User community of IGNOU at Central Library and Regional Centers with the help of remote authentication facility (off-campus learners) may obtain library's licensed electronic resources which is known as Remote Access to E-resources (RATE) service. For the purpose of advanced learning and research, teaching and personal study, both on campus and off campus learners of IGNOU library would be capable to obtain RATE service 365 X 7.

A-to-Z Service

A-to-Z service is a fast and convenient service for listing of IGNOU library's e-collection in full-text form. The integrated e-journal table of contents (TOC) browsing enables A-to-Z one-stop location to access subscribed e-journals.

Resource Sharing Services Using DELNET

The library is a member of Developing Library Network (DELNET). It offers services such as ILL (Inter Library Loan), DDS (Document Delivery Services), Union catalogue surfing facility etc.

Institutional Membership Services

IGNOU Library has membership of British Council Library (BCL) New Delhi, Indian Library Association (ILA), New Delhi and Indian Institute of Public Administration (IIPA), New Delhi. The registered members can avail reference, reading and lending services (through ILL) from these Institutions.

Single Window Search to Library Resources

The library provides single window search facility for students, faculty and employees for a quick access to exclusive IGNOU library resources and services, electronic resources and library catalogue in an exhaustive manner.

Institutional Repositories (e-Gyankosh)

IGNOU has developed e-Gyankosh, a National Digital Repository. Under this repository the entire study material of different courses has been digitized and made available to the IGNOU students through e-Gyankosh. At present the repository has 40,736+ documents. This library is planning to build repositories on special collections, photos and also publications of faculty members.

SDI Service

IGNOU Library provides its academic staff members with the content pages of periodicals to promote Selective Dissemination of Information. User specific bibliography is also sent to the user on demand. Through the help of e-mail service users are introduced with new arrivals and e-resources currently subscribed.

Assisted Technologies for the Disabled Student

The library has also taken some initiatives for physically disabled user community. The library has

already procured the software like MAGic (screen magnification software), Braille embosser and scanner, Kurzweil (Braille translation software) etc.

QR Codes

Quick Response (QR) Code, a matrix barcode, is now very popular in library field. This code can be scanned by smart phones and thus it gives link to the corresponding URL etc. In case of URL, the mobile browser will lead the users to the respective website with the help of active internet connection. IGNOU Library uses this technique for browsing library shelves area or periodical section for getting access to online e-version of printed aspects or similar subject guides. It uses this QR Code in video tutorials that are connected to YouTube via mobile applications.

Location Based Applications Mobile Augmented Reality

Mobile augmented reality application is in the pipeline in the library for increasing the scope of scanning physical book shelves, OCR, library navigation, facial recognition etc. Using this application subject of book stack is identified by app index and displayed on interface. Suggestions for procuring library materials are brought onto interface on real-time basis.

Conclusion

The scope of Higher Education in developing countries like India is enormous. To cope with this the quality of higher education needs to be improved here library services will also be fine-tuned specifically for open and distance learning system. The products of open and distance learning system will have the power to 'manifest their perfection' in the real world of complexity where unemployment looms large. So policy makers of our country should think on the education for sustainable development as we have to transform the status of our country from 'developing one' to 'developed one'. Population of our country is exponentially increasing; this vast human resource must be mobilized to add value to our economy in such a way that unemployment problem can be reduced to a minimum level. For this Indian Higher Education System is giving thrust on the facets of modern time issues such as entrepreneurship education, vocational education, women education with emphasis on women empowerment. ICT based library and information services obviously supplement this education system. As IGNOU is now the largest university in India in the field of open and distance learning system, its library has to be equipped with the features of ongoing ICT development to play a greater role in the horizon of Indian Higher Education System.

Acknowledgement

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Leprosy Eradication Mission : Some More Miles to Go

Ram Nath Kovind, Hon'ble President of India delivered the Presidential Address on the occasion of Presentation of International Gandhi Awards for Leprosy at Rashtrapati Bhavan on February 06, 2020. He said, ''More than the medical condition, the social stigma attached to the disease persists and this is a cause for concern. We have to become aware and educated on this disease and its different dimensions, and spread that awareness among our communities. We need to empower those who have been discriminated on account of leprosy through advocacy and information dissemination. I am very sure that with determination and clear focus, we shall surely win the battle against leprosy." Excerpts

I am happy to welcome all of you here in Rashtrapati Bhavan on the occasion of presentation of the International Gandhi Award for Leprosy. This award is special because it commemorates and reminds us of the compassion that Gandhiji possessed and service he rendered towards people afflicted with leprosy. This award recognises the work of individuals and organisations who have worked tirelessly to fight this disease and the prejudices associated with it.

I extend my heartiest congratulations to the recipients of this award for year 2019. Dr N. S. Dharamshaktu has been recognised today for devoting several years of his life in the cause of fighting Leprosy. Similarly, the Leprosy Mission Trust India, has been working with and for people affected by Leprosy for over a century. Both these awardees deserve great appreciation for their service to this cause.

I also compliment the Gandhi Memorial Leprosy Foundation for instituting the International Gandhi Award for Leprosy. Ever since its establishment in 1950, this Foundation has done pioneering work to eradicate the disease and to erase the stigma associated with the disease.

We are celebrating the 150th birth anniversary year of Mahatma Gandhi, whose compassion for patients of leprosy was exemplary. He understood the social dimensions of leprosy and worked relentlessly to reintegrate patients into the social mainstream. And we must remember, Gandhiji worked for the cause of Leprosy patients at a time when ignorance about the disease was widespread and prejudices against those suffering from it were extremely rigid. Gandhiji led by example – often tending to leprosy patients personally.

The Gandhi Leprosy Memorial Foundation and many of you are associated with Wardha. Last year, I had the privilege of visiting Gandhiji's Sevagram Ashram. Not far from there, Baba Amte anchored his social reform movement, to provide care to leprosy patients and hope to the underprivileged. Gandhiji began his Leprosy program at the Ashram. He included the cause of Leprosy patients in the 18-point Constructive Programme which was his framework for the India of his dreams.

In our fight against Leprosy, we have achieved a lot over the years. We have successfully accomplished levels of leprosy elimination defined as less than one case per ten thousand population. Further, the stigma and prejudice against leprosy has reduced considerably, thanks to the constant work of scientists, researchers, organisations and community workers. However, we cannot let our guard down. New cases continue to occur and highburden pockets of the disease do exist.

The major challenge in leprosy control activities lies in sustaining the same level of focus and commitment especially in low-resource settings where equity of access is an issue. We need to intensify our efforts towards early detection of leprosy cases, provide equitable access to appropriate treatment and provide integrated leprosy services in the geographically focused areas.

We must recognise all those who contribute to this cause. Last year, I had the privilege of honoring Mr Yohei Sasakawa of Japan with Gandhi Peace Prize for his efforts to eliminate Leprosy in India and work for welfare of Leprosy patients. We also recognized. Shri Damodar Ganesh Bapat with Padma Shri in 2018 for his work among Leprosy patients in Chhattisgarh.

While, Governments, healthcare system and different organisations are all working to ameliorate this situation, each one of us also has a role to play. I have also been associated with the work that one such organisation, Divya Prem Seva Mission based in Haridwar has been doing among patients of leprosy and their families. More than the medical condition, the social stigma attached to the disease persists and this is a cause for concern.

We have to become aware and educated on this disease and its different dimensions, and spread that awareness among our communities. We need to empower those who have been discriminated on account of leprosy through advocacy and information dissemination. I am very sure that with determination and clear focus, we shall surely win the battle against leprosy.

Thank you,
Jai Hind!

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Faculty Development Programme

A two-day Faculty Development Programme on 'Innovation of Teaching and Learning Methods' was organized by The Internal Quality Assurance Cell (IQAC), Srimath Sivagnana Balaya Swamigal Tamil, Arts and Science College, Mailam, Villupuram, Tamil Nadu, recently. The purpose of the event was to motivate the faculty members to innovative their teaching and learning methods and also to publish their research work in the UGC Care listed journals, to know about Predatory Journals and ameliorate their Knowledge in citation analysis and databases, to aware the issues related to plagiarism, young generation learners and challenges and to learn e-content development of teaching learning process. About eighty participants from Pudhucherry and all over Tamil Nadu from various Institutions and Departments actively participated and honed their Knowledge. The College Principal, Dr. S Thirunavukkarasu welcomed each and everyone who directly or indirectly involved in organizing the Faculty Development Programme.

The Inaugural address was delivered by Sivathiru. Rajiv Kumar Rajendran, Secretary, SSBSTAS College. He spoke about the importance of the Programme and instructed the Faculty Members to get adopted and nurture their teaching level with technical advancement. The Presidential address was delivered by Holiness Swami Ji Sri Sivagnana Balaya Swamigal, Chairman of SSBSTAS College. He emphasized on the 'Role of Teachers' and advised all the Teachers to equip with updated technology related to teaching and learning, and act as a sculpture in shaping the students (Young Generation) to face the competitive world through their value based education system. He compared the innovation of various countries with India. He clearly explained that the reading and writing skills will improve the knowledge and it will lead to forming a good society. He also added by saying that the topic of the event was very effective and essential to the current situation in the country and appreciated the effort taken by Dr. P Ramkumar, Programme Organizer and Librarian of SSBSTAS College.

The Keynote Address was delivered by Dr. Siva Pon Ambalavanan, Principal, Siddhar Sivaagnani Arts and Science College, Bommayapalayam, Puducherry. He highlighted on three components – 'To Study, To Write and To Express'. He clearly explained that the reading and writing skills will improve the knowledge which will lead to form a good society. These components will ruin the barrier of teaching which will enrich the knowledge by enlightening their flawless teaching and learning.

During technical session, Prof V Nagarajan, Director, Mind Scaping Academy, Puducherry delivered a lecture on 'Personality Development in Leadership Quality'. His enthusiasm for the topic really showed through his lecture and helped engage all faculty members in learning on personality enhancing through leadership quality, his task based activities like mind mapping, brain storming, all three minutes speed test, motivated all the participants by providing optimum learning of the topic.

Dr M Vijayasarathy, Assistant Professor, Department of Philosophy, Madras Christian College, Chennai spoke on the topic 'Intervention of Psychology in Understanding Class Room Space :A Critique on Technology'. He highlighted on 'Classical Conditioning, Motivation Orientation, Freud's 5 Stage of Psycho Sexual Development'.

Dr. P Suresh, Associate Professor, Department of English from Vels Institute of Science, Technology and Advanced Studies (Vels University), Chennai shared his experience with all faculty Members on 'Gen-Y Learners –Challenges and Strategies' and defined different type of learners and their characteristics and learners' challenges, he also insisted on Teachers' Equipments and Instructional Strategies and Approaches. The Vote of Thanks was proposed by Mr. V Vedhachalam, Head, Department of English. He immensely thanked Holiness Swami Ji, Secretary, Principal and IQAC of SSBSTAS College for Organizing informative and educative sessions with eminent resource persons from various Universities and Institutions.

On the next day, Dr. P Ramkumar welcomed everyone and gave a nutshell introduction about

the Resource Persons and he shared his opinion on technology enabled learning and its vital needs to the participants. The first Session of the Day was handled by Dr. V Shanmuganeethi, Associate Professor, Head I/c, Computer Science and Engineering, NITTTR, Chennai. He delivered a Lecture on 'e-Content Development, Technology Enabled Teaching Learning Process' online courseware, hypertext minds: qualities, golden angle of three learning questions like instructional questions, assessment questions and alignment questions and critical thinking skills with tools of education.

Mr. J Arumugam, Librarian, PSG College of Technology, Coimbatore spoke on 'Research Indicators and Predatory Journals'. He explained the Impact Factor (IF) and citation analysis role in various accreditations bodies like NAAC and NIRF. He also demonstrated the citations databases such as Web of Science, Scopus and Google Scholar-UGC Care List journals. He also explained how the Impact Factor, h-index, i-index was calculated. He gave awareness about the consequence of Plagiarism. He stressed the Faculties to avoid plagiarism while conducting their research work. He also added about the basic ethics in publishing papers for the research world. He explained the guidelines followed by the UGC.

The feedback from the participants was collected and the collected feedback forms was evaluated by Dr. S Thirunavukkarasu and suggestions collected from the participants were considered by him. He also delivered the valedictory address by narrating Dr. A.P.J Abdul Kalam's conversation with the faculty members by describing the lack of innovation, creativity in teaching and learning methodology and how it can be improved.

During Valedictory Function, Dr. S Thirunavukkarasu welcomed everyone and appreciated all the Resource Persons for their excellent presentations and transformation of knowledge. Report of the event was presented by Dr. C. Anuradha, Head, Department of Computer Application SSBSTAS College. The Certificates were distributed to the participants at the end of the session.

Dr. U Sivasubramanian, IQAC Coordinator, SSBSTAS College proposed the Vote of Thanks. He individually thanked Holiness Swami Ji for his blessings and guidance, he thanked College Secretary for his support and encouragement for fulfilling the requirements and he thanked College Principal for his energetic and moral support and for making the programme a very grand success and he thanked all the resource persons for their powerful transformation of knowledge. Also, he congratulated the participants for their patient and keen observation throughout the sessions of the event. The Programme was concluded after the National Anthem.

Programme on Strategic Human Resource Development for Competitive Advantage

A One-week Quality Improvement Programme on 'Strategic Human Resource Development for Competitive Advantage' is being organized by Department of Humanities and Social Sciences, Indian Institute of Technology Kharagpur during November 16-22, 2020. The Faculty teaching in AICTE approved institutions and interested in HRD activity of students and teaching of HRD course may participate in the programme.

The QIP sponsored programme on Strategic Human Resource Development for Competitive Advantage is aimed to develop an understanding in designing strategic HRD system and its contribution in organizational performance. This course offers a mix of theoretical and case based practical hands on approach to understand the dynamics of strategic HRD. It will provide a comprehensive understanding of strategic issues in human resource development, its alignment with business activities and linking it with performance that can better equip people to plan, teach, and research in the area of strategic HRD, and also for executives who are responsible to design , develop, and execute effective HRD system in their organizations. The Contents of the programme are:

- Theoretical and Practical Models of SHRD.
- Defining Strategic HRD and its Characteristics, Traditional and Strategic HRD Systems.
- Aligning Strategic HRD with Business, SHRD.
- Role of Line Managers, HRD Professionals.
- Developing Strategic HRD Systems and Practices Culture and Strategic.
- HRD Knowledge Management and Strategic HRD Factors Facilitating and Enabling Strategic HRD in Organizations.

- Linking Strategic HRD, Learning and Change.
- Case Studies, Assignment and Presentations.

For further details, contact, Principal Co-coordinator, Dr. KBL Srivastava, Department of Humanities and Social Sciences, Indian Institute of Technology Kharagpur-721302 (West Bengal), Phone: +91-3222-283624, E-mail: *kbls@hss.iitkgp.ac.in.* For updates, log on to: *www.iitkgp.ac.in*

Online Short Term Course on Sustainable Construction Practices

A One-week Online Short Term Course on 'Sustainable Construction Practices' is being organized by the Department of Civil Engineering, Indian Institute of Technology, Indore during October 12-18, 2020. The event is sponsored by Quality Improvement Programme, AICTE, New Delhi. The course is mainly organized for the faculties of engineering and polytechnic colleges approved by AICTE.

Growing environmental concern arising from construction activities has made concept of sustainability essential for professionals and researchers. Sustainable Construction Practices include but are not limited to use of alternate raw materials, construction using indigenous products, reduction of wastage, efficient building plan design and use of green construction techniques. The course aims to expose the environmental challenges associated with construction industry, and their management through the use of sustainable construction practices. The course will cover the use of alternate/green materials, green construction techniques, Life Cycle Assessment, circular economy, GRIHA and Building Information Modeling. The Contents of the Course are:

- Sustainability in Construction.
- Waste Utilization as a Construction.
- Material Use of Green or Bio-materials.
- Role of Building Products in.
- Sustainability Green Buildings and Their Design.
- Sustainability Assessment Methods.

For further details, contact Course Coordinator, Prof. Sandeep Chaudhary, Professor, Department of Civil Engineering Indian Institute of Technology Indore- 453552, Phone: 0731-2438700 (O) Extension: 540, E-mail: *schaudhary@iiti.ac.in.* For updates, log on to: *www.iiti.ac.in/event.*

Online Workshop on LaTeX for Engineers and Researchers

A five-day Self Sponsored Online Workshop on 'LaTeX for Engineers and Researchers' is being organized by the Department of Chemical Engineering, Maulana Azad National Institute of Technology Bhopal Madhya Pradesh during November 09-13, 2020. The event is open to the faculty members, UG, PG and Ph.D. scholars.

LaTeX is a document preparation system which is effectively used in many scientific fields like Mathematics, Statistics, Computer Science, Engineering, Chemistry, Physics, Economics, Linguistics, etc. to produce high quality documents, like articles, books, dissertations, technical reports, etc. It is an essential, powerful and open-source system that provides numerous facilities for automating typesetting of the document. The Contents of the event are:

- Basic Tools for Formatting Texts.
- Handling Different Types of Documents.
- Document Layout and Organization into Different Sections, Subsections, etc.
- Writing of Complex Mathematical Formulae.
- Systematic Management of Tables, Figures and Images.
- Conversion of Latex Mathematical Formulae into MS Word Formulae
- Error Messages and Their Rectification.
- Bibliographic Database Collection and Citation Using Different Tools and Techniques
- Presentation Using Beamer.
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For further details, contact Dr. Pushpendra Kumar, Assistant Professor, Department of Mathematics, Bioinformatics and Computer Applications, Maulana Azad National Institute of Technology Bhopal-462003 (Madhya Pradesh), Mobile No: +91 9759720891, E-mail: *pkumarfma@manit.ac.in* **or** *lerworkshop2020@gmail.com* For updates, log on to: *https://sites.google.com/view/ler2020/home.* ❑

THESES OF THE MONTH

SCIENCE & TECHNOLOGY

A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of August - September, 2020)

AGRICULTURAL & VETERINARY SCIENCES

Agronomy

1. Ranpariya, Vatsal Sanjaybhai. **Effect of nutrient management through organic sources on yield and quality of garlic (Allium sativum L) and soil properties under organic farming**. (Dr. K B Parmar), Department of Agronomy, Junagadh Agricultural University, Junagadh.

Biotechnology

1. Gurvinder Kaur. **Pulmonary expression of key genes associated with oxidative stress in response to 2,4-dichlorophenoxyacetic acid with and without LPS exposure in mice**. Department of Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

2. Kachhadiya, Harshita Jayeshkumar. **Transcriptome and metabolic profiling in response to *Fusarium* wilt in castor (*Ricinus communis* L)**. (Dr. D R Mehta), Department of Plant Molecular Biology and Biotechnology, Junagadh Agricultural University, Junagadh.

3. Mogal, Chaitanya Sahebrao. **Efficiency of Plant Growth Performing Rhizobacteria (PGPR) consortia for soil health rejuvenation and growth promotion of mungbean (Vigna radiata L)**. (Dr. Sanjay Jha), Department of Plant Molecular Biology and Biotechnology, Navsari Agricultural University, Navsari.

4. Rajveer Kaur. **Pulmonary expression of key genes associated with oxidative stress in response to fipronil with and without LPS**. Department of Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

Entomology

1. Patil, Vipul Mangesh. **Study on ecological niche and morphological identification of white grub species in Saurashtra**. (Dr. M F Acharya), Department of Agricultural Entomology, Junagadh Agricultural University, Junagadh.

1. Kachhadia, Palak Arvindbhai. **Effect of foliar spray of silicon and boron on frauiting, nutritional status of leaves and fruit quality of rejuvenated mango (*Mangifera indica* L) CV Sonpari**. (Dr. B N Patel), Aspee College of Horticulture & Forestry, Navsari Agricultural University, Navsari.

Genetics & Plant Breeding

1. Balat, Jigneshkumar Ravjibhai. **Genetics studies for fruit yield and its components in bottle gourd [Lagenaria siceraria (Mol) standl] over environments**. Department of Genetics and Plant Breeding, Junagadh Agricultural University, Junagadh.

BIOLOGICAL SCIENCES

Biotechnology

1. Mazumder, Munmi. **A study on anticancer activity of two ethno medicinal plants *Ricinus Communis* L *Amorphophallus paeoniifolius* (Dennst.) Nicolson collected from Assam, India against selected breast cancer cells**. (Dr. R Mukhopadhyay), Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur.

2. Sarma, Dhruba Jyoti. **Isolation and purification of cytochrome P450 from *Bacillus stratosphericus* for development of an ENFET device for n-hexadecane sensing**. (Dr T Medhi), Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur.

3. Sindhu, Parveen Kaur. **Bacteriocin production from lactic and bacteria and their interaction with nanoparticles for enhanced efficacy against food spoiling microorganisms**. (Dr. Kiran Nehra), Department of Biotechnology, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

Food Science & Technology

1. Jauhari, Nitanshi. **Bacteria-mediated degradation of petroleum hydrocarbons in *in-vitro* conditions**. (Dr. D K Upreti), Faculty of Biological Sciences, Academic of Scientific and Innovative Research, Ghaziabad.

EARTH SYSTEM SCIENCES

Environmental Science

1. Singh, Awanindra Pratap. **Appraisal of coalbed methane produced water and its impact on aquifer in Raniganj Coalfield, West Bengal**. (Prof.S K Gupta), Department of Environmental Science & Engineering, Indian Institute of Technology, Jharkhand.

Geophysics

1. Biswas, Koushik. **Modeling of seismogenesis of Earthquakes occurring in two intraplate zones in India**. (Prof. P K Khan), Department of Applied Geophysics, Indian Institute of Technology, Jharkhand.

2. Gogoi, Triveni. **Well log data analysis and reservoir characterization in parts of Assam and Assam-Arakan Basin, India**. (Prof. Rima Chatterjee), Department of Applied Geophysics, Indian Institute of Technology, Jharkhand.

ENGINEERING SCIENCES

Chemical Engineering

1. Sultana, Nazmun. **Synthesis of Sal oil (Shorea robusta) based biodiesel and dicarboxylic acids: Kinetics and process optimization**. (Prof. Chandan and Prof V K Saxena), Department of Chemical Engineering, Indian Institute of Technology, Jharkhand.

Civil Engineering

1. Poddar, Arunava. **Modelling soil moisture dynamics in crop root zone under shallow ground water table**. (Dr. Vijay Shankar), Department of Department of Civil Engineering, National Institute of Technology, Hamirpur.

2. Suresh, K. **Design of geo-composite liner for fly ash ponds.** (Dr. A Siva Sankar), Department of Civil Engineering, Koneru Lakshmaiah Education Foundation, Guntur.

Computer Science & Engineering

1. Bhardwaj, Kaushal. **Morphological profiles for spectral-spatial classification of hyperspectral remote sensing images**. (Dr. S. Patra), Department of Computer Science & Engineering, Tezpur University, Tezpur.

2. Kavathiya, Hiren Rajeshbhai. **Analysis and Design of data mining techniques for sustainable infirmary information system and quality assurance.** (Dr G C Bhimani), Department of Computer Science, Saurashtra University, Rajkot.

3. Modha, Rameshkumar Vallabhdas**. An analysis and study on text mining for Web Information Retrieval.** (Dr G C Bhimani), Department of Computer Science, Saurashtra University, Rajkot.

4. Purkait, Rajesh. **Study and development of intelligent routing protocols**. (Prof. Sachin Tripathi), Department of Computer Science & Engineering, Indian Institute of Technology, Jharkhand.

5. Ramani, Shrusti Kishorbhai. **Developing a model to determine the focus point of a human eye on the visual display.** (Dr Kishor H Atkotiya), Department of Computer Science, Saurashtra University, Rajkot.

Electrical & Electronics Engineering

1. Dilip Kumar, M. **Fault tolerant analysis of parallel diode clamped multilevel inverters**. (Dr. S F Kodad and Dr. B Sarvesh), Department of Electrical Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

2. Kumar, Deepa S. **Power system stability analysis using synchrophasors for self healing of smart grid**. (Dr. Savier J S), Department of Electrical & Electronics Engineering, APJ Abdul Kalam Technological University, Thiruvananthapuram.

3. Pal, Biswajit. **Design and analysis of planar reconfigurable filter for microwave wireless systems**. (Prof. Santanu Dwari), Department of Electronic Engineering, Indian Institute of Technology, Jharkhand.

4. Ranjan, Suman. **A signal processing approach for modelling and analysis of optical cavity**. (Prof. Sanjoy Mandal), Department of Electrical Engineering, Indian Institute of Technology, Jharkhand.

Electronics & Communication Engineering

1. Kodeeswari, M. **Lane detection in Hilly terrain for driver assistance system**. (Dr. Philemon Daniel), Department of Electronics & Communication Engineering, National Institute of Technology, Hamirpur.

2. Nitin. **An investigation into automatic license plate recognition system using soft computing techniques**. (Dr. Pawan Kumar Dahiya and Dr B R Marwah), Department of Electronics & Communication Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

3. Pramod Kumar. **Design and characterization of dielectric resonator antenna for wireless application**. (Prof. Santanu Dwari), Department of Electronic Engineering, Indian Institute of Technology, Jharkhand.

Energy Studies

1. Baruah, Dipal. **Development of a decision support system for decentralized energy generation using biomass gasification**. (Prof. D C Baruah) Department of Energy, Tezpur University, Tezpur.

2. Gogoi, Biswajit. **Development of a fuel efficient multi-purpose biomass stove**. (Prof. D C Baruah), Department of Energy, Tezpur University, Tezpur.

3. Patowary, Rupam. **Thermoelectric conversion and utilization of waste heat from fixed clay cook stove**. (Prof. D C Baruah), Department of Energy, Tezpur University, Tezpur.

Mechanical Engineering

1. Chhibber, Utkarsh. **Design and analysis of a compact acoustic filter for broadband noise attenuation in practical applications**. (Prof. R N Hota), Department of Mechanical Engineering, Indian Institute of Technology, Jharkhand.

2. Hemant Kumar. **Experimental investigation of activated flux TIG welding on inconel 718 superalloy**. (Prof. N K Singh), Department of Mechanical Engineering, Indian Institute of Technology, Jharkhand.

3. Konwar, Dwipen. **Performance evaluation single and double effect H_2O-LIC1 absorption refrigeration systems through exergy analysis and optimization**. (Prof. T K Gogoi), Department of Mechanical Engineering, Tezpur University, Tezpur.

4. Perwez, Ashif. **Thermal performance investigations of a dimple cooling channel and its applications**. (Prof. Rakesh Kumar), Department of Mechanical Engineering, Indian Institute of Technology, Jharkhand.

5. Reddy, B Madhusudan. **Development and characterization of cordia dichotoma fiber, granite filler reinforced epoxy and polyester composites**. (Dr. Y V Mohan Reddy and B Chandra Mohana Reddy), Department of Mechanical Engineering, Jawaharlal Nehru Technological University Anantapur,Ananthapuramu.

Metallurgical Engineering

1. Kadiyan, Sunil. **Analysis of mechanical properties and microstructure of ultra-fine grained FCC alloys produced by equal channel angual pressing technique**. (Dr. B S Dehiya), Department of Materials Science and Nano Technology, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

Mining Engineering

1. Ajit Kumar. **Performance analysis of articulated hydraulic steering system and cable reeling drum drive of underground mining equipment using accumulator**. (Prof. Kabir Dasgupta), Department of Mining Engineering, Indian Institute of Technology, Jharkhand.

2. Satyanarayana, Inumula. **Stability analysis and design of PIT slopes in opencast coal mines in Godavari Valley Coalfield**. (Prof. G Budi), Department of Mining Engineering, Indian Institute of Technology, Jharkhand.

MATHEMATICAL SCIENCES

Mathematics

1. Karna, Suneetha. **Heat and mass transfer effects on boundary layer flow with radiation and first order chemical reaction**. (Dr. G Venkata Ramana Reddy), Department of Mathematics, Koneru Lakshmaiah Education Foundation, Guntur.

2. Maji, Reba. **on the use of auxiliary information in estimation of finite population parameters in sample surveys**. (Prof. G N Singh), Department of Mathematics and Computing, Indian Institute of Technology, Jharkhand.

3. Pal, Subha. **A study of navier-stokes equations with navier-slip boundary conditions**. (Dr. R Haloi), Department of Mathematics, Tezpur University, Tezpur.

4. Sharma, Mami. **A Study on some aspects of fuzzy normed linear spaces and L-fuzzy metric spaces**. (Prof D Hazarika), Department of Mathematics, Tezpur University, Tezpur.

5. Saikia, Krishna Ram. **Discretization of certain univariate continuous distributions: Properties and applications**. (Prof.M Borah), Department of Mathematics, Tezpur University, Tezpur.

MEDICAL SCIENCES

Medicine

1. Yadav, Pratiksha. **Evaluation of multi-parametric MRI in differentiating benign and malignant lesions of the breast**. (Dr. V M Kulkarni), Department of Medicine, Dr D Y Patil Vidyapeeth, Pune.

Parasitology

1. Sandhya. **To study the host factors in immunopathogenesis of amoebic liver abscess**. Department of Parasitology, Postgraduate Institute of Medical Education and Research, Chandigarh.

Pharmaceutical Science

1. Parepalli, Srikanth. **Formulation and evaluation of stomach specific drug delivery system for selected drugs**. (Dr. S Hemalatha and Dr. S V Satyanarayana), Department of Pharmaceutical Science, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Virology

1. Thakur, Vikram. **Study of inflammasomes in the pathogenesis of viral hepatitis E**. Department of Virology, Postgraduate Institute of Medical Education and Research, Chandigarh.

PHYSICAL SCIENCES

Chemistry

1. Ahmed, Kabirun. **Polymer immobilized, peroxido complexes of titanium (IV) and molybdenum (VI): Synthesis, characterization and application as eco compatible catalysts in organic oxidations**. (Prof.Nashreen S. Islam), Department of Chemical Sciences, Tezpur University, Tezpur.

2. Bayan, Rajarshi. **Renewable resources derived hyperbranched polyurethane nanocomposites for multi faceted applications**. (Prof. Niranjan Karak), Department of Chemical Sciences, Tezpur University, Tezpur.

3. Bharadwaz, Priyam. **Theoretical studies on chemistry of divalent carbon and monovalent boron bases**. (Prof. A K Phukan), Department of Chemical Sciences, Tezpur University, Tezpur.

4. Bora, Anindita. **Development of carbon based nanomaterials and their applications**. (Prof. S K Dolui), Department of Chemical Sciences, Tezpur University, Tezpur.

5. Bora, Anup Jyoti. **Studies on removal of some metal lons from groundwater by oxidation- coagulation-adsorption at optimized pH**. (Prof Robin K. Dutta), Department of Chemical Sciences, Tezpur University, Tezpur.

6. Borah, Biraj Jyoti. **Synthesis, charcterization and catalytic application of palladium and copper- based nanoparticles**. (Dr. Pankaj Bharali), Department of Chemical Sciences, Tezpur University, Tezpur.

7. Borah, Raju Kumar. **Studies on the development of palladium and copper based nanocatalysts for sustainable Suzuki Miyaura, Sonogashira and chan-lam cross-coupling reaction**. (Prof. A J Thakur), Department of Chemical Science, Tezpur University, Tezpur.

8. Doley, Simanta. **Development of bio-based non-isocyanate polyurethane through CO_2 insertion and its nanocomposites**. (Prof. S K Dolui), Department of Chemical Sciences, Tezpur University, Tezpur.

9. Dutta, Snigdha. **Magnetostructural study of transition metal complexes and clusters by computational methods**. (Prof R C Deka), Department of Chemical Sciences, Tezpur University, Tezpur.

10. Paul, Abhijit. **A photochemical approach to surfactant free metal nanoparticles and nanoclusters and their catalytic applications in organic reactions**. (Prof. Somnath Yadav), Department of Chemistry, Indian Institute of Technology, Jharkhand.

11. Sarkar, Chandrama. **Studies on catalytic properties of graphene and functionalized graphene based nanocomposites**. (Prof.S K Dolui), Department of Chemical Science, Tezpur University, Tezpur.

12. Saxena, Neha. **Synthesis of surfactants from natural resources and their characterization for application in enhanced oil recovery**. (Prof. Ajay Mandal), Department of Chemistry, Indian Institute of Technology, Jharkhand.

Physics

1. Aideo, Swati Nawami. **Studies on characteristic structural colour and wettability properties of certain natural systems**. (Dr. D Mohanta), Department of Physics, Tezpur University, Tezpur.

2. Borgohain, Happy. **Neutrinoless double beta decay, lepton flavor violation and neutrino phenomenology in left-right symmetric model.** (Dr M K Das), Department of Physics, Tezpur University, Tezpur.

3. Chetia, Lakhi. **Photocatalytic activity and chemical sensing behaviour of fresh water diatoms**. (Dr. G A Ahmed), Department of Physics, Tezpur University, Tezpur.

4. Gondia, Navneet Kumar. **Development and characterization of schiff base compound for optoelectronic devices.** (Prof. S K Sharma), Department of Physics, Indian Institute of Technology, Jharkhand.

5. Hazarika, Saurabh Jyoti. **Investigation of photocatalytic, photoluminescence and mechanical properties of tungsten disulphide (WS_2) nanosystems along with irradiation induced modifications**. (Dr. D Mohanta), Department of Physics, Tezpur University, Tezpur.

6. Kalidindi, V S N Raju .**Image dynamics and dielectric studies of nematogens with bio and nano particles**. (Dr. Shaik Babu), Department of Physics, Koneru Lakshmaiah Education Foundation, Guntur.

7. Kundalia, Hetal Kishorbhai. **Studies on mixed oxide composites for dielectric applications.** (Dr D G Kuberkar), Department of Physics, Saurashtra University, Rajkot.

8. Monika. **Development of conducting polymers composites as advanced electomagnetic radiations shielding materials**. (Dr. S K Singh and Dr. Rajni Shukla), Department of Physics, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

9. Sharma, Nagesh. **Synthesis and characterization of thin films for micro-electro mechanical system devices**. (Prof. S K Sharma and), Department of Physics, Indian Institute of Technology, Jharkhand. ❑

ANNOUNCEMENT

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- **Chapter in a Book**
  Rendel, M. (1986). How many women academics 1912-1977? In R. Deem (ed.), *Schooling for Women's Work*. London: Routledge.
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1	**Principal**	–	01	01 - OPEN
2	**Assistant Professor**	Commerce	07	07 - OPEN
3	**Assistant Professor**	Economics	01	01 - OPEN
4	**Assistant Professor**	Accountancy	04	04 - OPEN
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Reservation for women will be as per **University Circular No. BCC/16/74/1998 dated 10th March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05th July, 2019.**

Candidates having knowledge of Marathi will be preferred.

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2	Science	01	01
3	Social Science (Geography Method)	01	01

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