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ANNOUNCEMENT

Special Number of the University News
on
'Implementing National Education Policy–2020 to Transform Higher Education in India'

A **Special Number of the University News** on the theme **'Implementing National Education Policy -2020 to Transform Higher Education in India'** is being brought out in the month of **March, 2021.** The **Special Issue** will cover articles of experienced and eminent educationists, higher education practitioners and policy makers. Readers of the University News are also invited to contribute to the Special Number by submitting papers/articles on below mentioned themes:

1. Innovative Implementation Strategies for Recommendations on Various Components of the Policy.
2. Implementation Strategies for Different Dimensions viz., Teaching, Research and Community Engagement.
3. Issues and Challenges in Implementation of the Policy.
4. Practicability, Suitability and Ease of Implementation of the Policy.
5. Roadmap for Holistic Implementation of the Policy.
6. Actionable Points on the Part of Government, HEIs and other Stakeholders.
7. Any Other Subtheme Relevant to the Topic.

Following are the essential guidelines to be followed:

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Using ICT to Cope With the Impact of COVID-19: Response of the Educational Sector

Diksha Rajput*

The turn of the millennium made it evident that Information and Communications Technology (ICT) would soon bring sweeping changes to the management and governance landscape across the world. It was only a matter of time before by-the-minute advancements in ICT would reach a point where governments would reap rich dividends on every investment in technology, which would in-turn enable them to optimise the utilisation of costs, time and resources. The arrival of the Corona Virus or COVID-19 pandemic changed all of that in December, 2019.

The WHO declared COVD-19 as a pandemic spreading the disease worldwide (WHO, 2010). As per OECD, 'the spread of COVID-19 has sent shock waves across the globe. The public health crisis, unprecedented in our lifetimes, has caused severe human suffering and loss of life. The exponential rise in infected patients and the dramatic consequences of serious cases of the disease have overwhelmed hospitals and health professionals and put significant strain on the health sector' (Schleicher, 2020). The Sustainable Development Goals (SDGs)-Education 2030 Steering Committee (SDG 4 education 2030, 2020) in its recommendations for COVID-19 education response has referred to the COVID-19 pandemic as a global health crisis as well as an educational crisis, with over 1.5 billion learners affected by near-universal school closures.

As the COVID-19 pandemic spread worldwide, governments across the world were forced to shut down offices, educational institutions, businesses etc. Efforts to stop the viral outbreak included working from homes, providing flexible working hours, or closing many institutions where people could infect one another with COVID-19. Protocols to shut down buildings involved schools, universities and many other educational institutions. This situation forced all levels of educational institutions to operate remotely and to put emergency remote teaching into practice (Bozkurt and Sharma, 2020).

As per World Economic Forum Report (World Economic Forum, 2020), the COVID-19 has resulted in schools shut all across the world. As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms.

According to UNESCO Director-General Audrey Azoulay, "while temporary school closures as a result of health and other crises are not new unfortunately, the global scale and speed of the

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current educational disruption is unparalleled and, if prolonged, could threaten the right to education," (UNESCO, 2020a).

COVID-19 Reinvigorates the Role of E-Governance

According to the United Nations, (United Nations, 2020**)** the COVID-19 crisis has also brought new needs for digital government services and more demand on existing services. Many governments took innovative initiatives as they took immediate note of the benefits of employing ICT to administer their policies, especially, as the technology was beginning to prove itself to be an enabler by helping governments establish and retain a strong citizen-centric focus. While the pandemic has reinvigorated the role of e-government, both in its conventional delivery of digital services as well as new innovative efforts in managing the crisis, it has also brought challenges and multiple forms of digital divides to the fore, especially among the poorest and the most vulnerable groups, **(**United Nations, 2020**).**

Uninterrupted Teaching Learning During COVID-19: Initiatives of Ministry of Education's Autonomous Bodies for School Education and Higher Education

As a preventive measure to curb the further spread of the COVID-19 pandemic, schools, universities, training centres and other education institutions were closed across India since 20 March, 2020. This caused an unprecedented disruption of education affecting more than 90 per cent of the school population. The autonomous institutions and subordinate offices under the Ministry of Education (MoE) were asked to remain closed for a period of 3 weeks and all officers and staff were to work from home (Press Information Bureau, 2020a).

During the months of February to May, schools have final year and board examinations for High School and higher secondary and universities have end semester examinations, respectively. The Central Board of Secondary Education (CBSE), National Institute of Open Schooling (NIOS) and National Testing Agency (NTA) were asked to work on revised schedule of exams. CBSE affiliates schools in the country and conducts annual examination for class X and XII in addition to updating and designing curriculum among other things, while NIOS provides several vocational, life enrichment and community oriented courses besides general and academic courses at Secondary and Senior Secondary level and NTA conducts entrance examinations for admission/ fellowship in higher educational institutions.

Autonomous Educational bodies like the University Grants Commission (UGC) and National Council of Educational Research & Training (NCERT) were asked to draft alternate academic calendars for higher education and school education, respectively (Press Information Bureau, 2020b). UGC as a statutory body of the Government of India set up through an Act of Parliament coordinates, determines and maintain the standards of university education in India, while NCERT plays an advisory role in assisting Central and the State Governments on academic matters related to school education by providing academic and technical support for qualitative improvement of school education research, development, training, extension, international cooperation related research.

To ensure uninterrupted teaching learning during the lockdown period, requisite measures were taken by autonomous institutions to safeguard the academic interest of students. Accordingly, Kendriya Vidyalaya Sangathan (KVS adopted online and digital methods for teaching and directed its Regional Offices to find out ways for engaging students in online learning. (Press Information Bureau, 2020). KVS teachers conducted online classes for live sessions on three Direct To Home (DTH) Channels-Panini, Sharda and Kishore Manch, all part of SWAYAMPRABHA, a group of 32 DTH channels. Skype and Live Web Chats were also used to address student's queries and clear their doubts. National Institute of Open Schooling (NIOS) and National Council of Educational Research and Training (NCERT) are also providing online lessons through the (Study Webs of Active-Learning for Young Aspiring Minds-Massive Open Online Courses) SWAYAM-MOOC platform in all major subjects at Secondary and Senior Secondary level on *https://swayam.gov.in/nc_details/NIOS*.

Students could now view daily broadcasts of 6 hours of recorded Educational programmes followed by 6 hours of live sessions with four different subject experts for one and half hour session each on these DTH Channels and NIOS YouTube channel. Learners can put forth questions directly to the subject experts from their home through phone call on the number displayed during live sessions and through 'Student Portal' of NIOS website directly. Tata Sky and Airtel DTH operators came forward to air three SWAYAMPRABHA DTH channels on their DTH

platforms. Besides DD-DTH and Jio TV App, Panini, Sharda and Kishore Manch SWAYAMPRABHA DTH channels are available through all DTH service providers.

Study material for the differently abled has been developed by NIOS on Digitally Accessible Information System (DAISY) and in sign language.

NCERT and UNESCO New Delhi Office came out with a booklet on "Safe online learning in the times of COVID-19" containing basic do's, and don'ts for students and teachers to raise awareness about staying safe online (UNESCO, 2020b**)**.

Guidelines for the continuation of education of children with special need was released by CBSE, which also suggested ways to cover all children including those with no access to digital device for assisting them in their learning. To create awareness about cyber security among the students of secondary and senior secondary school, CBSE came out with a handbook for students which covers topics related to cyber safety, cyber bullying, social exclusion, intimidation, defamation, emotional harassment, online sexual abuse, cyber radicalization, online attack and fraud, and online enticement.

University Grants Commission (UGC) Initiatives

Keeping in mind the health and safety of the students, teachers and the higher educational fraternity at large during the outbreak of COVID-19 pandemic, UGC issued appeals, advisories and notices to Higher Educational Institutions (HEIs)-universities and colleges, students, teachers and parents regarding the directives of the Government of India covering preventive measures to contain COVID-19 (University Grants Commission, 2020). Some of these includes permission to the teaching and non-teaching staff to work from home, safety and care of the hostel residents, downloading of the Aarogya setu app-an indigenous app developed for helping support the efforts of restricting the COVID19 spread, contact tracing through Bluetooth, mapping of likely hotspots and dissemination of relevant information about COVID-19 (Ministry of Electronics & Information Technology, 2020), and measures for the mental health and psychological well-being of the students and immunity boosting measures as provided by the Ministry of Ayush.

For wider dissemination of these advisories, UGC used its Website, e-mails and SMSs database to reach out to universities and colleges, and social media platforms like Twitter and YouTube are also being used on a regular basis.

UGC took several student-centric measures. Universities and colleges were requested to take all possible steps for safety and care of hostel residents during the COVID-19 outbreak. Hand and respiratory hygiene measures, immunity boosting measures and the AYUSH App for tracking COVID-19 related news were shared with universities and colleges. Guidelines on Examinations and Academic Calendar were issued on 29th April, 2020, advising universities to plan their academic activities keeping in view the safety and interest of all stakeholders, giving highest priority to the health of all concerned, while adopting and implementing the Guidelines. Universities were requested to establish a Cell for handling grievances of the students related to examinations and other academic activities arising due to this pandemic and notify the same to the students.

To monitor the queries, grievances, and other academic matters of students, teachers, and institutions, arising due to COVID-19 pandemic, UGC set up a dedicated helpline number and students can lodge their grievances on the existing Online Students Grievance Redressal Portal (*https://www.ugc.ac.in/grievance/student_reg.aspx*). UGC issued Revised Guidelines for Examination and Academic Calendar on 6th July, 2020, wherein Universities were required to chart out a plan for completion of terminal semester/ final year examinations by the end of September, 2020 in offline (pen & paper)/ online/ blended (online+offline) mode following the prescribed protocols/guidelines related to COVID-19 pandemic.

In September, 2020 guidelines on academic calendar for the first year under graduate and post graduate students in the Universities and colleges were issued.

As part of faculty/institution centric measures**,** UGC suggested to Vice Chancellors to develop Institutional Implementation Plan of UGC Quality Mandate Initiatives. Also, innovative ideas/ suggestions were invited from the academic fraternity, including students, researchers and teachers for the 'Bharat Padhe Online' campaign to improve online education in India.

University Grants Commission (Open and Distance Learning Programmes and Online Programmes)

Regulations, 2020 have been gazette notified on 4th September, 2020. They lay down the minimum standards of instruction for the grant of degrees at the undergraduate and post graduate levels and grant of post graduate diploma, through Open and Distance Learning mode and Online mode and shall be in addition to and not in derogation of any other Regulations, Notifications, Guidelines or Instructions issued by the UGC.

The All India Council for Teacher Education (AICTE) offered 49 free online courses (*https://free.aicte-india.org/*) such as GATE Exam Preparation, Free App-based Courses for Communication Skills and Interview Preparation, Certified Full Stack Engineer, Digital Marketing, Java Programming, Diploma in Machine Learning with R studio, Online Internship in Financial Analysis Basics, On-line Engineering Teaching Resources, etc. There are over 100 hours of video lessons on all the major topics of each branch of engineering (Hindustan Times, 2020).

Psychosocial Support for Mental Health and Emotional Wellbeing

In a time of crisis, when people are under trauma, stress and psychological pressure, should we focus on teaching educational content or should we focus on teaching how to share, collaborate and support? We should remember, when things go back to normal, people will not remember the educational content delivered, but they will remember how they felt, how we cared for them, and how we supported them (Bozkurt & Sharma, 2020).

The MoE came out with MANODARPAN (http://manodarpan.mhrd.gov.in/) for psychosocial support of students, teachers and families for their mental health and emotional well-being. A national helpline has also been set up to provide counselling to students. UGC requested HEIs to set up helplines for mental health and psychological or any other related concerns, for regular interactions with students through appeals/letters and formation of 'Help Groups' of students under the mentorship of wardens/senior faculty. To provide help and support to students facing difficulties due to closure of colleges and hostels, AICTE launched a Student Helpline Portal (https://helpline.aicte-india.org). The portal connects those who are willing to provide help with those who need help. The nature of support includes accommodation, food, online classes, attendance, examinations, scholarships, health, transport, harassment etc. (Press Information Bureau, 2020c).

Similarly, the PRAGYATA Guidelines (https://www.mhrd.gov.in/sites/upload_files/mhrd/files/pragyata-guidelines_0.pdf) of MoE focus on online/blended/digital education for students/learners who are presently at home due to lockdown. These guidelines provide steps to implement digital education heads of school and teachers in terms of need assessment, planning while at the same time ensuring cyber safety and privacy measures. Supports measures for students with special needs are also specified the amount of screen times to be devoted by students for online and offline learning is an essential aspect to be followed by educators.

ICT Initiatives

UGC requested HEIs to take preventive and precautionary measures, maintaining social distancing to combat COVID-19 and utilise this time productively by engaging in online learning (University Grants Commission, 2020). The ICT initiatives of the Ministry of Education (MoE) Erstwhile Ministry of Human Resource Development (MHRD), UGC and its Inter University Centres (IUCs) - Information and Library Network (INFLIBNET) and Consortium for Educational Communication (CEC), in the form of digital platforms were shared and teachers, students and researchers in Universities and Colleges could access these for broadening their horizon of learning and knowledge sharing. (Table-1).

- ***SWAYAM*** *(swayam.gov.in)* is an indigenous platform of Government of India offering Maasive Open Online Courses (MOOCs) from School to Teacher Training level, coordinated by Nine National Coordinators: NCERT for school education from 9th to 12th; NIOS for out of school children from 9th to 12th; Consortium for Educational Communication (CEC), an IUC of UGC, for Non-technology UG & PG programmes; NPTEL & NIT, Trichy for Technical/ Engineering UG & PG degree programmes; IIM Bangalore for management programmes; AICTE for Self-paced MOOCs and NITTR, Chennai for Teacher Training programmes. High quality content benefits lifelong learners, students, teachers, homemaker, researchers and other stakeholders to acquire knowledge and skill-sets using multimedia anytime and anywhere. There are Archived SWAYAM courses which are accessed by Students/Learners at https://storage.googleapis.com/uniquecourses/online.html. Similarly SWAYAM UG and PG (Non-Technology)

archived courses are available at *http://ugcmoocs.inflibnet.ac.in/ugcmoocs/moocs_courses.php*.

- ***e-PG Pathshala*** *(epgp.inflibnet.ac.in)* provides high quality, curriculum-based, containing 23,000 modules (e-text and video) Interactive e-content in 67 Post Graduate disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences.
    - *e-Pathya (Offline Access):* is software driven course/content package that facilitates offline access to students pursuing higher education (PG level) in distance learning as well as campus learning mode
    - *e-Adhyayan (e-Books):* is a platform which provides 700+ e-Books for the Post-Graduate Courses derived from e-PG Pathshala content. It also facilitates play-list of video content.

  e-Content courseware in 87 UG subjects with 24,110 e-content modules is also available at CEC website http://cec.nic.in/

- ***SWAYAMPRABHA*** *(https://www.swayamprabha.gov.in/)* is a group of 32 DTH channels providing high quality educational curriculum based course contents covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities subjects, engineering, technology, law, medicine, agriculture etc to all teachers, students and citizens across the country interested in lifelong learning. These channels are free to air and can also be accessed through your cable operator. The telecasted videos/lectures are also as archived videos on the Swayamprabha portal.
- ***CEC-UGC YouTube Channel*** (https://www.youtube.com/user/cecedusat) provides access to unlimited educational curriculum-based lectures absolutely free.
- ***National Digital Library*** **(***https://ndl.iitkgp.ac.in/***)** is a digital repository of a vast amount of academic content in different formats and provides interface support for leading Indian languages for all academic levels including researchers and lifelong learners, all disciplines, all popular form of access devices and differently-abled learners.
- ***Shodhganga*** **(***https://shodhganga.inflibnet.ac.in/***)** is an Indian Electronic Theses and Dissertations digital repository platform in open access containing 2,60,000 Theses for research students to submit their Ph.D. theses and make it available to the entire scholarly community.
- ***e-Shodh Sindhu*** *(https://ess.inflibnet.ac.in/***)** provides current as well as archival access to more than 15,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions including centrally-funded technical institutions, universities and colleges that are covered under 12(B) and 2(f) Sections of the UGC Act.
- ***Vidwan*** **(***https://vidwan.inflibnet.ac.in/*) is a database of experts for providing information about experts to peers, prospective collaborators, funding agencies, policy makers and research scholars in the country
- ***INFLIBNET Learning Management System (ILMS)*** **(***https://www.inflibnet.ac.in/ilms/about.html*) provides pre-populated learning content, derived from e-PG Pathshala content to higher education institutions across the country on request basis
- ***YUKTI (Young India Combating Covid with Knowledge, Technology and Innovation).*** A unique portal and dashboard to monitor and record the efforts and initiatives of MoE and intends to cover the different dimensions of COVID-19 challenges in a very holistic and comprehensive way. The portal attempts to ensure that students, teachers and researchers in higher educational institutions are getting appropriate support to meet the requirements needed to advance their technologies and innovations
- ***National Repository of Open Educational Resources (NROER)*** (*https://nroer.gov.in/*) is a repository of digital resources covering all stages of school education and teacher education. It provides access to E-libraries, E-Courses and chance to participate in events online and theme-based education.
- ***DIKSHA (Digital Infrastructure for Knowledge Sharing)*** (*https://diksha.gov.in/*) is a digital platform to help teachers learn and train themselves and connect with teacher community. This initiative has been taken forward to enhance coverage and improve the quality of e-content for teachers

- ***ePathshala*** *(epathshala.nic.in)* has been developed by NCERT for showcasing and disseminating all educational e-resources including textbooks, audio, video, periodicals and a variety of other print and non-print materials.
- ***Vidya Daan 2.0*** (*https://vdn.diksha.gov.in/*) is a part of MoE's initiative, DIKSHA (National Digital Infrastructure for School Teachers) provides a platform for continuity of quality learning to learners wherein individuals and organizations throughout the country can donate/ contribute e-learning content for school education. Contributions of different types of content in the form explanatory and teaching videos, practice questions, lesson plans, competency-based items, etc. for classes 1 to 12 in any subject as specified by the states/UTs under their respective projects can be made by individuals, teachers, educationists, subject experts, schools, government and non-government organisations etc.
- ***One India One Digital Platform*** (*https://odp.inflibnet.ac.in/*) is an integrated e-Content portal which provides, textual material, multimedia enriched materials etc or metadata of Class I to PG level which can be searched , browsed and easily accessed.

Using Social Media and Video Conferencing Tools for Information Dissemination

A robust e-governance system in UGC was used in reaching out to the HEIs, students, teachers and the academic fraternity on a large especially during the unprecedented COVID-19 pandemic lockdown period. Video Conferencing systems and social media tools are being used regularly for virtual meetings, webinars, live webcasts etc. e-books in downloadable formats are available on the UGC website. Virtual meetings and Webinars are being organised through Video Conferencing tools like Jitsi, WebEx, Google meet, Microsoft Meets, Vidyo, etc.

Four different whatsApp groups of Vice-Chancellors, an e-mail and sms database of 1000 plus Universities and 39,000 Colleges, UGC,_India on twitter and University Grants Commission YouTube Channel are used by UGC to reach out to the students, teachers and other stakeholders.

India Report on Digital Education, 2020

In July, 2020, the India Report on Digital Education was released by the Ministry of Education (Press Information Bureau, 2020d). This report covers the innovative methods adopted by Ministry of Education and the Education Departments of States and Union Territories for ensuring accessible and inclusive education to children at home and reducing learning gaps. Several media were used to connect with the learners, some major ones being social media tools like WhatsApp Group for learners of all classes, Online classes through YouTube channel, Google meet, Skype, etc., E-learning portal, TV (Doordarshan & regional channels), Radio (AIR). To facilitate remote learning several innovative mobile apps and portals were also launched by some states.

WhatsApp Groups Created by States for Students

As per the Report, using Whatsapp as a medium for education and to encourage teachers, parents, and students to stay connected is an innovative initiative of the States. (Table-2) (Press Information Bureau, 2020d)

Addressing the Digital Divide: Central and State Governments Initiatives for Learners

In order to reach out to students with low bandwidth or no internet or limited access to digital means, the Report mentions the extensive use of SWAYAM PRABHA, a group of 34 DTH channels, and Radio including Community Radio for providing round the clock education to students.

All India Radio, Itanagar, Arunachal Pradesh is broadcasting radio talks for students of primary classes in in their mother tongue. Teachers in Jharkhand districts are addressing students through regional Doordarshan and available radio slots. Similarly, Pondicherry is telecasting classes through virtual control rooms on local TV channels. Students of class 3-5 in Manipur are learning concepts in a fun way through comic books. Ladakh has collaborated with EMBIBE Bangalore and 17000 feet foundation, NGOs, for providing online education to students even in low connectivity zones (Press Information Bureau, 2020d).

National Education Policy (NEP), 2020 and the Emphasis on Technology for Teaching Learning

While efforts were on to continue with uninterrupted teaching learning by sharing various available e resources, the National Education Policy (NEP) of India, the first in the 21st century was launched by the Ministry of Education in July, 2020.

Table 1: State Government's Major Digital Initiatives for Students and Teachers

	Digital Initiative	Website/Portal / Mobile App Links	State/UT
1	SMILE (Social Media Interface for Learning Engagement)	https://shivira.com/smile-program/	Rajasthan
2	Project Home Classes in Jammu	https://www.jammueducators.com/online-home-videos-by-dsej	Jammu
3	Padhai Tunhar duvaar (Education at your doorstep)	https://pmmodiyojana.in/chattisgarh-padhai-tunhar-dwar-portal/	Chhatisgarh
4	Unnayan	https://play.google.com/store/apps/details?id=com.eckovation.unnayan&hl=en_IN	Bihar
5	Mission Buniyaad		NCT of Delhi
6	educational TV channel (Hi-Tech school programme	https://kite.kerala.gov.in/KITE/index.php/welcome/ict/1	Kerala
7	E scholar	http://Niceinfotech.co.in	Meghalaya
8	Online certificate programs for teachers	-	Telangana
9	Top Parent App	https://play.google.com/store/apps/details?id=com.csf.topparent	Madhya Pradesh
10	KHEL(Knowledge Hub for Electronic Learning)	https://www.earlylearningtoolkit.org/fr/program/khel-knowledge-hubs-education-and-learning	Uttarakhand
11	Sampark Biathak	https://play.google.com/store/apps/details?id=com.sf.app&hl=en_IN	Uttarakhand
12	Sikkim Edutech App	https://play.google.com/store/apps/details?id=com.netspeq.sikkimedutech&hl=en_IN	Sikkim
13	Biswa Vidya Assam Mobile Application	https://play.google.com/store/apps/details?id=com.gumbi.biswavael&hl=en_IN	Assam
14	Learning Outcomes Smart Q Mobile App		Maharashtra
15	iScuela Learn Mobile Application	https://play.google.com/store/apps/details?id=org.iscuelaUser&hl=en_IN	Punjab
16	Mera Mobile Mera Vidyalaya	https://play.google.com/store/apps/details?id=com.eckovation.unnayan&hl=en_IN	Bihar
17	Vidyavahini	https://play.google.com/store/apps/details?id=com.abdiel.bihar&hl=en_IN	Bihar
18	'Empower U Shiksha Darpan'	https://play.google.com/store/apps/details?id=in.empoweru.tripura&hl=en_IN	Tripura
19	Top Parent		Uttar Pradesh
20	Phoenix Mobile application	https://play.google.com/store/apps/details?id=com.spic.elap&hl=en_IN	Chandigarh

(Source: PIB, 2000d)

Acknowledging and emphasizing the importance of using technology in education, the NEP states that - While education will play a critical role in this transformation, technology itself will play an important role in the improvement of educational processes and outcomes; thus, the relationship between technology and education at all levels is bidirectional (Ministry of Education, 2020.).

Further, the NEP also recommends the setting up of the National Educational Technology Forum (NETF), an autonomous body to provide a platform for the free exchange of ideas on the use of technology

Table-2: WhatsApp Groups Created by the States

	WhatsApp Group	State
1	Top Parent'	Uttar Pradesh
2	Mission *Prerna ki e-Pathshala*	Uttar Pradesh
3	*Shiksha Sanjog*	Odisha
4	*Hawamahal* – Joyful Saturday	Jaipur
5	*Karona, Thodi Masti, Thodi Padhai;'Har Ghar Pathshala', Hum Kisi se Kam Nahi- Mera Ghar Meri Pathshala*	Himachal Pradesh

to enhance learning, assessment and evaluation, planning, administration, etc both for all levels of educations from school to higher education. E-courses will be developed in regional languages other than English and Hindi and virtual labs will be developed.

Global Initiatives: Sharing of E-Resources

According to an OECD Survey, 2020 countries usually used several tools in order to support students' learning while they were unable to come to school- from textbooks, worksheets and printouts to radio education, educational television and online instructional resources. The most popular tool used by OECD and partner countries during school closures were online platforms (Reimers and Schleicher, 2020).

The Commonwealth of Learning (COL) came forward to share its expertise and resources to enable stakeholders to keep the doors of learning open for all. A curated list of resources has been provided for policymakers, school and college administrators, teachers, parents and learners that will assist with student learning during the closure of educational institutions (COL, 2020). As per WEF-2020 Report, in response to significant demand, many online learning platforms are offering free access to their services, including platforms like BYJU's, a Bangalore-based educational technology and online tutoring firm founded in 2011, which is now the world's most highly valued edtech company (World Economic Forum, 2020).

Lessons Learnt and Way Forward

While on the one hand the COVID-19 crisis brought to the fore the already existing educational disparities, it also led to reduced learning opportunities for the disadvantaged, poor and differently abled learners children and youth alike, who were forced to stay at home as educational institutions were shut down. On the other hand, the crisis was an opportunity for governments to come up with innovative solutions to reach out to these vulnerable population using radio, television, social media, websites etc.

A UN Survey on e-governance finds that for ICTs to truly transform the public sector into an instrument of sustainable development efficiency in service delivery must be also coupled with social equity and ensuring that all people can access quality services. Such efforts are vital to making sure that the sustainable development goals are at the centre of all government policies and of public management and that no one is left behind (United Nations, 2016).

Digital government played a central role in addressing the crisis, becoming an essential element of communication, leadership and collaboration between policymakers and society during the COVID-19 pandemic. The pandemic has shown how critical ICT can be when appropriately leveraged for good governance, especially in difficult times. Governments need to accelerate efforts to embrace technology, even when the crisis is over (United Nations, 2020).

The Ministry of Education in India and its autonomous educational bodies for school and higher responded swiftly and efficiently in response to COVID-19 to ensure continuity of learning through various digital platforms and address the psychosocial concerns. The National Educational Policy-2020 of India has also emphasised the role of disruptive technologies in improvement of educational processes and outcomes. The World Economic Forum felt that -while some believe that the unplanned and rapid move to online learning – with no training, insufficient bandwidth, and little preparation – will result in a poor user experience that is unconducive to sustained growth, others believe that a new hybrid model of education will emerge, with significant benefits (World Economic Forum, 2020).

Conclusion

For universities to remain relevant, they will have to reinvent their learning environments so that digitalisation expands and complements student-teacher and other relationships, points out the OECD Survey (Schleicher, 2020).

As the India Report-Digital Education 2020 clearly shows how ICT enhanced the effectiveness of the various e-learning initiatives which were used in reaching out to students across the length and breadth of the country during the COVID-19 lockdown period. The report lists some of the best practices adopted by the Centre and States and also identifies challenges and gap areas which will be continued to be to be addressed and newer innovative e learning solutions are developed so that no learner is left behind (Press Information Bureau, 2020d).

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Doctoral Thesis Writing in Social Sciences: Essentials to Enhance its Usefulness

M R Patil * and Prashant M Patil**

Doctoral thesis is the end product of a research, that is carried out by a researcher on any relevant researchable problem or topic. It is a written document that describes research findings of any investigation or an inquiry done on any research study. It is a detailed presentation of the research work under the subheads background to research problem, statement of research problem, research questions, research assumptions, research objectives, research methods, research findings, conclusions, policy recommendations and select reference resources used to conduct the said research.

Writing down a doctoral thesis in a very simple, clear, polite and an easily understandable manner is altogether a specialized skill which needs a lot of intellectual abilities. A good doctoral thesis writing needs good vocabulary, basics of language and spelling, logical flow of ideas/thoughts/information. Proper linkage between sentences and paragraphs, simple sentences rather complex sentences and others. An effective doctoral thesis writing should necessarily aim to inspire and motivate readers, create an interest among readers and more importantly, make sure that a layman can understand quickly and easily the content/ gist of a doctoral thesis. At the same time, in order to achieve the basic aim of doctoral thesis, the writer of doctoral thesis should also posses qualities like an urge for thinking and rethinking, learning and writing, revising and rewriting, concentration, patience, hard working and more importantly, not compromising on quality. The doctoral research scholars need to focus on the following requisites to make thesis more meaningful and useful.

Content of the thesis needs to be kept optimal to make it effective for the reader...

In India, the size and volume of doctoral thesis in social sciences by and large, runs into several pages and many a time it is very strong in terms of quantity and very weak in terms of quality. It is difficult to carry bulky and heavy theses from one place to another place. Printing on one side of the page and use of high quality papers like executive bond paper would further adds to the thickness of the thesis. Once a thesis is submitted to the concerned university and a doctoral degree has been awarded to a research scholar, the thesis is shelved in the library of the concerned university. These theses are very rarely used for practical application or referred to as a source of knowledge except by Ph D research scholars who are forced to refer to these thesis as a review of literature for his or her ongoing doctoral research work. Therefore, there is a genuine need to rethink about the size and content of Ph.D thesis. The size of the thesis in social science disciplines ideally needs to be brought down to 100 to 125 Pages and these 100 to 125 pages should precisely speak about the 300 to 600 pages doctoral research work.

Introduction Chapter needs to be contextualized, updated and to the point...

The introductory chapter of a doctoral thesis by and large, runs into 40 to 50 and even more pages which contain about the history and background to the chosen research problem, covering meaning, definitions, objectives and other related background information, necessarily needs to be reduced and it can be brought ideally to a maximum of 10 to 15 pages. Gone are the days where this type of detailed background information was relevant because during those days, sources of information were limited and information was in scarcity. Today, this type of background information is no longer relevant to the readers as better and minute to minute updated literature/information is available at the fingertips of readers through their mobile. Hence, the introductory chapter can be trimmed down to 10 to 15 pages. Research scholars need to explain the background and relevance of the chosen research problem in a nutshell, providing a clear idea and the specific purpose about the select research problem to the readers.

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The Introductory Chapter must have a summary with an extension of theoretical and conceptual notes...

Introductory chapter should contain summary at the end more or less describing the background literature, historical development in the chosen research problem, global scenario, national scenario, state level developments and the ion of developments in the concerned location of the study. Further, this should highlight different stages of information growth, different terms and concepts relating to the select research problem. Thus, most relevant content of the chapter relating to the problem be summarized at the end of the introductory chapter. The size of both the chapter along with the summary should not be more than 10 to 15 pages.

In Literature Review, points need to be relevant to the topic of the thesis...

The very objective of literature review is to examine, evaluate and understand the previous research works in the chosen research problem. The review of literature enables the research scholar to understand the significant research gaps and research process which in turn helps the scholars to revise and redefine their research objectives and research methodology in the light of an identified research gaps and research process. It also helps research scholars to avoid duplication of research work in their chosen research study. Presently, whatever previous research studies namely research papers, doctoral thesis, books, project reports and any other documented report in the chosen research problem, are reviewed by research scholars and the same are included in this chapter. If the research scholar reviews 50 previous studies, all 50 studies are to be written in brief, each one running at least a half a page or even a full page covering the title, research objectives, hypothesis, research methods, research findings and key suggestions and the same are included in this chapter. This chapter also more or less runs into 40 to 50 or even more pages. The summary of each article/thesis running a half/full page is not necessary to be included in this chapter which would unnecessarily increase the size of the thesis for no reason. By not including the summary of each review will certainly not affect in any way the utility of doctoral thesis. What is more important to be included in this chapter is the total no of reviews that are made by the research scholars and the identified relevant research gaps from the total literature review that is carried out by the research scholar. Therefore, it is felt necessary to reduce this chapter to 8 to 10 pages covering only identified research gaps.

Research Methodology Chapter needs to be made specific and focused...

Research Methodology chapter by and large, describes in detail the variables and attributes like economic scenario, climatic condition, cropping pattern, demographic profile, industrial profile, educational institutions, financial institutions and many such similar information. These informations are not required in the methodology chapter and these things hardly matter for the reader as they are more interested in knowing what innovative methods that the research scholar has employed to accomplish meaningfully his/her research objectives. This kind of information would certainly shorten the interest of the readers/users. Most of the time, the information like this is explained in the introductory chapter. Therefore, this methodology chapter precisely focuses only on sampling design (sampling unit, sample size and sampling methods); data source, data collection instrument, respondents contact method, data analytical tools, etc. Unnecessary and irrelevant information needs to be avoided. While explaining analytical tools to be used, research scholars need to indicate only the tools/models/equations that are used to analyze collected data of his/her research study. It is not necessary to provide a historical background and the stages of development of a particular model/equation. This chapter also needs to be brought down to smaller size restricting only to the required information.

Lengthy and confusing titles need to the avoided...

Many times, the title of a doctoral thesis runs in many sentences. It is also seen that the title occupies almost a half of the front page of the thesis. Very often, the simplicity, clarity and understandability of the title are ignored. Readers many times find it very difficult to understand the inherent message of the research title. Therefore, a good title of a doctoral thesis must possess the following essentials: title should be precise, clear, specific, catchy, easily understandable and reader friendly. The title should be 'as precise as possible' and should convey 'as much as possible' to the readers. More importantly, it should indicate location of the study and it should take readers as quickly as possible to the content of a doctoral thesis. Appropriateness of the title is very important, because a good title provides first impression, spells out key ideas, focuses on researchers' investigation and makes readers stay with

the thesis. Hence, a researcher has to take utmost care and caution while framing a title for his or her doctoral thesis.

Objectives need to the scientific and realistic...

Setting appropriate, relevant and researchable objectives for the research study is another important task of a research investigator. Many times, several objectives ranging from 5 to 15 are set and if these are critically and wisely screened in terms of their feasibility and viability, they can be very well brought down to 3 to 4 researchable objectives. Proper care needs to be exercised while setting objectives for the study. Objectives in number are not important but the quality and practicality of objectives is more important. The real objectives should lead to some meaningful research. For the research topic "Quality and Adequacy of Nursing services in select government and private hospitals', the objectives like 'to know the origin and development of nursing profession across the globe' is considered to be the irrelevant and objective. The origin and growth of the nursing profession across the globe perhaps will be included in the introductory chapter as a background to research problems. Setting good researchable objectives would certainly enhance interest among readers/users of a doctoral thesis.

Analysis and Interpretation and Discussion chapter needs to be strengthened...

Analysis and interpretation and discussion is the most significant core chapter of a doctoral thesis. This chapter is regarded to be the heart of the doctoral thesis as results of collected data/information through research are presented in this chapter. An intended research objective relating to chosen research problem should be accomplished in this chapter. The success and strength of a doctoral thesis depends upon this chapter. If this chapter is weak and poor, then it gets reflected on the entire thesis. A researcher presents all the computed/calculated results/values of collected primary and secondary data with the help of tables, diagrams, graphs and pictures. Analysis refers to splitting/dividing/classifying collected data and establishing the relationship between and among different data variables/groups. That is what in other words is called as results/statistical values that are all presented in tables. On the other hand, interpretation/ discussion explains results/computed values with appropriate arguments and comments. It also explains the meaning and significance of data/results with logical and sensible reasons for the behavior of results in a particular manner. It also discusses the logic or reason behind behaving a particular variable/value in a particular manner.

In this chapter many times the Researcher gives more stress/emphasis only for analysis. In the sense, the collected data is adequately analyzed and tables, graphs, diagrams and pictures are sufficiently used and are presented but equal importance is not given to the discussion/interpretation of calculated/computed results/values and these values are not critically examined and argued with logical reasoning. As a result, readers/users do not clearly understand the findings/results of a doctoral thesis.

Sometimes this chapter is found to be full of statistical/technical values that are computed with the help of econometrics/mathematical/statistical models/equations which are hardly understood by a common man. This complexity of technology obviously restricts the accessibility of a large number of readers to doctoral research work. Then, questions arise about the usefulness of research work. The use of econometric and mathematical models/equations to analyze data/information is well appreciated. But, it is necessary to screen and choose relevant and useful results from the total data analyzed and the same may be shown in this chapter with the help of tables and diagrams. So that these relevant and meaningful values are well explained and thereby utility of research findings to the readers would be reasonably enhanced. Sometimes, extensive use of tables, graphs, pictures and diagrams which otherwise are not required, would digress from the objective and undermine the relevance of findings. Hence it is necessary to use only relevant tables and figures to represent research results.

Findings and Conclusions to be drawn only from interpreted results...

Effective presentation of Findings, Conclusions and Suggestions chapter is very important. This chapter summarizes in a nutshell main abstracts of results of an investigation/research. In this chapter it is expected to present the final outcome of research but many Researchers give irrelevant information like background to research problems, importance of research topic, objectives and similar information in this chapter. As a result, readers need to screen the chapter for findings. Therefore, it is necessary to avoid the inclusion of such irrelevant information as this chapter is exclusively meant for findings and

suggestions only. If specific outcomes of research in the form of conclusions are presented in this chapter, Readers can understand findings of research without wasting their valuable time in searching for specific findings and if this is followed, it would create an interest and curiosity in readers and the thesis will become reader friendly.

Suggestions/Policy Recommendations should be made keeping in mind constraints in real life...

First and foremost, whatever policy recommendations are made should be purely based on the research scholars' research findings. Suggestions if any should not be general in nature. Preferably, suggestions should be on the basis of research scholars' own experiences as a research scholar. The suggestions which are not based on the research findings should be avoided as they will seem baseless. Suggestions should not be counted in numerical numbers and they should be valued more in terms of their application and utility towards addressing/solving a particular problem. Five to eight suggestions of practical significance to the concerned research problem may be considered enough than giving n number of suggestions running into 20 to 25 or even more just for increasing quantity and number. General suggestions that are made in some other context by other research scholars pertaining to their research studies need not be cited unless they are very relevant. Research scholars are considered to be the experts to give policy suggestions as they have carried out the research and they only know the inherent things of their research better than anybody else.

Policy suggestions should not be mere statements e.g. company should initiate necessary steps to control the increasing attrition; Government should take immediate measures to improve the profitability of state run transport corporations; RBI should take steps to control rising NPA of banks so as to safeguard the interest of the deposit holders and so on. These kinds of suggestions do not have any policy implications and such statements are well known to everyone and can be made without research. Thus, suggestions made should be constructive and useful. The strength of a research scholar lies in giving suggestions which do have policy implications. Instead of making a mere statement, a research scholar needs to provide a roadmap, a blueprint, step to be taken, list of measures or a developed model as an effective solution to address the said problems namely improving metrics of labour attrition, declining profitability and increasing non-performing assets. These suggestions would certainly encourage readers to make use of the research work.

Research problems to be focused on actual issues and not hypothetical situations...

Statement of research problem is a statement that precisely describes the issues/ problems and formulates questions that a researcher intends to investigate/ conduct a research. It also explains how a research scholar gets interested in his or her chosen research problem, tells why there is a need for the study, how does the researcher think this study is useful, how does researcher choose a particular research problem and so on. The relevant literature that supports his/her present research study also to be included in this statement of research problems. Smooth transition and flow in research problems, research titles, research objectives and others need to the ensured.

Many times, the problems, titles, objectives and methods do not match with one another. There would be a lack of proper linkage among these different components. This kind of mismatch is illustrated with the help of the following example:

Research Problem

"Impact of Faculty Development Programs on Beneficiaries in Management Institutions"

Research Title

"A study on Design and Development of FDP in Select Management Institutions in Bangalore City"

Research Objectives

- To study the different FDP conducted by the management institutions
- To know the approach of management institutions towards FDP programs
- To examine previous research studies in the area of FDP programs

Research Method

Choosing the faculty members we have not undergone any FDP programs as a sampling unit for the study.

Findings

Conduct of FDP programs periodically assumes

to be more important in updating knowledge and skill of faculty members and these management institutions have conducted several FDP programs.

Suggestions

It is suggested that management institutions need to conduct a similar FDP for the administrative staff members.

In the above example, it is evident that the identified research problem is different from the title of the problem. The formulated title is one and the set research objectives are deviated from the title. The set research objectives are one and the research findings are different from the objectives. This kind of delink/mismatch should not happen in research. If this happens, the end product of research becomes meaningless and of no use. The effort of a research scholar goes in vain. Therefore, a research scholar needs to take care that the research problem should be reflected/seen in the research title and the research title should be reflected in research objectives and the accomplishment of research objectives should be seen in research findings.

Revise and Rewrite to improve the Quality of Doctoral Thesis

A doctoral thesis is ineffective unless there is a consistent and continual effort of a research scholar. The content of each paragraph and a chapter needs to be iterated several times. In the first stage, ideas/facts and other relevant material resources are to be gathered and the same be noted. In the second stage, the collected information needs to be organized into comprehensible sentences and at the third stage, each individual sentence is to be connected and brought to make sense in a paragraph. All the individual paragraphs are to be logically and sequentially to be brought in the form of a chapter. Each chapter is prepared as a draft copy and thereafter, with new ideas and thoughts that emerge in the process a draft copy be revised and updated. This process with a total involvement of a writer would certainly enrich and enhance value addition to a doctoral thesis.

Findings of the Research Study be Presented in Present Tense Preferably

A doctoral thesis is generally written in the past tense on the assumption that writing a thesis begins after having completed all the research work. However, in order to retain the relevance of research output in the near future, it is better to write a thesis in the present form so that readers will carry a better impression about the findings of a doctoral thesis.

Structure of Doctoral Thesis: An Ideal Model (100 to 125 pages)

Doctoral thesis is divided into two parts:

Part 1: Preliminaries

- Title page
- Declaration (research scholar)
- Certificate (research supervisor)
- Acknowledgement
- Content of Chapters
- List of Tables and figures

Part 2: Body of Doctoral Thesis No of pages

Chapter 1: Introduction (1 to 15 P)

1.1 Background to Research Problem
1.2 Socio-Economic Significance of Research Problem
1.3 Statement of Problem/Need for the Study
1.4 Objectives of the Study
1.5 Hypothesis of the Study
1.6 Limitations of the Study

Chapter 2: Literature Review (16 to 25 P)

2.1 Previous Research Studies in the Chosen Research Problem

2.2 Critical Research Gaps

Chapter 3: Research Methodology (26 to 40 P)

3.1Location of the Study (specific)
3.2 Sampling Design
3.2.1 Sampling Unit
3.2.2 Sample Size
3.2.3 Sampling Method
3.3 Data Source
3.4 Data Collection Instrument
3.5 Respondents Contact Method
3.6 Data Analytical tools
3.7 Implications of the Study
3.8 Any other Important Method

Chapter 4: Analysis and Discussion (41 TO 100 P)

1 Collected Data is analyzed.

2 To be presented with the help of Tables, Diagrams, Graphs.

3 To be Discussed/Explained with Logical Arguments and Comments

Chapter 5: Summary of Findings, Conclusions and Suggestions (101 to 122 P)

5.1 Summary of Findings

5.2 Concrete Conclusions

5.3 Policy Suggestions/Recommendations

References: (123 to 125 P)

Important Explanatory Notes

1. Genuine need of the hour today is to make doctoral thesis simple, handy and of easy access to a wide audience.

2. Five chapters are ideally enough to present the entire doctoral research work and it is not necessary to make a number of chapters particularly analysis and discussion of research work. With so many chapters, the purpose of simplifying a doctoral thesis will be defeated. Therefore, it would be better to present logically and meticulously the whole research work in the given five chapters.

3. The inclusion of crucial pieces viz. chosen research problem, set research objective, research methods that are used to accomplish objectives, significant findings and relevant policy recommendation, indeed are more than sufficient to meet the expectation of users

4. While writing a doctoral thesis quantity can be compromised but quality should not be compromised for quantity.

5. Every doctoral research scholar may be provided a portal/an account on the concerned university website and a link for the same would be made available to all the users/readers. All the additional information/all the supportive data namely data sheets, calculations, supportive descriptive statistics, questionnaire/schedule, additional references, papers published out of the doctoral research work and other important supportive information may be made available in the form of a soft copy on a research scholar's portal/account for ready reference.

6. Now, it is time to rethink online submission of doctoral thesis as a part of reduced carbon footprint and increased green cover. Even for evaluation of doctoral thesis, a soft copy of the thesis may be sent to examiners. As a result, the physical administrative pressure on the part of the concerned university, library and the postal department may be reduced to some extent and paperless administration can also be assured.

Conclusion

It is concluded that a doctoral thesis is the valuable source of research based knowledge and the stakeholders namely research scholars, teachers, students, industrialists, and academicians and others, play a vital role as a bridge between research-based knowledge and society. The suggested modifications to doctoral thesis writing would certainly enhance the quality, accessibility and utility of a doctoral thesis and there by research output can be used for the betterment and well-being of the society.

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Accreditation of Universities: A Different Perspective Needed[#]

G Srinivas*

Traditionally, in India, higher education is offered through universities and colleges. Universities being degree awarding institutions give affiliation to autonomous and other colleges. This article stands on the premise that, similar to the diversity of the country, our universities are also diverse and heterogeneous in multiple ways. This paper outlines the context of current accreditation in Universities in India and points out the need, benefits and a model for departmental level accreditation.

In order to catalyze academic excellence at par with global standards, the government of India took significant initiatives and made accreditation mandatory. It has also started ranking Higher Education Institutions (HEIs) annually under National Institutional Ranking Framework (NIRF). These well intended initiatives have some unintended consequences too. Many institutions embraced accreditation as a credentialing for branding and marketing while on the contrary many others developed an *accreditation phobia* because of their inherent limitations along with systemic problems.

The concept and process of accreditation is relatively young in India compared to developed nations, but is catching up in faster pace in the last few years. National Assessment and Accreditation Council (NAAC), the first accreditation agency in Indian higher education, came into existence in 1994 through the initiative of UGC, as an autonomous body. It is one of the Inter-University Centres (IUCs) of UGC. National Board of Accreditation (NBA) was another accreditation body established by AICTE in the same year. While NAAC has been doing institutional accreditation, NBA is conducting programme-based accreditation in the area of Technical Education.

UGC expects all HEI's to be accredited by 2022 which appears to be an uphill task. A year ago, UGC brought out a draft bill for multiple accreditation agencies including Private Accreditation bodies which may create healthy competition among different accreditation agencies, a situation similar to other countries. However this is yet to be materialised. Therefore, in effect, NAAC remains as the single accreditation body executing all institutional accreditation in Indian Universities.

Insufficiency of Current Approach

NAAC's framework of methodology, criteria and accreditation process are common for universities and colleges while metrics and weightages differ for Universities, autonomous colleges and affiliated colleges. This difference is in terms of percentages of score-allocation and weightage, not in process or framework or approach. The broad process of NAAC accreditation considers the institution - *whether it be a university or autonomous college or affiliated college* - as a single unit. In that way, the approach of accreditation treats the institutional system as homogenous. The criteria for Self Study Report or Internal Quality Assurance Report or the subsequent Peer Team Visit consider each university as a single homogenous entity like colleges. In daily reality and in practice this approach is far from the actual situation. This missing factor and recognizing that the Universities are heterogeneous clusters demands a new accreditation model for Universities, which is different from Colleges.

There are sufficient reasons to argue that the University accreditation should be different from that of colleges in terms of methodology, criteria and metrics. Firstly, the existing level of differentiation in universities by way of specializations in postgraduate courses and research programs are not adequately captured by the current *umbrella approach* of accreditation. One can argue that there are also various departments in a college as well. But most of these colleges caters to undergraduate programmes where as universities largely cater to postgraduate and research programmes, which demand a different approach; not only for internal quality measurement and enhancement but also in the eyes of stakeholders.

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As a tribute to late Dr. G Srinivas.

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Secondly, the department level quality efficiencies or inefficiencies are overlooked or averaged by considering the university as a single entity. This is a hindrance, if the accreditation is to be considered as a correctional mechanism, as the source of potential inefficiency is unclear. The net accreditation of a university is expected to be the summation of evaluation scores of individual departments or programmes. That level of specificity and precision is not evidenced in the current method.

Third factor is about the governance and administration practices in universities. Besides the evaluation of individual academic departments, administration, finance, student support services may also be assessed as separate units, in an ideal condition. In many universities, administration and finance are moribund units due to inefficient old-styled functioning. The common links of the university cluster are central and departmental libraries, administration, finance, sports facilities, student support services, hostels, etc. These aspects currently form a part of the common criteria for evaluation process, which is again not a representation of the true functioning of those common but interdependent units.

Even though the university may offer innovative academic programs, their administration and support services are still following outdated standards of functioning. These matters get exposed, attended to and will get resolved only through a model of summation of individual cum total model. This will help the university to understand the overlapping impact of central services on departmental performance also. Summation of scores of all these units can be the institutional (University) score in a meaningful way.

Fourthly, the current unified score of a university does not indicate the performance of each academic department (s). Strengths and weaknesses of each unit or programme are not known to stake holders. One is also not able to appreciate the achievements of individual departments. At best, peer teams may capture only the outlier of achievements, which appears rare. There are certain departments in several universities given special recognition by extramural agencies based on their achievements. Special Assistance Programme (SAP) scheme of UGC is one such programme with several phases linked to departmental performance. In the current NAAC accreditation process, these aspects get subsumed. The departmental identity is not adequately reflected.

Fifth, the affiliating responsibilities of the universities are not well considered in the current accreditation process. While central universities (baring few, which are largely due to historic developments), deemed universities and private universities do not have affiliated colleges, one of the major responsibilities of the state universities is catering to affiliated colleges. This is a very sensitive and serious responsibility considering the size and number of affiliating colleges. With admissions, curriculum design, examination and award of degrees of affiliated colleges coming under the State University, managing these aspects need serious considerations and resources. How effectively the State Universities are facilitating their affiliated colleges need far more important reflection in terms of due weightage in relevant matrices of accreditation. Affiliation is not a liability, but a significant job in developing colleges by mentoring.

Growing Heterogeneity

Universities are unification of extremely divergent units, but they are not merely aggregation of various academic departments. There is diversity within and across departments and the academic proximity of the departments needs to be rethought. While we argue for better departmental collaboration, whether the current accreditation looks into each department sufficiently enough to provide such insights remains unanswered.

UGC, in its norms, says that there should be at least five teaching departments in a University. Each department should have minimum 1+2+4 faculty members in the cadres of *Professor*, *Associate Professor* and *Assistant Professors* respectively. But with interdisciplinary approach catching up, this concept also needs change. There are universities with more than 150 Academic departments like the Banaras Hindu University (BHU), Varanasi. On average, Universities in India have about fifty academic departments. This diversity is thus very significant. There is also concept of *Schools* and *Areas* offering different academic programmes on interdisciplinary mode moving towards boundary-less multidisciplinary curriculum. Therefore, it can be more prudent to move towards programme accreditation as well.

Considering the limitations of current model and in cognizance of growing heterogeneity of academic disciplines and Universities, an alternative accreditation model is proposed here.

An Alternative Two-tier Model

With accreditation becoming much more than a mandatory activity, the expectations of stake holders on the process of Assessment & Accreditation too have increased in terms of reliability, transparency and efficiency of the process. Accreditation, which was once voluntary, has not only become mandatory but also linked to many awards and rewards. It is now an integral part of policy and regulation. Universities are increasingly interested to catch up with the requirements of Assessment & Accreditation and comply with the process in the changed circumstances. To obtain appreciation of stakeholders, the assessment & accreditation method should also be able to meet their expectations and satisfy their needs on real time basis. NAAC has in recent years come out with a new methodology of Assessment & Accreditation as an improvement over the past which lays more emphasis on digital and data-driven evaluation. It is also accompanied with more objective measures than the subjective approach of the past.

In the earlier or the current (called Revised Accreditation Frame work, RAF) methodology, the evaluation is based on the seven criteria. In both the methodologies universities are treated as one unit reflecting that accreditation is for the whole university. However, in the earlier methodology NAAC used to give departmental evaluation remarks to the Universities along with common Peer Team report. These were brief, descriptive, specific remarks without any direct bearing on scores. These departmental evaluation remarks were well received and helped many Universities to strengthen their academic departments as often stated by the beneficiary Universities. Considering these benefits, in the proposed model, the evaluation will be a two tier process.

In tier one, academic departments of Universities are assessed individually on the basis of criteria 1, 2 and 3 of NAAC. Then all their departmental/ programme scores are summated. In this process, criterion-wise evaluation remarks and scores are given for individual departments. In tier two evaluation, the common or central services of the universities are assessed on the basis of criterion 4, 5, 6 and 7 of NAAC.

A) Tier-I Assessment

Tier-I will be Departmental Assessment in which every academic department or the programme is individually assessed on the following three academic parameters:

1) Curricular Aspects.
2) Teaching, Learning & Development.
3) Research, Innovation & Extension

B) Tier-II Assessment

Tier-II Assessment will reflect the overall institutional performance in the common areas irrespective of a particular academic department. The University is assessed using these five parameters;

1) Infrastructure and Learning Resources.
2) Student Support and Progression.
3) Games & Sports.
4) Governance, Leadership and Management.
5) Institutional Values and Best practices.

The Key indicators, Qualitative Metrics and Quantitative Metrics can be broadly the same as envisaged in the Revised Accreditation Framework (RAF) of NAAC; or they can be slightly re-distributed; for example, more emphasis may be considered in case of State Universities depending on their affiliation load.

Summation of Departmental scores (Tier-I) with Tier-II Assessment (Common Areas) can become the overall score of the University. While awarding the University grade and score, individual departmental grades and scores can also be announced.

Expected Benefits

Regulatory recognitions, financial grants and graded autonomy are increasingly linked to accreditation. The future would be programme accreditation. With increased access to higher education opportunities, the stakeholders will demand more than current mode of summated accreditation grade. With the proposed model, one can transparently comprehend the quality of particular department in absolute or relative terms. For decisions on selecting a university or department, this is equally useful for faculty and students. Assigning separate criterion to common support services and sports facilities will propel the universities to allocate better resources and provide adequate emphasis in those areas. A student wishing to know the University's performance in a particular niche area before her joining, two-tier system makes it possible. Universities can become more stakeholder-friendly when they are subjected

to departmental/ programme evaluation. The analogy here is that a university is like a train consisting of several interlinked passenger and service or Goods compartments.

The two-tier method will be a more realistic representation of departments as well as the entire University. Unsurprisingly, it may be noted that most international quality assurance agencies also go by departmental scores.

The alternative model will expand the benefits of prevailing practice of accreditation further more accurately. Every improvement starts at micro-level, even if it is total organizational revamping. If one of the leading goals of accreditation is continuous improvement, the associated accreditation process needs to become programme /departmental specific.

In an outcome based education (OBE) context, which will soon be the norm in India, the performance standards for the competencies will need to be specified and might be stated in each programme and department. Continuous improvement of educational outcomes through ongoing monitoring will be more manageable at departmental and programme level. Considering these factors, it is expected that academic leaders ponder over the need to fully capture the contemporary imperatives of University functioning and develop better strategies for accreditation.

Acknowledgments

The author gratefully acknowledge the inputs given by Dr. Salil. S, Education Officer, UGC.

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Dr. G Srinivas Passes Away

Dr. G. Srinivas (1965-2020) Additional Secretary, University Grants Commission (UGC), Hyderabad passed away due to a sudden cardiac arrest and a fatal brain bleed on December 11, 2020. As Additional Secretary, he was heading the South Eastern Regional Office (SERO) and South Western Regional Office (SWRO), of University Grants Commission. Earlier, he led UGC Regional Offices at Kolkata, Pune and Guwahati as Regional Director. Dr. Srinivas also served as the Registrar of Technology Information, Forecasting and Assessment Council (TIFAC), Department of Science and Technology, New Delhi, and was Deputy Advisor of National Assessment and Accreditation Council (NAAC), Bengaluru.

Dr. G Srinivas was an alumnus of Banaras Hindu University (BHU), Varanasi where he did doctoral studies in Plant Sciences. He was awarded National Scholarship for Meritorious Academic Record and JRF(CSIR-UGC/NET). He has some publications to his credit in the areas of Environmental Biology and Higher Education Planning. His areas of research included education policy, institutional efficiency, and quality enhancement in higher education. His three decades of experience spans the areas of higher education administration, policy planning and quality assurance in UGC.

AIU fraternity expresses profound grief on his demise.

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!

❑

COMMUNICATION

Being Selfless and Humble in a Hierarchical World

In Memory of Late Dr. G Srinivas (1965-2020)

S Salil*

Dr. G Srinivas defies many conventions of a typical senior bureaucrat in a regulatory body. He was neither street-smart nor pushy and refused to take part in any rat race for positions. While working in the UGC Hyderabad office in the afternoon of 11th December, 2020, he demised after a sudden cardiac arrest and a fatal brain bleed. Serving as the Additional Secretary of UGC and as an active presence in higher education planning for over three decades, what did he stand for, what were his values and concerns?

He spoke softly, slowly, and smiled often. As an individual, he respected hierarchy, intensely committed to work, and extremely loyal to his organisation. Yet, he challenged several assumptions of status-quo in his daily activities.

Subtle were his deeds. If he wanted to remind anyone on a deadline or a mistake, he did not reprimand but looked downward with an unusual grin of helplessness and pain. It was enough for most of his subordinates, including me, to get the idea. He was unique in mentoring others by real result-driven autonomy. With silent but strong convictions, he welcomed newness, a rarity in most traditional governmental settings. I was reporting to him as an officer, and he encouraged me to disagree and argue on many matters. And I did. A day before his last breath, he spoke to me on how edtech companies do regulatory hacking during COVID-19. I retorted that such bypassing is inevitable unless we move to an anticipatory mode of regulation.

As he worked with all regional offices of UGC, the ground realities of the college sector which cater to most of the student population in India was his major concern. He often remarked on the resource constraints in rural colleges and how ill-equipped they are in fundraising. He contemplated alternatives to the daily file-pushing which has been overdone to the point of losing its original meaning. His way of thinking and doing were attempts on how education policy can support institutional efficiency as a living experience, not as a policy doctrine.

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While serving as the Registrar of Technology Information, Forecasting and Assessment Council (TIFAC), his colleagues remember the administrative role taken by him for scientific projects. This is significant in India, where the priorities of the administration and the culture of the scientific community differ and even contradict. While working as the Deputy Advisor of NAAC, he was one of the core members in bringing out the concept of Quality Assurance Cells, which turned out to be IQAC. While heading the North East Regional Office (NERO) of UGC at Guwahati, he popularised and implemented the Cluster Colleges and Entrepreneurship Development Cells in Colleges (EDCs) and coordinated the implementation of a special package for the North-East Region. He did his part in upgrading the historical 'Cotton College' into a University. Beyond working in committees as member secretary and in serving in governing bodies of different institutions, he was keener to work on educational matters at the grassroots. Dr. Srinivas is remembered by his university batch mates in Banaras Hindu University, where he did doctoral studies in Plant Sciences, as one of the brightest students and recipient of the national award for academic merit.

He spent most of his time on work. Many had been working with him for more years than me, who will miss him most. Beyond the office work, I was fortunate to co-author with him for The Hindu, World University News, and University News. While I write this late-night, two unfinished works send by him are sorely staring in my inbox.

A blend of heightened selflessness and humility fashioned his personality. Everyone connected with him echoes the same. I find his concerns on higher education, particularly on rural colleges; their resource constraints and need for alternatives are far enduring beyond him.

With a stoic lifestyle and conduct, he conversed always with the search for shared meaning. If you have interacted with him, even distantly, you know how important and valued ***you*** are; it was never about him, but about ***you***–despite what or who you are.

National Workshop on UGC DAE CSR Facilities at HNB Garhwal University

A four-day Online National Awareness Workshop was organized by SWAYAM Cell of Hemvati Nandan Bahuguna Garhwal University, Srinagar, Garhwal, Uttarakhand in association with UGC, Department of Atomic Energy Consortium for Scientific Research (DAE CSE). More than 1000 registered participants across the country participated in the event. Dr Ajay Semalty, Organizing Secretary and Workshop Coordinator greeted all the participants and the entire team of UGC, DAE CSR. In the Opening Remark, Dr Vasudev Siruguri, Director, UGC, DAE CSR told that UGC, DAE Consortium for Scientific Research is an autonomous institute of University Grants Commission (UGC) which provides specialized training and advanced characterization facilities for university researchers and also making facilities of DAE accessible to them. Dr Siruguri briefed about the mega state of the art facilities provided by its various centres to academic researchers and research scholars. Dr Siruguri said that this kind of awareness workshop are conducted by the centre in various universities time to time.

The event was inaugurated by Prof. Annpurna Nautiyal, Vice Chancellor, HNB Garhwal University. Prof Nautiyal welcomed the entire UGC, DAE CSR Team and acknowledged the role of the centre in providing the vital support to academic research through the mega facilities available at its Mumbai, Indore, Kolkata, Kalpakkam, Raja Ramanna Centre of Advanced Technology Indore and the facilities of Bhabha Atomic Research Centre Mumbai. Prof Nautiyal requested the centre to provide the exclusive research support to all the universities of all Himalayan states. She stressed on the improvement in STEM research which has also been focussed in New Education Policy by Ministry of Education.

The Technical Session was taken by Dr. Vasudev Siruguri, Centre Director, UGC, DAE CSR, Mumbai Centre. Dr Siruguri delivered his talk on 'Neutron as Probes for Condensed Matter'. Dr Siruguri elaborated the properties of neutron and its applicability for characterization of condensed matter. Dr Siruguri stated that the centre provides a variety of facilities apart from neutron based experimental facility. These facilities include rheology, material synthesis, dielectric relaxation spectroscopy, XRD, etc.

Senior Scientist, Dr Sudhindra Rayaprol, UGC, DAE CSR Mumbai Centre delivered the lecture during the another session. Dr Rayaprol discussed the neutron diffraction facilities of India's pride DHRUVA reactor at BARC Mumbai. These facilities are extended to the researchers freely on the basis of request and time slot available.

From Indore Centre, Dr VR Reddy and Dr DM Phase delivered lectures on Research Activities/ Facilities at UGC, DAE CSR, Indore Centre and RRCAT, Indore, respectively. Dr Reddy presented the overview of research facilities and activities at UGC, DAE CSR Indore Centre. Dr Reddy told that UGC, DAE CSR Indore, the head quarter of the UGC, DAE CSR, is equipped with various diverse facilities like MOKE, HRXRD, LTHMF XRD, DSC, ESCA, SEM, TEM, LTHM scanning probe microscope, Cryogenic lab, Raman spectroscopy, XPS, Mossbauer spectroscopy, FTIR, etc. The centre takes up Ph D students through JEST.

Dr DM Phase, Director Indore Centre, presented his lecture on 'INDUS Synchrotron: Opportunities for Research in Condensed Matter Physics'. Dr Phase explained about this state-of-the-art facility available through Raja Ramanna Centre of Advanced Technology (RRCAT) Indore. RRCAT provides two beamlines (INDUS I and INDUS II) for experimental work. Recently, accelerator has also been started in RRCAT. Now the neutron scattering/ diffraction experiments can also be done in RRCAT. The RRCAT provides an automated online system for users for applying for the beam time and/or other experimental facilities.

Dr SS Ghugre presented on 'Overview of Research Facilities and Activities of Kolkata Centre'. Dr Ghugre in his expert talk stated that Kolkata centre provides diverse facilities for multidisciplinary researchers of nuclear physics/condensed matter physics, macromolecular/radiation chemistry, radiation

biology, engineering and biomedical field. The facilities include The INGA setup at VECC supported by the digital pulse processing and data acquisition system, HRXRD, Low Temperature High Magnetic Field (LTHF), FTIR, Laser Raman Spectrometer, other spectrometers, PLC based Gamma irradiation System, DLS, ECXRF and sample preparation facilities, etc.

Dr NV Chandra Shekar provided Overview of Research Facilities and Activities at UGC, DAE CSR Kalpakkam Node. Dr Shekar stated that the Kalpakkam nodeis a very environment friendly centre which provides the facilities like HRXRD, XPS, NMR, Hot Isostatic Press, High Energy Ball Milling, IRFZ Single Crystal Growth Furnace, SUPRA 55 FESEM/ EDX, etc. Dr VK Aswal from Bhabha Atomic Research Centre, Mumbai delivered his lecture on use of Small Angle Neutron Scattering (SANS) for analysing the structure and shape of nanomaterials or nanocomposites. Dr Aswal explained the basis of neutron scattering. He briefed the SANS facilities available at DHRUVA research reactor at BARC, Mumbai. Dr Aswal explained the application of SANS in various field of research including chemistry, physics, biological and biomedical research. Dr Aswal invited all the researchers to avail this world class indigenous research facilities for the well defined problems.

Dr Ajay Semalty, HNB Garhwal University Srinagar, Garhwal shared his experience as user of the research facilities of UGC, DAE CSR centres. Dr Semalty briefed the use of solid state characterization for phospholipid and cyclodextrin composites of micro and nano range. Dr Semalty emphasized utilizing the facilities with good planning, prior experimental work, sample planning and prior discussion with concerned scientists of CSR centres. Dr Semalty also underlined the passion of Centres' scientist in teaching, experimenting and learning Science. During Valedictory Session, Dr Sudhindra Rayaprol, Coordinator CSR workshop presented the report of the event. The Chief Guest of Valedictory Session, Prof MSM Rawat, Adviser, Department of Higher Education, Government of Uttarakhand requested UGC, DAE CSR to extend the support to colleges and universities of Uttarakhand. Prof Rawat also invited Director UGC, DAE CSR for conducting the similar workshop for state University and PG colleges of Uttarakhand. In his Concluding Remark, Dr Siruguri thanked Prof Annpurna Nautiyal, Vice Chancellor, HNB Garhwal University for her inaugural address. Dr Siruguri said that the workshop will generate a new pool of users of research facilities. He invited researchers to avail the facilities and ensured the full support from the centre to researchers. At the end, Dr Siruguri thanked Dr Ajay Semalty and his entire team for conducting the workshop. The vote of thanks was presented by Dr Ajay Semalty. Dr Semalty thanked Dr Siruguri, Dr Sudhindra, and all the speakers of the awareness workshop for giving their expert lecture. Dr Semalty thanked Dr Kaushik and the entire team of UGC, DAE CSR for coordinating the workshop. The enthusiasm and overwhelming response of huge number of participants from various disciplines of research was warmly acknowledged. Dr Semalty invited UGC DAE CSR to the University for physically conducting the workshop for researchers. The workshop was conducted on Microsoft Live Event and the lectures of workshop were made available through YouTube (*http://tiny.cc/CSRHNBGU*). Every lecture was followed by the question and answer session in which the participants got the answers of the queries by the experts and got the new and priceless insight to STEM Research.

International Conference on Built Environment, Science and Technology

A two-day International Conference on 'Built Environment, Science and Technology' is being organized by the School of Architecture and Interior Design, SRM Institute of Science and Technology, kattankulathur, Tamil Nadu during February 20-21, 2020. The academicians, practitioners, researchers, experts from the Industry, and graduate students from the various domain of Architecture, Engineering, Urban Planning, Building Science, Landscape Design, Psychology, and other relevant disciplines around the globe, who are interested in understanding and solving the issues related to the built environment through the lens of science of technology may participate in the event.

The built environment is increasingly becoming a product of technology. The Bio-physics involved in the building has an important role to play in human wellbeing. With the advent of sustainable technologies, our knowledge horizon concerning the physical behavior of buildings and the impact of buildings on the energy efficiency, comfort, health, safety and durability has expanded. In the wake of the above context, it can be said that the Science and Technology have asserted its position in the contemporary building processes;

this means the building can't be purely considered as an object of art anymore. The technological quotient involved in a building equally dictates and shapes the final built environment. The themes of the event are:

I. ***Cities, Neighbourhood and Built Environment***

- Urban Climate
- Urban Heat Island.
- Outdoor Comfort.
- Culture and Societies.
- Air Quality – Outdoor.
- Mobility and Walkability.
- Planning and Policies.
- Future Cities.
- Sustainable Landscape Planning.
- Smart Cities.
- Urban Agriculture/ Farming.
- Microclimate Control/Auditing.

II. ***Building Science and Technology***

- Energy Efficient Buildings.
- Health and Well-being of Buildings.
- Net zero Energy Buildings.
- Thermal Comfort/ Visual Comfort/ Aural Comfort.
- Building Acoustics.
- Natural Ventilation and Lighting.
- Simulations and Tools for Energy Efficient Buildings.
- Renewable Technologies in Buildings.

III. ***Building Materials and Technology***

- Sustainable Building Technologies and Materials.
- Vernacular Building Materials.
- Recyclable/Reusable Building Materials.
- Durability of Building Materials.
- Materials and Nanotechnology.
- High Performance Materials.
- Experimental and Mathematical Analysis Related to Material Properties.
- Materials for Building Enclosure, Assemblies, and
- Regulating Space Heating and Cooling Modes.
- Smart Materials for Architectural Applications.

VI. ***Architecture and Allied Domains***

- History and Theories of Architecture.
- Conservation and Rehabilitation of Traditional Sites Buildings.
- Urban Design/Planning.
- Art and Architecture.
- Interior Design/ Product Design.
- Pedagogy /Education.
- Building Structures.
- Digital Architecture.
- Psychology/ Behaviour Studies.
- Any Other Topics in the above Domains.

For further details, contact Coordinator, Prof. Shanthi Priya. R, Professor, School of Architecture and Interior Design, SRM Institute of Science and Technology, kattankulathur- 603 203 (Tamil Nadu), Phone: +91 9600025012, +91 9884901728, +91 638053114, E-mail: *iconbest.2021@srmist.edu.in.* For updates, log on to: *https://www.srmist.edu.in/iconbest-2021.*

International Conference on Big Data, Machine Learning and Their Applications

A three-day International Conference on 'Big Data, Machine Learning and Their Applications' is being organised by Motilal Nehru National Institute of Technology (MNNIT), Allahabad during May 28-30, 2021. The event may provide a forum for academics, researchers and practitioners from academia and industries to exchange ideas and share recent developments in the field of Big Data and Machine Learning and their Applications. It will provide a platform for researchers to get recognition for their research innovations and provide wider publicity to the Institute as well as industries. The event focuses on both theory and applications in the broad areas of Big Data and Machine Learning and its Applications in various areas. The Tracks of the event are:

- ***Track I: Big Data***
- ***Track-II: Machine Learning***
- ***Track III: Bio Inspired Algorithms***
- ***Track IV: Artificial Intelligence***

- ***Track V: Applications of Big Data, Machine Learning and Bio Inspired Algorithms in***

For further details, contact Dr. Niraj Kumar Choudhary/Dr. Navjot Singh, Department of Electrical Engineering /Department of Computer Science and Engineering, MNNIT Allahabad- 211 004 (Uttar Pradesh), Phone: 09455691568 / 9650506400, E-mail: *icbma2021@gmail*.com. For updates, log on to: *www.mnnit.ac.in/*

International Conference on Empowering Learners in a Digital World

A three-day International Conference on 'Empowering Learners in a Digital World' is being organized by The International Institute of Knowledge Management, Sri Lanka during April 06-08, 2021. The hosting partners are the Department of Foundations of Education, Faculty of Educational Studies, University Putra, Malaysia and South South Triangular, Education Consortium (SSTEC). One of the main objectives of the event is to continue to work toward improving the standard of the international community of educational researchers, scholars, and practitioners by introducing them to the latest trends, developments, and challenges in the education field while addressing the theme. The Topics of interest for submission include, but are not limited to:

- Effective Technology in the Classroom.
- Pandemic-based Educational Research.
- Working with Diverse Populations.
- Innovative Educational Practices.
- Curriculum that Works.
- Learning Science.
- Assessment Reliability and Validity.

Dates of Importance

Early Bird Payment Deadline: January 20, 2021
Regular Payment Deadline: February 18, 2021
PP Presentation Due on Or before: March 25, 2021
Full Paper Submission Deadline: May 03, 2021

For further details, contact Conference Secretariat, Ms Asha Ratnayake, The International Institute of Knowledge Management, #531/18, Kotte road, Pitakotte, Sri Lanka, Phone No: +94 117992022, Fax: +94 112873371, Hotline: +94 765733737, E-mail: *secretariat@educationconference.co.* ❑

THESES OF THE MONTH

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

AGRICULTURAL & VETERINARY SCIENCES

Agronomy

1. Hadiyal, Jigneshkumar Ganeshbhai. **Crop intensification and diversification through groundnut (*Arachis hypogaea* L) + sweet corn (*Zea mays var saccharate*) intercropping system**. (Dr R K Mathukia), Department of Agronomy, Junagadh Agricultural University, Junagadh.

2. Pooja. **Effect of some cow based bio-enhancers and botanicals for organic cultivation of soybean (*Glycine max* L) and their residual effect on succeeding wheat**. (Dr P K Chovatia), Department of Agronomy, Junagadh Agricultural University, Junagadh.

Soil Science

1. Ajay Kumar. **Soil quality indexing of an acid alfisol under rice-wheat cropping system based on continuous integrated plant nutrient supply in mid-hills of Himachal Pradesh**. (Dr S S Paliyal), Department of Soil Science, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

BIOLOGICAL SCIENCES

Genetics

1. Sanitha, Mary. **Approaches to develop clostridia as a plant-fermenting biocatalyst**. (Dr. Ramya Mohandass), Department of Genetics, SRM University, Kattankulathur, Chennai.

Zoology

1. Deb, Mamata. **Study on the molecular mechanism of artemisia annua L/ induces toxicity against tribolium casteneum (Herbst)**. (Prof. Dolly Kumar), Department of Zoology, M S University of Baroda, Vadodara.

2. Purohit, Hardik Yogeshbhai. **Influence of abiotic and biotic factors on the life cycle of spodoptera litura fabricius, 1775 (Lepidoptera: Noctuidae)**. (Prof. Dolly Kumar), Department of Zoology, M S University of Baroda, Vadodara.

3. Wangsa, Khamhee. **A study on the effect of Scoparia Dulcis L leaf extract on expression of endometrial insulin like growth factor-II (IGF-II) and decidualization during periimplantation in albino mice**. (Prof. Hirendra Nath Sarma), Department of Zoology, Rajiv Gandhi University, Itanagar.

EARTH SYSTEM SCIENCES

Environmental Science

1. Bhadanuriya, Gaurav. **Extraction of biofungicides from bryophytes and their contribution in plant disease resistance**. (Dr. Shivom Singh), Department of Environmental Science, ITM University, Gwalior.

ENGINEERING SCIENCES

Biomedical Engineering

1. Gnanavel, S. **In vitro corrosion and biocompatibility studies of the surface modified titanium and stainless steel alloys for biomedical implant applications**. (Dr. S. Ponnusamy), Department of Biomedical Engineering, SRM University, Kattankulathur, Chennai.

Chemical Engineering

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