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Excellence in Research and Innovation in Indian Universities: Retrospect and Way Forward

PK Sudhir* and SAV Satya Murty**

innovation contribute significantly to the Research and development of a country and for providing quality of life to its people. Centuries back, India had leading scientists and mathematicians who contributed to many innovations. Indian Institute of Science (IISc) and Tata Institute of Fundamental Research (TIFR) established before India's independence are still contributing in a good measure to research and innovation. Post-independence, many public funded research laboratories were established, but they are working in silos, though contributing significantly to their mission programmes. During the same period, a good number of higher educational institutes like Indian Institutes of Technology (IITs), Central Universities, and National Institute of Technology (NITs) were established. In recent decades, many private universities were also established. They contribute to good number of journal publications, which is one of the measures of research carried out in their institutes. This paper covers the details of journal publications made by different top notch public funded higher educational institutes like IITs, Central Universities, NITs and leading private universities. It also talks about their citation count and measures the quality of these research papers published by these institutes. Based on data sets from the 2013 release of Scimago Rankings World Reports to evaluate the longitudinal performance of the quality and quantity of research output of select institutions were analysed. Though the numbers look attractive, they are not commensurate with the investments made. Also, the investments made are a small percentage of India's GDP and much smaller when compared to some of the developed and developing countries. The role of incubation centres is also mentioned; the paper also suggests various measures to be taken in the other institutes to improve the research and innovations and create an eco-system for significant research.

Research and Innovation

Research plays a significant role in the development of a country and its safety, security and wellbeing of the people of the country. This fact has been proved time and again. If the quality of life of the people in the developed countries like USA, UK, Japan etc. is good, it can be attributed to their higher per capita income due to the greater industrialisation resulted by the amount of quality research done over a period of time.

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Research is defined as the creation of new knowledge or identification of new ways to use the existing knowledge in a new and creative way so as to generate new theories, concepts, methodologies. It is a methodical and detailed study of a specific problem, concern, or issue to find a solution. Research is being done by many individuals in different areas for centuries throughout the world and we are enjoying its benefits in our daily life (Dalal, 2018).

Research leads to innovation. Innovation is the process of creation, development or conceptualisation of a new product, process or service, or improving the efficiency, effectiveness of an existing system with the aim of improving wellbeing of people (Wikipedia—Research). There are manv inventions made by inventors that has changed the life of mankind, some of which are disruptive incremental. Disruptive invention or is something which makes a very big impact on the market and living of the people, like Thomas Edison's incandescent light bulb, Graham Bell's telephone, Marconi's radio, Alexander Fleming's penicillin-the first true antibiotic, Leo Hendrik Baekeland's plastic, Martin Cooper's cell phone etc. Incremental inventions are things like the development of 3G or 4G technology for cell phones when 2G technology is already in existence.

Research and Innovations which made Impact

Some of the inventions are research findings which later made a big impact, such as identification of the Solar System by Nicolaus Copernicus, X-Rays by Wilhelm Conrad Roentgen, the Electromagnetic Theory by James Clerk Maxwell, Marie Curie's development of the theory of Radioactivity, and Albert Einstein's theory of Relativity. If we still go back some of the oldest medical systems invented are Dhanvatari's Ayurvedic system, Hippocrates's Unani system, and Samuel Christian Hahnemann's Homeopathy system, which are practiced even today.

Research and Development (R&D) plays a crucial role in any innovation process. It is an investment in technology and future capabilities that will be transformed into new products, processes or services. Sometimes, a research that was started for proving or understanding certain concepts, has stumbled upon new inventions. Galileo Galilei pioneered the experimental scientific method and was the first to use a refracting telescope to make important astronomical discoveries. He is often referred to as the "Father of Modern Astronomy" and the "Father of Modern Physics". Albert Einstein called Galileo the "Father of Modern Science" (Wikipedia-Galileo Galili). Greek mathematician Archimedes is widely considered by many to be the "Father of Mathematics (Wikipedia-Archimedes).

India also contributed significantly in those years. Science and Mathematics were early highly developed during the ancient period in India. Some famous ancient Indian mathematicians Baudhayan, Aryabhatta, Brahmgupta, were Bhaskaracharya, Mahaviracharya. Some famous scientists were Kanad, Varahamihira, Nagarjuna Kanada, also known as Kashyapa, was an ancient Indian natural scientist and philosopher who founded the Vaisheshika school of Indian philosophy that also represents the earliest Indian physics. Aryabhatta was the first well known mathematician cum astronomer the classical age of Indian mathematics from and astronomy. He invented Zero, which changed the understanding of Mathematics (Wikipedia-Aryabhatta). Varahamihira's mathematical work included the discover y of the trigonometric formulas. He improved the accuracy of the sine tables of Aryabhatta and defined the algebraic properties of zero as well as of negative numbers (Wikipedia-Varahamihira). Nagarjuna was considered as the wizard of chemical sciences. In the area where medieval alchemists of England failed, Nagarjuna had discovered the alchemy of transmuting base metals into gold (Wikipedia-Hindu Jagruti). However, India could not sustain the leadership because of lack of support and ecosystem.

The Journey so Far

It took centuries to establish organised research laboratories throughout the world. AT&T Bell Laboratories is one of the earliest research laboratories established in 1925 by Alexander Graham Bell. These labs have over 33,000 patents and 13 Nobel Prize winners. It has many inventions to its credit that are game changers for the world such as the transistor, cellular technology, data networking, laser, solar cells, communication satellites, etc.

Simultaneously, one major change that took place in the 20th century was the commercialisation of inventions. Earlier, scientists felt that their inventions shall be freely available for the benefit of people at large. However, there was a debatable change in perception among the scientists and their employers and concept of IPRs have come.

Public funded academic institutes were established in India and they started contributing innovation. Indian Institute of to research and Technology Roorkee (IITR), formerly University of Roorkee and Thomason College of Civil Engineering, was established in 1847 in British India by the then Lieutenant Governor, Sir James Thomason. It is the second oldest technical institution in Asia, known for its mastery in Civil Engineering. The Electrical Engineering Department of the Thomason College was established in the year 1897 and was one of the earliest such specialisations in the world. IITR has produced about 25 Shanti Swarup Bhatnagar Prize for Science and Technology winners (Wikipedia-IIT-Roorkee).

One of the public funded research universities of India, a jewel in the list of academic institutes in India contributing to research, remains Indian Institute of Science (IISc), which was established in 1909 in Bangalore with active financial support from Jamsetji Tata (Wikipedia-IISc). It has a origin of great interest. During a chance meeting between Jamsetji Tata and Swami Vivekananda, on a ship in 1893 incidentally, they discussed Tata's plan of bringing to India the steel industry. Such was the passion of Jamsetji Tata that he wrote five years later to Vivekananda: "I hope and trust, you remember me as a fellow-traveller on your voyage from Japan to Chicago. I very much recall even at this moment your views on the growth of the spirit characterized by severe self-discipline and abstention from all forms of indulgence in India. Tata was impressed by Vivekananda's views on science and leadership abilities. Hence he wanted him to guide in his campaign to start a Research Institute of Science for India. Vivekananda supported the project with enthusiasm. Jamsetji Tata constituted a Provisional Committee to prepare a plan for setting up of an Institute of research and higher education, with the aim of advancing the scientific capabilities of the country. The committee presented the draft proposal to Lord Curzon on 31 December, 1898. IISc was established in 1909 and Morris Travers, the coworker of Sir William Ramsay in the discovery of the noble gases, became its first Director. The first Indian Director of IISc was the Nobel Laureate Sir C.V. Raman. IISc has been a doing great job in Research since then. Bharat Ratna Dr. C.N.R. Rao who has an h-index of 155 currently, was with IISc for long and also had been its Director. Research, innovation and excellence in India has taken another quantum jump with the establishment of Tata Institute of Fundamental Research (TIFR) in 1945, currently a deemed to be university and an outstanding research institute. TIFR was founded through the initiative of the great Scientist and Visionary Homi J. Bhabha and it is currently an aided Institute of Department of Atomic Energy. Its contribution has been recognised in the form of 32 Padma awards over the years, more than 25 Shanti Swarup Bhatnagar awards, seven Infosys awards and 15 Swarnajayanti Fellowships, in addition to international awards like the ICTP Prize, TWAS Prize and the New Horizons Physics (Milner) Prize etc. The rate of publications from TIFR has been consistently high over the years, with more than 1000 publications (including Conference Proceedings) during 2014-15(TIFR, 2016).

funded research laboratories and Public academic institutes were established in the postindependent India, thanks to the foresight of the then governments, such as Atomic Energy Establishment, Defence Research and Development Organisation, Indian Space Research Organisation, Council of Scientific and Industrial Research Laboratories, Indian Council for Medical Research Laboratories etc. Though these departments made extra ordinary contributions to research and innovation, they work mostly in silos and collaborations with academic institutes is limited considering their size and investment made by the government. During the same period, the government established higher educational institutes like the Indian Institutes of Technology in different parts of the country, central universities and regional engineering colleges, which were later known as National Institutes of Technology that are significantly contributing to research and innovation.

Parameters for Measuring The Research and Innovation

Some of the parameters for measuring research, innovation and excellence are number of products developed, scientific ideas conceptualised, patents filed, scientific journal papers published, citations per paper published, h-index, i10 index etc. For obvious reasons, these parameters vary drastically between the institutions doing Basic Research and Applied Research. As per the study conducted by Department of Science and Technology (DST), Government of India in 2016, IISc tops in the research output in India with 22,056 scientific journal publications between 2002-

2014. During the same period, Indian Institute of Technology (IIT) Kharagpur had published 15,797 and Indian Institute of Technology (IIT), Delhi had published 14,956 journal papers. According to data available with the Human Resource Development (HRD) Ministry, Indian Institute of Technology (IIT)-Madras has filed 132 patents by its students and faculty in 2018. Indian Institute of Technology (IIT), Mumbai is second with 104 patents, IISc Bangalore is close behind with 101 patents and IIT Delhi has registered 96 patents (Hindustan Times, 2018). As per the data uploaded on 19th November, 2019, the number of patents filed by Indian Institue of Technology and Management (IITM) in 2018-19 was 195 while the number of patents granted were 45 (iitsystem.ac.in). The number of patents filed by IIT Delhi in 2019 is 150 (Business Today, 2019). As per data, Elsevier, a top publisher of scientific articles and journals, places India in the fifth position for scientific research (The Print, 2018).

The number of Web of Science (WoS) Total Publications (TPs) between 2010-16 for the four sets of most productive higher educational institutes, namely 19 IITs, 25 institutes each of Central Universities (CU), National Institutes of Technology (NITs), and private universities is 51159, 41470, 16604, and 28466 respectively (Bansal, 2019). The data is given in Table-1. As could be seen from Table-1, institutes that are long standing, well equipped, have quality faculty and well managed universities are faring better whether they are public funded or private funded. However, considering that there are almost 1000 universities in the country and the higher education system in India being the third largest in the world, next only to the United States and China, the research and innovation from academic institutes have to be significantly improved.

Though India is among the top five countries in terms of scientific publications, it does not match up in investments. The total Research and Development (R&D) expenditure tripled in the last one decade from Rs. 24,117 crores in 2004-05 to an estimated Rs. 1,04,864 crores in 2016-17. However, as a fraction of Gross Domestic Product (GDP), public expenditure on R&D has been more or less stagnant between 0.6 per cent-0.7 per cent of GDP over the past two decades, which is well below that in developed and developing nations such as USA (2.8 per cent), China (2.1 per cent), Israel (4.3 per cent), and Korea (4.2 per cent) according to a report by the Economic Advisory Council in 2019 (The Hindu, 2020).

Quality of Research Output

Quantity of research output is important. At the same time, quality of the publications is equally significant. Citations and average citations per journal paper are the most widely used indicators for deciding the quality. The Total Citations (TC) count is directly available from the data. For measuring the Quality of

IITs	ТР	Central Universities	ТР	NITs	ТР	Private Institutions	ТР
IIT, Kharagpur	9208	University of Delhi	8327	NIT, Rourkela	2185	Manipal University	4018
IIT, Bombay	7485	BHU, Varanasi	8054	NIT, Trichy	2072	Vellore Institute of Technology, Vellore	3570
IIT, Delhi	7172	Aligarh Muslim University	4307	Sardar Vallabhbhai NIT, Surat	1178	Thapar University, Patiala	2270
IIT, Madras	7122	University of Hyderabad	3795	NIT, Durgapur	1146	BITS, Pilani	2254
IIT, Kanpur	5957	Jawaharlal Nehru University,New Delhi	3012	NIT, Karnataka, Suratkal	1106	Jamia Hamdard, New Delhi	1950

Table-1: No. of Publications by Top 5 Institutes of IIT, CUS, NIT andPrivate Universities (2010-16)

Publications, TC data, Average Citations Per Paper (ACPP) calculated and h-index for all the four sets of institutions i.e., IITs, Central Universities, NITs and Private Universities, for each year are used. Tables 2A to 2D present these indicators for each of the four institution-sets (Bansal, 2019).

It can be seen from the tables that IITs lead with the highest number of citations as well as the highest average h-index. This is somewhat closely followed by Central Universities and then the NITs and Private Universities. Considering the fact that private universities have a good number of papers in the recent years and are growing fast, it can be easily assumed that private universities will get higher number of citations in the years to come, as the citation window size gets bigger. The top one per cent most cited papers of India during the years 2010-16 (total Papers: 4588) are referred to as highly cited papers (HiCP)(Bansal, 2015). Table-3 gives a total number of papers published, number of faculty, research expenditure for three years, and per faculty expenditure/year for IISc and other established private universities, which indicates the quality of research and resources spent for achieving the quality.

The O (or Output) indicator is an exact measure of the quantity or size of the publications made by an institution and is the total number of publications made in scholarly journals that are indexed in Scopus. The three proxies that signify in various ways the quality of academic research output are given below (Parthap, 2014).

1. The NI (or Normalised Impact) compares the average scientific impact of the institution with that of the world average taken as 1. Thus, a score of 0.8 means that it is a 20 per cent below average citation performance, while a score of

Year	Total Publications (TP)	Total Citations (TC)	ACPP	h-index
2010	5247	84356	16.07	93
2011	5473	81295	14.85	88
2012	5913	74110	12.53	76
2013	6678	74986	11.22	77
2014	7740	57708	7.45	57
2015	8906	38823	4.35	41
2016	11202	17379	1.55	25

Table 2a: Quality of Research (IITS)

Year	Total Publications (TP)	Total Citations (TC)	ACPP	h-index
2010	4416	67857	15.366	83
2011	5076	68000	13.396	80
2012	5490	71619	13.045	81
2013	5925	55574	9.38	65
2014	6271	41484	6.615	49
2015	6803	26665	3.92	40
2016	7489	10415	1.391	22

 Table 2b: Quality of Research (CUS)

Table 2c: Quality of Research (NITS)

Year	Total Publications (TP)	Total Citations (TC)	ACPP	h-index
2010	1277	18955	14.843	54
2011	1461	16179	11.074	46
2012	1645	17273	10.5	42
2013	2100	17923	8.535	43
2014	2544	14936	5.871	32
2015	3233	9333	2.887	24
2016	4344	5050	1.163	15

Year	Total Publications (TP)	Total Citations (TC)	ACPP	h-index
2010	1957	27849	14.23	68
2011	2432	26226	10.784	59
2012	3060	30291	9.899	52
2013	3853	27775	7.209	48
2014	4303	24369	5.663	42
2015	5527	16909	3.059	31
2016	7334	7149	0.975	19

Table 2d: Quality of Research (Pvt. Univ.)

	-			
Institute	Total Papers	No. of Faculty	Expenditure for 3 years in Rs. Crores	Expenditure/ faculty/ year in Rs. Crores
IISc, Bengaluru	7237	430	1603.67	1.24
Manipal University	3240	2586	3759.88	0.49
VIT, Vellore	4289	1720	1539.84	0.30
Thapar Institute of Engineering and Technology	1802	482	417.79	0.29
BITS, Pilani	2183	694	1126.61	0.54

 Table 3: Quality of Research Vs Research Expenditure

1.3 implies that the institution is cited 30 per cent above average citation performance.

- 2. The Q1 (or high quality publications) is the ratio of publications that the institution published in what the Scimago team takes as the most influential scholarly journals of the world; those that are ranked in the first quartile (25 percent) in their categories as ordered by Scimago Journal Rank (SJR). Since this is indicated as a percentage, the ratio (Q1/25) is yet another normalised proxy for the quality of publication, with a value of one taken as the world average.
- 3. The ER (or Excellence Rate) signifies the percentage of an institution's scientific output that is included into the set formed by the top 10 per cent of the most cited papers in the relevant and respective scientific fields. It serves as an important measure of the high quality output of the research institution. Again, the ratio ER/10, permits one to normalise this proxy so that the world average becomes 1.

An important point to be mentioned here is that these three indicators intrinsically encompass what is called the field normalisation aspect, i.e. they account for the fact that different publications and citation practices across varied disciplines will lead to significantly different citation rates and that this can be normalised by adopting NI, Q1 and ER as bibliometric indicators, which are defined below. Default ranking using output as the only criterion is easy as it is a unidimensional indicator. However, as there are three different quality indicators, ranking by quality needs that these three different indicators are combined into a single composite quality indicator. It is possible to use a Euclidean measure to combine these three quality proxies into a single one. For this purpose, it is proposed that the q2 proxy, where q2 is defined as ((NI)2 + (Q1/25)2 + (ER/10)2)/3. This is a simple measure and it is a composite quality indicator with a value of 1 describing the world norm constituted from the three indicators, namely NI, Q1/25 and ER/10, each of which defines a world norm with a value of 1. Thus in this analysis, the simplified the Scimago Institutions Rankings (SIR) reports data to one quantity term (Q=O) and quality term (q2). The single composite term, X = q2 Q is that term that serves as the best proxy for total performance in the current research context (Parthap, 2014). Table 4 Data is based on SIR 2013 rankings World Reports to evaluate the quality and quantity of research output based on longitudinal performance of select

	Values				ankings	
HEI	No. of Publications	Q2	X	Output	2	X
IISc	9111	2.44	22221.51	1	4	1
IITKGP	7665	1.93	14816.90	2	9	2
IITB	5822	2.12	12369.41	7	7	3
IITD	6629	1.78	11799.68	3	14	4
IITM	6252	1.85	11573.71	5	11	5
IITK	5075	2.10	10658.27	10	8	6
TIFR	3490	3.01	10515.64	14	2	7
Univ. of Delhi	6488	1.32	8534.83	4	30	8
BHU	5336	1.38	7374.12	8	26	9
IITR	4277	1.64	7031.46	12	17	10

Table 4: Rankings of Heis Appearing In Sir 2013 Accordingto Various Indicators

institutions belonging to this sector for the period 2003-2011.

The count of scientific documents takes into account articles, conference papers, short reviews etc. collected by Scopus.

Incubation Centres

Incubation centres are an essential component in any institute especially in engineering and technological institutes for the faculty and students to try out their research and engineering ideas to make prototypes and test them. Once they are successfully tested, they can be commercialised through proper commercial models.

It can be seen from the data furnished in various tables above that the quantum and quality of research output which decides the research, innovation and excellence in Indian universities depends on: the infrastructure in the university, research inclination by the faculty, research funding, facilitation, research ecosystem built, etc.

If the research output is good in IISc, to a large extent it is because of the research investment made by each faculty member, state of the art infrastructure available, vibrant research ecosystem, quality and qualified faculty, and the academic freedom they enjoy. It is true to a large extent in other IITs too.

It should always be borne in mind that universities must not restrict themselves to just awarding degrees but pursue research with all earnestness which will improve their academic quality as well as research output. For a university having constituent/affiliated colleges making a beginning in research, the following measures will yield positive results over a period of time:

- Frame a Research Promotion Policy for the university and revise whenever policy changes are required to improve the system.
- Motivate all faculty to spend more time on research for improved quality research output and facilitate their research by providing sufficient time for the same by adjusting their workload.
- Interested work groups may be formed for working on different research problems, in the form of task forces by identifying suitable faculty across the departments based on the research topic.
- Improved research infrastructure.
- Capacity building of the faculty and students through exposure to the state-of-the-arttechnologies. This can be achieved through their active participation in quality international/ national conferences, symposiums, workshops, etc. They shall have good network linkages to the scientific faculty around the world.
- International collaborations through faculty exchange programmes and sharing of research infrastructure.
- Full- time research associates either in the form of PhD scholars or Post- doctoral fellows. They shall be supported with good fellowship amounts. This is in addition to the research contributions made by the faculty.

- Seed money for the faculty/students in the form of internal funding to test or try out their research ideas or hypothesis.
- Financial support for the UG/PG students to carry out their research projects and dissertations.
- Though a research scientist derives the satisfaction from his research results and recognition by peers, institutes and recognition through awards, he has to feel it to get motivated. Till then, the university has to incentivise the efforts put by the faculty in the form incentives for publishing in high quality journals, patents filed, products incubated etc.
- Proper facilitation is essential for the faculty to carry out research without any bureaucratic hindrances.
- A research ecosystem has to be built for the faculty/students through proper systems, structures and review & follow up mechanism.

Conclusion

Research and innovation play an important role for the development of any country. Exclusive research institutes established post-independence are working well in their silos meeting their mission programmes without many collaborations, considering their size and quantum of public money spent on them. The IISc, IITs, Central Universities, NITs and some of the private universities established in pre and post independence era are contributing fairly well to the research and innovation. As per AISHE 2018-19, report there are more than 50,000 higher educational institutes (HEI) in India (GoI, 2019). The number of students pursuing higher education in India is about 3.8 crores (Livemint, 2019).

Though these numbers looks big, the quantum and quality of research in the country is far from sat is factory. The quantitative measures of the research and innovation are number of innovations made, journal articles published, patents filed/granted, the citation count of the journal publications made, h-index, etc. When we correlate the number of HEIs with the number of innovations made, number of papers published, their citation count, patents filed/ granted, the picture looks unsatisfactory. Through a close look at the numbers presented in higher educational institutes, both public and privately funded, the following can be observed if the rest of the institutes (95 per cent) also contribute to research and innovation in some measure, then India can claim to be a research hub. All efforts shall be to make it happen as soon as possible. It is possible only by increasing the investments made in research and developing a proper research ecosystem. The government shall play a major role in both these enablers. The paper summarises with the steps to be taken to improve the research ecosystem and to motivate the faculty and students in universities making a beginning to make a mark in the research.

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Seven Strategies to Develop Students' Critical Thinking Skills

A Joseph Dorairaj*

While a typical American/British/European classroom is largely dialogical, most of our classrooms are reduced to monologues with very little student participation. While their examination system tests students' critical thinking skills, our system focuses on rote memory. While their students are encouraged to articulate their individual points of view on a given topic, our students are trained to echo their masters' voices faithfully. In short, Indian students, both at the secondary and tertiary levels, lack robust critical thinking skills.

As academicians, what steps should we take to develop our students' critical thinking skills at the tertiary level? Before we strategize, we should clarify that these are skills and, therefore, like any other skill such as communication skills or IT skills, critical thinking skills too can be diligently cultivated over a period of time. It is true that the home environment, especially the conversations surrounding the dining table, plays a decisive role in inculcating and developing an individual's critical thinking skills. But we shall focus on the role of classrooms in developing these skills.

The first strategy is to consciously transition into a dialogical model where there will be meaningful conversations between teachers and students. Instead of a one-way system where classrooms are reduced to drab monologues, the two-way system provides the space for Q&A, debates and discussions and even disagreement without getting acrimonious. The traditional system reduces students to passive consumers and the examination system too promotes only those pedagogies that promote rote learning.

The Socratic or maieutic method of education, as opposed to the banking model of education critiqued by Freire in his celebrated *The Pedagogy of the Oppressed*, provides the key. While the banking model reduces students to objects into whose 'empty' minds are deposited scraps of information which are rarely processed and converted into knowledge, the Socratic model of education turns students into active learners whose minds bristle with questions. While the banking model does not promote any active learning, the maieutic method of education, where the teacher plays the role of a midwife just as Socrates did with the Athenian youth, assists in the discovery of knowledge by the students themselves. Therefore, the teacher should be periodically raising appropriate questions which would lead and guide the students towards knowledge. By asking the right questions, students could be helped to navigate and arrive at plausible answers and this would certainly promote their critical thinking skills.

Secondly, the educational system should inspire students to ask questions. It is a fact that many teachers do not encourage their students to ask questions for various reasons and one of them is that they are always in a tearing hurry 'to finish the syllabus' and cannot tolerate any delay that distracts them from reaching this goal. Students rarely ask questions and even those who risk asking questions earn the wrath of their teachers who tease them with words like 'So, you think you know more than me'. Such an ecosystem is hardly conducive for any real learning which revolves around questions and discussions. In most classes even if the teacher invites questions, no student dares to ask any question largely out of fear that it may be dismissed as a silly question. Therefore, a good strategy would be to gently prod four or five students on any given day to raise a few questions so that by the end of the month every student would have raised at least one question on a given topic.

Thirdly, the examination system needs to be revamped if critical thinking skills are to be promoted. Currently, both secondary and tertiary education promote only rote learning where memory plays the cardinal role. Against this backdrop, there should be a conscious shift to problem-solving and application-oriented exercises. Bloom's taxonomy talks of lower and higher order thinking skills. The question papers should include 'recall/remember' questions testing students' memory as well as

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analytical and evaluative questions which will test their critical thinking skills. There should be space for open-ended questions too which will force them to think on their feet and come up with logically convincing answers. Once the assessment pattern changes, the pedagogy too will change. A few institutions have already adopted the outcomebased educational paradigm but this model needs to be implemented widely and imaginatively as well.

Fourthly, group discussions on select topics related to their courses and debates on general topics would certainly promote students' critical thinking abilities. During such events, teachers should play the role of a catalyst motivating and encouraging students to articulate their points of view on a given topic and subject. During these discussions and debates, students learn how to negotiate other perspectives and also recognize and appreciate diverse points of view. Such exercises will inculcate in them the openness and even humility to listen to others' views, sift them and take in whatever is backed by solid evidence.

Fifthly, dealing with primary, rather than secondary, data will help students of social sciences develop their critical thinking skills. Assignments in formulating hypotheses, deciding on appropriate data collection tools, collecting, sifting, analysing and interpreting data and arriving at logical conclusions will certainly strengthen their critical thinking skills. Rather than working with secondary data and bookish examples, going out into the field for an empirical study helps students not only in terms of research but also in honing their critical thinking skills. Therefore, all students of social sciences should be encouraged to take up field work culminating in scientifically-written project reports which will go a long way in promoting their critical thinking abilities.

Sixthly, as part of liberal education, an introductory course in Philosophy may be offered to promote students' critical thinking skills. The benefits of dialoguing with Socrates, Plato, Aristotle, Descartes, Aquinas, Kant, Heidegger, Wittgenstein, Heidegger, Sartre and Habermas and Tagore, Sri Aurobindo and Gandhi are immense. Not only will students get acquainted with the concepts and theories of these philosophical giants, but will also get trained in critical thinking when engaging with these thinkers.

Lastly, learning has to be personalized or individualized. Instead of asking students to reproduce what books and authors have said on a particular phenomenon or topic, the teacher should facilitate a personalized approach to learning where the student's stance on a particular topic/author would be valued. Questions like 'What do you think on this particular topic? What is your take on this concept/phenomenon?' will motivate students to critique even established views and perspectives on a given topic/phenomenon and come up with their own responses. Such personalized learning will not only strengthen students' critical thinking skills but will also lead to a deconstruction of the existing opinions/stances which will eventually promote originality.

If we have to produce another Amartya Sen or Venkatraman Ramakrishnan or Abhijit Banerjee or Sundar Pichai, we need a curriculum that will ardently promote critical thinking skills. An outcome-based education that ensures valid and relevant content, appropriate and robust pedagogies, and valid and reliable assessment systems that will test students' memory as well as critical thinking skills will certainly produce amazing results.

Role of National Education Policy–2020 in Human Resource Development: Gap between Recommendations and Implementation

Annapoorna* and Geetanjali Diwani**

The New Education policy emphasis on the global education development agenda reflected in the Goal 4 (SDG 4) of the 2030 Agenda for Sustainable Development-adopted by India in 2015. Human being is a very exquisite resource to be taken with utmost care coupled with vitality. In the pursuit of converting human resource into human capital, most important is dissemination of right knowledge to right person. Each individual's growth presents a different range of problems and requirements, therefore the catalytic action of Education in this multifaceted and vibrant growth process needs to be planned methodically and implemented with great compassion.

The first National Policy of Education was announced in 1968 based on reports and recommendations of Education Commission (Kothari Commission, 1964-1966) with the emphasis on radical restructuring and equal opportunity to access education. Next National Policy on Education was announced in May, 1986 with the aim of removing disparities, childcentric approach, open university, rural university to name a few. It was further revised in 1992 with modifications based on recommendations of Ramamurthy Committee set up in 1990. In 2009, Yashpal Committee has presented a report to advice on the renovation and rejuvenation of higher education. Report of the Committee for Evolution of the New Education Policy-2016 suggested revamp of education sector to reap the advantage of huge demographic dividend.

The present New Education Policy–2020 is the first education policy of the 21st century and aims to address the many growing developmental imperatives of our country. This policy proposes the revision and revamping of all aspects of education structure, including its regulations and governance, including SDG 4, while building upon India's Traditions and value systems.

All the earlier policies have stressed on equity, quality and access and fulfilment of these objectives require huge public funding. But it was observed that there was always a gap between recommendations and implementations especially in case of public expenditure on education which has serious implications on human resource development of the country.

As per the Report of the Committee for Evolution of the New Education Policy, 2016 the earlier National Education Policies of 1968, and 1986 as modified in 1992, had recommended a norm of 6% of GDP as the minimum expenditure on education. The expenditure by Education Departments of the Centre and States has never ascended above 4.3% of the GDP, and is currently around 3.5%. The basic objective of this study is to understand the extent of gap between the recommendations and implementation in case of public expenditure on education and make suitable recommendations keeping the New Education Policy–2020 implementation.

Literature Review

Lucas (1988) in his Endogenous Growth Theory regarded Human Capital as a factor of Production and Knowledge which is the centrifugal force to accelerate economic growth. Sustaining an economic and social progress in a nation requires Human Capital. Blundell, Dearden, Meghir and Sianesi (1990) gave more direct evidence on the importance of human capital for national productivity growth by growth regressions, where the education measures have been found to be significant explanatory variables, with higher education being the most relevant education variable for more developed countries. Becker, Murphy and Tamura (1990) discussed that education expenditure since 1960 has been an important determinant of the subsequent growth in

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per capita incomes for around hundred countries since 1960. Douglass (2010) found that educational achievement of a nation's population is an important factor for greater national productivity and global competitiveness. Dukkipati (2010) quoted that for India to maintain its economic growth in a global marketplace fuelled by the knowledge economy, it needs to nearly double its number of students in higher education by 2012. Without proper access to education the country's demographic dividend could turn into a demographic disaster. He proposed that the Government of India expenditure on education and more specifically higher education does not correspond with the country's economic growth. The author points out that in 1950, higher education expenditure as a proportion of GNP was 0.19 per cent and rose to 1% in 1980; however by the mid-1990s it fell to 0.4%. Musai et al. (2011) revealed that the elasticity of the production of human capital, physical capital and labor force are 0.28, 0.696 and 0.044, respectively while studied the relationship between education and economic growth of 79 countries. According to their study, increase in education spending, physical capital and labor force will increase the economic growth of a country.

Financing higher education has appealed serious responsiveness of policy makers and educational scholars as higher education system is facing financial crux (Varghese 2009, Rani 2014) in recent years. It is important to underline the fact here, that from the Second to the Sixth Five-Year Plan period, higher education grew reasonably well with increasing attention coupled with rising allocations of public resources. But from the Seventh Five-Year Plan onwards, higher education did not receive the attention it deserved. Gupta & Gupta (2012) uphold Dukkipati's contention about the Government's desertion of research. The authors recorded that the Government expenditure on research and development in science and technology as percentage of GDP was 0.8% during 2005-06 in India. By way of comparison, the equivalent figure for other countries like Israel, Sweden, Japan, US and China were 5%, 4%, 3%, 2.77% and 1.5% respectively. Bhatia and Dash (2013) observed that Human Development Index of India used to be the lowest among all the countries. India spent the lowest on education in the year 2005 (3.7% of GDP). They suggested that

Government can also work towards provision of free education to all till graduation which indicates a huge public expenditure on education.

Shi Mei-ling (2014) showed through the empirical regression equation that the income elasticity of personal education investment is 1.074, the income elasticity of health investment is 1.539, are more than 1 which means that educating people of the country can greatly promote the economic growth.

Aziz, Khan and Aziz (2008) indicated that education expenditures do affect growth positively. But inequalities in access to higher education by gender, caste and religion increased and interinstitutional variations in quality of higher education became strikingly visible (Tilak 2007).

Ranis et al. (2000) estimated the effects of economic growth as the result of human capital development and the effects of human capital development as the result of economic growth. Outcomes showed that economic growth had constructive and strong bearing on human capital development. Results also showed that substantial and robust GDP per capita income growth leads to higher human capital development.

Here, it is observed that national education policies were framed and revised from time to time but there is always a shortfall in implementation especially with regards to expenditure. Various studies in this field have shown a positive relationship between education expenditure and human resource development which in turn affects economic growth. Thus, in this background, it is important to understand the trends in policy recommendation and implementation of education expenditure and analyse the relationship between education expenditure and human resource development.

Purpose of the Study

Education policies provide a comprehensive framework to ensure the development of education in the country by setting a broad direction with the expectation from the governments to follow it. Successive governments have pledged to increase spending on education to 6 per cent of GDP as it was recommended by National Education Policies, but actual spending has hung around 4 per cent only. Shortage of fund could be a potential reason for failure of the governments to bring out a proper programme of action and implementation.

If we seriously increase spending on education and bring in structural reforms, we can move up from the present HDI rankings of 131 among 188 countries in terms of human development according to the Human Resource Development Report (2020) released by United Nations Development Programme. The purpose of the study is to analyse the relationship between the present New Education Policy the expenditure on education and human resource development in India.

Data and Methodology

The descriptive research method is used research method in education. It helps to explain educational phenomena in terms of the conditions or relationships that exists, opinion that are held by the students, teachers, parents and expert, processes that are going on, effects that are evident or trends that are developing. We have used descriptive method study, to analyze the trends in the education expenditure in the public budget and the relationship that exists the New Education Policy, education expenditure and human resource development.

Data Description

Secondary data provided by the authentic and reliable sources of Government agencies like MHRD, NSS, CSO, Union Budgets and various issues of Economic survey, Human development reports released by UNDP are used to analyse the current situation. Time series data of education expenditure as percentage of GDP from 1950-2018 is used to analyse the gap between recommended expenditure on education by National education policies and expenditure actually incurred on education by successive governments. The time series data of GDP growth rate is used to examine the causal relationship between education expenditure as percentage of GDP and GDP growth rate.

Objectives

- 1. To analyze the gap in education expenditure recommended by National Education Policies and implemented through public budget.
- 2. To analyze the causal relationship between education expenditure as percentage of GDP and GDP growth rate of India.

3. To examine the impact of education expenditure on the implementation of the Education policy 2020.

Hypothesis

- *H_I*: There is bi-directional relationship between education expenditure as percentage of GDP and GDP growth rate of India.
- H_2 : There is positive relationship between education expenditure and human resource development.

Empirical Methodology

Granger Causality test is used to analyze the causal relationship between education expenditure and GDP of India and multiple regressions is used to examine the relationship between education expenditure and human resource development.

Gap Analysis of Recommended and Actual Education Expenditure

The real wealth of a nation lies in "human resources" and the importance of education in development of human resource. Education expenditure should be regarded as a necessity everywhere, and especially in developing countries, since it is a vital investment for the future. Education as a sector which comes in concurrent list has been given due importance in various plan documents. The Government of India has formulated National Policy on Education in 1968 and 1986. The Kothari Commission (1966) suggested initially and the National Policy on Education (1986) and Ramamurthy Committee (1991) stressed sub sequently that 6 per cent of GDP should be spent on this sector. The Delors Commission (1996) has clearly argued for increasing public spending on education. As a rule of thumb, not less than 6 per cent of GNP should be devoted to education". UNESCO and UNDP also favoured it, as a desirable level for the developing countries.

The previous education commission has suggested 6 per cent target based on the requirement of the system for next 20 years. The level of spending by the economically advanced countries like Japan, the US and the USSR as a proportion of their GNP on education and the likely trends in future was also considered in recommending 6% of GDP for education expenditure. Of the several recommendations made by the Kothari commission, 6 per cent of the GDP was accepted by the government of India. Both the education policies resolved to increase the investment in education so as to reach a level of expenditure of 6 per cent of the national income as early as possible. But what has been the performance over the years can be understood by analysing the trends in education expenditure over the period of time.

Empirical Results and Analysis

The data for education expenditure as % of GDP is available for the time period of 1950-2013. The data is divided into 3 sets of years – First is 1950-68, the time period before the first National Policy on Education. Second is 1968-86, the time period between first and second National Policy on Education. Third is 1986-2013, the time period after the second National Policy on Education. After Independence, the key challenges were improving access and quality at all levels of education and improving literacy rates. Along with these

challenges, another major challenge was funding which was required at large scale at the early stage of development. If 6% of GDP is considered as a benchmark for ideal education expenditure for a developing nation as suggested by various commissions, it is observed that Government expenditure on education was never being sufficient enough to improve the performance of the education sector.

Before the first National Policy of Education (1968), as shown in Figure-1, expenditure incurred on education by the Government was just the 10% of the required expenditure in the year 1950, gradually increased to 20% in the year 1960 and remained around it for the next 8 years.

Figure-2 clearly shows that after inception of National Policy of Education in 1968, education expenditure increased gradually from 20% to almost



Figure-1: Education Expenditure as % of GDP in the Period of 1950-68

Source: MHRD





Source: MHRD





Source: MHRD

40% of the total expenditure required at 6% of GDP in almost one and half decade until the second National Policy of Education was framed in 1986. But this increase in expenditure was not sufficient as it was still 60% less than what resolved by the National Policy of Education 1968.

Even after the revision in National Policy of Education in 1986, in which again it was resolved that education expenditure should be increased to 6% of GDP, actual expenditure incurred remained around 40% of the required expenditure till date. With the help of descriptive statistics, we can understand the data with more clarity.

Table 1 explains the basic features of data set. On an average, the education expenditure was 2.75% of GDP and the GDP growth rate was almost 5%. GDP growth rate widely ranged between-5.2 to 10.16 whereas education expenditure ranged from 0.64 to 4.28.

Standard deviation of both education expenditure and GDP growth rate are 1.08 and 3.12 respectively and clearly shows that most of the data is close to the mean. But, it is necessary to understand whether education expenditure and GDP growth rate are related to each other. In order to find whether and how strongly pairs of variables are related, technique of Correlation is used. In Table 2, correlation coefficient for the time period of 1950-2018 shows low correlation between education expenditure and GDP growth rate. During the period of 1950-68, there is almost zero correlation between education expenditure and GDP growth rate. Even during the period after inception of first National Education policy and before the second National Education policy, correlation between the two variables is as low as 0.275. After the second National Education policy came into existence, education expenditure and GDP growth rate showed low correlation but this time it is negative. So, the overall picture is that education expenditure and GDP growth rate are hardly related with each other.

Table-2: Correlation between Education Expenditure as % of GDP & GDP Growth rate

Variables	Correlation coefficient
1950-2018	0.3065
1950-68	0.0584
1968-86	0.2751
1986-2018	-0.2393

Source: Author's Analysis

Causal Relationship between Education Expenditure as percentage of GDP and GDP growth rate of India

A causal relation between two events exists

Variables	Mean	Median	Minimum	Maximum	Std. Dev.
Education Expenditure as % of GDP	2.75857	3.14000	0.640000	4.28000	1.08043
GDP Growth Rate	4.96000	5.36000	-5.20000	10.1600	3.12333

Table-1: Descriptive Statistics 1950-2018

Source: Author's Analysis

if the occurrence of the first causes the other. A correlation between two variables does not imply causation. On the other hand, if there is a causal relationship between two variables, they must be correlated.

To test the causality between variables X and Y, Granger Causality Test is employed. Granger causality says if a signal X "Granger-causes" a signal Y, then preceding values of X should enclose information that helps predict Y. The test assumes that only past values of X can "cause" Y. If X fails to cause Y, X will be considered to be exogenous of Y. Similarly, if both X and Y fails to Granger cause each other, both the variables will be considered to be independent. Granger causality is thus a dominant tool which allows testing for things that was not considered important so far. Vector Auto regressions or VARS are often used to test Granger Causality. A VAR is the extension of the auto regressive (AR) model in case where there is more than one variable under study. VAR helps in finding that whether X causes Y or Y causes X. Before conducting the Granger Causality Test, it is necessary to validate the stationarity of selected variables. To check the stationarity of variables, one of the most popular unit root test, Augmented Dickey Fuller (ADF) test is employed on each variables.

Unit Root Test

To check the stationarity of the selected variables, Augmented Dickey Fuller Test is applied as it is considered as one of the most popular unit root test. Table 3 reveals the result of ADF test of selected variables in its level and first level of difference. Here, the variables are the education expenditure and GDP growth rate. But, both the variables are divided into the different time periods. At first place, we would like to examine the causal relation between two variables for the long period of 1950-2013. Then, there are other 3 periods i.e., pre policy period (1950-68), time period between first and second policy (1968-86) and post second policy period (1986-2018). The p-value is calculated with constant and without constant. The results of the table indicate that all the selected variables appeared to be non-stationary at level in both the situations when p-value is calculated with constant and also without constant. However, all the variables show stationarity at first level of differencing in both the cases.

A variable X Granger-causes Y if Y can be well projected using the histories of both X and Y than by using the history of Y alone. Conceptually, the causal relation is temporal if only past values of X can cause Y. X is considered to be exogenous of Y if X fails to Granger-cause Y. Variables X and Y are independent if both fail to Granger-cause the other. Granger causality is a dominant instrument, which permits us to check for things that one might otherwise take for granted.

As shown in Table 4, for the long period of 1950-2018, variables showed bidirectional causal relationship. But, when we examine the causal relation between the two variables, results depict the different pictures. In case of pre policy period, education expenditure does not Granger Cause GDP growth rate but GDP growth rate Granger Cause

Table-3: Unit Root Test of Stationary using ADF Test Results

Variables		1950-2	2013	1950-68		1968-1986		1986-2018	
		Expanded as % of GDP	GDP growth rate	Expanded as % of GDP	GDP growth rate	Expanded as % of GDP	GDP growth rate	Expanded as % of GDP	GDP growth rate
p-value without	Level of variable	0.9831	0.8632	0.9984	0.01984	0.4825	0.8523	0.765	0.4731
constant	First level of difference	1.419e-011	1.3e-008	0.008231	8.058e-009	0.0009653	0.0001	0.0001232	1.14e-008
p-value with	Level of variable	0.4935	6.412e-009	0.6796	0.0001239	0.5053	0.921	0.0006628	0.007752
constant	First level of difference	2.168e-008	2.582e-007	0.002484	6.47e-007	0.00107	1.733e-006	0.003455	1.14e-008

Source: Author's Analysis

education expenditure. Here, education expenditure is considered to be exogenous of GDP growth rate and the causal relation is unidirectional. In case of time period between first and second policy, both the variables are independent as both failed to Granger Cause the other. In case of post second policy period, causal relation is temporal as education expenditure Granger Cause GDP growth rate but GDP growth rate does not Granger Cause education expenditure.

New Education Policy–2020

The National Education Policy- 2020 envisions an Indian cantered education system by considering its tradition, culture, values and ethos to contribute directly to transform the country into an equitable, sustainable and vibrant knowledge society.

The objective of the currently announced NEP-2020 is to provide a multidisciplinary and interdisciplinary liberal education to every aspirant to raise the current Gross Enrolment Ratio (GER) to 50% by 2035.

Challenges in Implementation of the New Education Policy- 2020

The study is conducted with the purpose of understanding the Government's role in Human Resource Development.

According to Musgrave and Rostov's Development Model a considerable expenditure is required on education not only in early development stage, but also in the phase of high income societies because education becomes investment good due to increasing demand for skilled labour. "Skill India, Build India" is the need of the hour which rightly hints that the dependence of nation's growth is on its human resource development. Investment in an individual to develop the skills and competency shall contribute to their employability, better remuneration and higher employment rate in the country. India being a labour abundant country has greater advantage of procuring comparative advantage in labour intensive industries. But without skilled and trained labour, advantage will just disappear.

Insufficient resource allocation from central government for education and training is making education a private good in India rather being a public good. Even education is also considered as merit good by various experts and ought to be subsidised or provided free at the point of use so that consumption does not depend primarily on the ability to pay. In India, many are still deprived of education due to inability to pay for it and that's why human development index is pretty low. Though, Indian education system is regarded as one of the largest in the world but just not sufficient as per the growing demand. Thus, education deserves public finance. The present paper concludes that there is considerably large gap between recommended and actually realised expenditure on education by the successive government and does not create impact on human resource development of India. Government role in developing human resource requires restructuring especially with regards to financing education.

The Union Budget 2021-22 the expectations for the Education sector are high. According to the NEP

Hypothesis	F Statistics	Probability	Observations	df
edex does not Granger Cause GDP growth (1950-2013)	4.041524	0.0061 ***	62	56
GDP growth does not Granger Cause edex (1950-2013)	1234.826	0.0739 *	62	56
edex does not Granger Cause GDP growth (1950-68)	1.434749	0.9838	18	12
GDP growth does not Granger Cause edex (1950-68)	195.0678	3.81e-012 ***	18	12
edex does not Granger Cause GDP growth (1968-86)	0.982443	0.8706	17	12
GDP growth does not Granger Cause edex (1968-86)	64.33198	0.2634	17	12
edex does not Granger Cause GDP growth (1986-2013)	2.714666	0.0858 *	27	20
GDP growth does not Granger Cause edex (1986-2013)	11.02203	0.6743	27	20

Table-4: Granger Causality Results

Source: Author's Analysis

Year	Budget Revised estimates (In Crore Rupees)	% of the total Budget Allocation
2017-18	34862.00	1.62 %
2018-19	35000.00	1.43 %
2019-20	85010.00	3.05 %
2020-21	94853.64	3.11%

Total-5: Allocation for Education Sector in the Budget from 2017 to 2021

2020 the implementation of the National Education Policy 2020 and the revival of the education sector require budgetary allocation in the upcoming budget 2021. To achieve the goals of the NEP 2020 the total budget allocation on the education sector should at least be minimum 5% of the total budget. But the major challenge is given the pandemic situation and the slow economic growth can the allocation of 5% be allocated to education sector.

The Education expenditure, which may develop human capital, is public good in LDCs and need Government involvement to function effectively. It can be easily observed that the total state expenditure on education in the country has hung around 3% of GDP, far below the 6% of GDP benchmark set by the Kothari Commission way back in 1968. The states and union territories have to make a sincere commitment to allocate minimum 5% of the total budget allocation to education sector. This will enhance and enrolment ratio and also improve the quality of Human Resource Development.

The National Education Policy (NEP-2020) has listed out a number of changes in the higher education system in the country. The thrust towards bringing changes is clear in the policy document. The speedy implementation of the new policy needs a very promising budget allocation in the next 5 years. Based on the our study we recommend that to achieve the changes stated in the New Education Policy the minimum allocation in every budget for the coming five years should be minimum 6% and above. But the major challenge for the present 2021 budget is the impact of pandemic on the budget and in turn the allocation to the education sector.

The trend analysis of education expenditure as % of GDP depicts that education expenditure has gradually increased. But it has not increased any time

to achieve the goals and objectives as planned in the National Education Policies. The major challenge is for the NEP–2020 is, the budget allocation to achieve the goals. Based on our study we would like to state that the total budget allocation after revision, for education sector alone should be more than 6% from present 2021 budget. This should be followed by the state level budget allocation, it should also be ranging from 4 to 6% of the total revised for education sector alone only.

The present Government is already prioritising education sector in its budget allocation. As stated in the Economic Survey 201-20, the expenditure in education sector as percentage of GDP has increased from 208% in 2014-15 to 3.1% in 2019-20. This clearly shows Education is the given highest priority on the agenda of the present government is Education. To implement NEP -2020 the allocation needs to increase more that 6% of the total allocation and this should be increase for the next 5 to 10 years consecutively. Only then we will be able to achieve the goals of NEP–2020.

As rightly said, nation's development depends highly on its human development. Also, a nation's growth should be assessed not only based on its economic growth and development but also on its human resource development.

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COVID-19 Induced Agility in Teaching Methods: Study of an Indian Engineering College

Pratima Khandelwal* and Upasana Gitanjali Singh**

The ongoing pandemic caused by COVID-19 has led to unprecedented health and socioeconomic crises within weeks of its origin. It has changed the world we live in, and will continue to mark our lives for a long time. It has taught the world the need for enhanced international and global viewpoints for analysing various bearings in the short, medium and long terms (Marinoni et al., 2020). One effect of the pandemic is that it has accelerated both education and research segments to the mainstream of public attention across the world (Research and higher education in the time of COVID-19, 2020). WFH has become the new norm across all sectors, and academia has been no exception (Arora and Srinivasan, 2020). With the announcements of lockdown and physical confinement in many parts of the world, this "health crisis has pushed about 1.3 billion children and young people out of schools and universities" around the world (UNESCO, 2020). Through academic resilience, many higher education institutions (HEIs) attempted to remain functionally open, in an online mode, while their campuses were physically closed. These HEIs attempted to respond swiftly to the impact of the pandemic while facing multiple challenges of shifting over to an online mode in a commendably short time.

This study intended at investigating the impact of the COVID-19 pandemic on academics' shift to online teaching, learning and associated academic activities at a private engineering college at an urban location in the southern state of Karnataka, India. Until the onset of COVID-19, direct/face-toface methods were the key methods for teaching, learning and assessment at this College. Digital or tech-enabled means of assignments and basic assessments were being experimented in some academic departments prior to the onset of pandemic. This called for creative thinking and the application of new strategies for leading academic activities in what would become the 'new normal', all being remotely accomplished while working from home. With the extension of lockdown periods in phases, continuous internal assessments (quizzes, tests, viva voce for projects/seminars/internship) also had to be integrated into the online mode, thus introducing new trust, integrity and ethics into assessment. The complete work-life balance called for new adjustments and transitioning into the WFH concept, hitherto uncommon in academia.

Literature Review

Globally, India houses the third largest higher education structure in terms of size and its diversity; standing only next to China and USA. It is "largest in terms of number of educational institutions" (Sharma and Sharma, 2015). Indian HEIs cater for a myriad of courses and disciplines, and are governed under a complex regulatory body framework. There is a high heterogeneity in terms of culture, language, religion, geographic and topographical distribution, as well as socio-economic variations both in equity and access, highlighting the digital divide (Sheikh, 2017). According to Mandal (2020), the emergency teaching and learning solutions adopted only exacerbated the digital divide already prevalent. He outlined the clear divide between the premier, well-funded higher education institutions who had better infrastructure and thus were more equipped to adopt digital platforms almost seamlessly, while the state and central level institutions grappled with basic and makeshift arrangements to continue to complete their syllabi and assignments. Khandelwal et al. (2020) indicate the enhanced need of skilling teachers on digital technologies.

To contain the spread of this highly contagious, viral respiratory disease, Indian union and state governments issued stringent COVID-19 guidelines for all HEIs, resulting in the temporary closure of more than 1000 universities and over 40000 colleges across India. On-campus students were asked to go home, and efforts were made to shift towards online

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classes. These unrivalled measures were bound to have an impact on over 37.5 million enrolled students and about 1.4 million teachers in the system (Ramaswamy et al., 2020). It has forced HEIs to redefine and reinvent to overcome the challenges and barriers that have arisen from the uncertainty. While many HEIs were seen to shift to e-classrooms overnight, the pandemic provided an opportunity to reflect upon the next-normal systems of HEIs (Kumar, 2020). Since the shift to the online environment, Indian HEIs are also attempting to address the issues of accessibility of education and availability of digital and allied resources beyond those pertaining to assessment and pedagogy. Kumar (2020) has highlighted the importance of determining which ways Indian HEIs can "ensure accessible education both during and after the pandemic". COVID-19 has also driven "HEIs to reimagine how to deliver an engaging and holistic classroom experience to students and is driving a new reform in academia" (OP Jindal Global University and Association of Indian Universities, 2020).

The impact of COVID-19 on HEIs worldwide has been significant and has opened new gateways to harness the potential of the virtual/online mode of teaching, learning and assessment. "Many institutions rushed to convert curriculum to an online environment, mindful of the technology" and infrastructure available to them, but many queried if higher education was ready for the 'forthcoming digital era of learning' (Crawford et al., 2020). Due to the problem of the already existent digital divide in many developing countries, there were many challenges faced with the sudden transition to online teaching at many HEIs, Indian HEIs being no exception. A significant number of Indian students from remote locations and marginalized sections faced challenges with continuing their academic activities during this pandemic (Kapasia et al., 2020). Whilst some HEIs experienced appreciable acceptance for the online mode of teaching and learning, many others had only limited success in completing their syllabus to the satisfaction of their main stakeholders - students for a number of reasons. Issues pertaining to internet connectivity, non-availability of devices, minimal to limited experience of online teaching, learning and assessment, limitations in using digitech tools and live/recorded online sessions, difficulties in courses that required field work, laboratories set-up/handson learning with equipment/instruments and live experimentation, beyond overall psychological acceptance of the change, have been highlighted at many Indian HEIs. Despite challenges, there have also been episodes of successes through resilience and fast adaptation reported at many other Indian HEIs. During the pandemic, there were a number of illustrations of unique innovations and digital developments by educators, to face the challenge of the shift to the online space (Dhawan, 2020).

Research Focus

Based on the above, this study investigates the impact of the COVID-19 pandemic on academics' adoption of online teaching and assessment as well as the general impact of the forced shift to WFH, at the chosen private engineering college in Karnataka, India, in the form of a case study. This study aims at understanding how academics at this engineering college coped with the sudden transition to the online environment, in an attempt to complete the academic year. In order to achieve this, the adopted data collection tool was designed to answer the following research questions:

- What are academics' preferences of technology to support online teaching and assessment?
- What are academics' experiences with the shift to a forced 'work from home' situation?
- What is the general impact of the pandemic on academics?

Methodology

This research is part of a broader international study on the impact of the COVID-19 pandemic on academics at HEIs. Full ethics approval for this international project was received from the University of KwaZulu-Natal, South Africa, where the project is housed, as per Protocol Reference Number HSSREC/00001284/2020. The engineering college being studied here provided Gatekeeper consent through a formal letter from their leadership for the questionnaire to be distributed at their institute, with reporting requested to be done anonymously. In particular, this study was envisaged to decipher how academic activities got effected by COVID-19 pandemic at the designated engineering college located in the metropolitan setup in southern India.

The focus of this study was on higher education at the selected engineering college in India. The nonprobability selective sampling technique was adopted. A representative sample of Engineering academics was selected to suit the needs of this project. This sampling method was selected as it is both time-and cost-effective whilst resulting in a range of responses (Easton and McColl, 2018). The methodology used a quantitative approach. The population targeted was 168 engineering academics and the final sample achieved was 91.

Instrument and Procedures

An online survey tool through Google Forms was developed to gather primary data. The questionnaire was formulated with 4 sections - Section 1 focused on the demographics of the participants; Section 2 included questions which investigated academics' adoption of technology-based tools to support their teaching and assessment prior to and during the COVID-19 pandemic; Section 3 researched the impact of the forced shift to WFH on academics' capacity to conduct their regular academic activities; and Section 4 looked at the impact of the COVID-19 pandemic on the academics' general work life and the anticipated effect that the pandemic had on shaping the future of their institution. Quantitative data focused on analysing usage and adoption of technology for teaching, and assessment, prior to and during the pandemic, as well as their general experiences with WFH. Eleven questions gathered demographic data, while 16 questions required rating on a scale. Questions were initially developed from the principal investigator's interaction with academics during empowerment training sessions. Thereafter contributions to the questionnaire development were made from collaborators on the project. The questionnaire was pilot tested by 3 academics and minor refinements were made to improve the logic and flow of the questionnaire. The survey was distributed through direct email invitation to academic staff at the selected institution. Data collection was open for a period of 3 weeks.

The online survey took approximately 15 minutes to complete and was anonymous. Participation in the online survey was voluntary. The data was analysed using statistical analysis with SPSS, using Descriptive statistics.

Results

A sample of 91 valid responses were received

in this study. Table-1 summarises the demographic distribution of the respondents. The majority of the participants (58.2%) were between the ages of 31 and 40. Females (60.4%) dominated the study, with a large majority of respondents (92.3%) holding a postgraduate degree. Lecturers (41.8%) held the highest participation rate, with all holding permanent tenure (100%). These are the assistant professors with less than 5 years of teaching experience. The participants' experience in academia was distributed across three categories of 6 to 10 years (29.7%), 11 to 15 years (27.5%), and more than 16 years (27.5%).

To determine the bearing of COVID-19 pandemic on the primary teaching method adopted at this engineering college, the next question enquired about the three dominant types, that is contact based (face-to-face), online or virtual learning and blended learning. As depicted in Figure 1 there was a clear shift from face-to-face learning (96.7%) to online learning (95.6%) during the pandemic. There was also a noted increase in blended learning during the pandemic (20.9%).

Results from a Pearson Chi-square test revealed that a significant proportion (67.0%, p=.002) of the academics did not use a blended approach either prior to, or during the pandemic.

The first section in the questionnaire gauged academics' proficiency in adopting technology to support online teaching and assessment, by rating their proficiency using the scale from 1 = poor to 5 = excellent. A one-sample t-test was applied to test if the average proficiency rating was significantly above or below an average rating of '3'. Results showed that proficiency ratings were significantly above average for both teaching methods (mean rating = 3.84, p<.0005) and assessment methods (mean rating = 3.63, p<.0005). This indicates that the respondents rated themselves as better than average, tending towards excellent, in their proficiency in adopting technology for both teaching and assessment. Respondents were asked to identify the tools they adopted to support online teaching, prior to and during the pandemic. Results are summarised in Figure-2.

A Binomial test was conducted to identify if a significant proportion of the sample responded Yes or No to usage of each of these tools prior to or during the pandemic. Results, summarized in Table-2, showed that Zoom, Google Tools, Recorded

Variable/categories	Frequency (Percent)	Variable/categories	Frequency (Percent)
Age		Experience	<u>`</u>
20-30	10 (11.0%)	1 - 5	14 (15.5%)
31-40	53 (58.2%)	6 - 10	27 (29.7%)
41-50	24 (26.4%)	11 - 15	25 (27.5%)
51-60	4 (4.4%)	16+	25 (27.5%)
>60	0 (0.0%)		
Gender		Tenure	
Female	55 (60.4%)	Permanent	91 (100%)
Male	36 (39.6%)	Contract	0 (0.0%)
Qualification		Academic Role	
Undergraduate degree	7 (7.7%)	Lecturer	38 (41.8%)
Postgraduate degree	84 (92.3%)	Assistant professor	21 (23.1%)
		Associate professor	21 (23.1%)
		Full professor	11 (12.1%)

Table-1 Demographics Summary

video lectures and WhatsApp were adopted by a significant proportion of the respondents during the pandemic, while only BlackBoard tools were adopted significantly, prior to the pandemic.

Table-2	Table-2 . Teaching Tools Summary					
Tool	Usage Period	Usage %	p-value			
Zoom	During COVID-19	84	<.0005			
Google tools	During COVID-19	84	<.0005			
Recorded video lectures	During COVID-19	91	<.0005			
WhatsApp	During COVID-19	91	<.0005			
Blackboard tools	Prior to COVID-19	80	<.0005			

Table-2 : Teaching Tools summary

As illustrated in Figure 3, the top 4 assessment tools adopted prior to the pandemic were Blackboard tools (56%), WhatsApp (27.5%), Google Tools (24.2%), and Other LMS Tools (13.2%). Some



Figure-1: Primary Teaching Method

academics (14.2%) had not adopted any online assessment tools prior to the pandemic. During the pandemic, Google Tools topped the list (87.9%), followed by WhatsApp (79.1%), Zoom (48.4) and Recorded video lectures (41.8%). A binomial test indicated significant usage (p<.0005) of Google Tools (88%) and WhatsApp (79%) for assessment during the pandemic. When asked to rate their proficiency in communicating with their students on an online learning platform during the pandemic on a scale from 1 = very difficult to 5 = very easy, no significant results were noted (mean = 3.16).

From Figure 4 it is noted that after 'Access to connectivity' (91.9%), the major challenges students were facing were 'Lack of interaction' (29.7%), 'Access to devices' (24.3%), and 'Resistance to change' (17.1%). This was followed by 'Technology competence' (13.5%), 'Fear of the unknown' (6.8%) and 'Demotivation' (5.9%). A binomial test indicated that access to connectivity was selected by a significant proportion (92%, p<.0005) of the respondents.

The most significant (p<.0005) methods which were adopted by academics to support their students during the pandemic are illustrated in Figure 5 above. These are 'Online lectures' (95.6%), 'Online assessment' (91.2%) and 'Phone' (85.7%). When rating the responsiveness of their students to the support they provided, on a scale from 1 =unresponsive to 5 = very responsive, the mean rating was 3.63 which is significantly higher than the central score of '3' (p<.0005), indicating that



Figure-2: Teaching Tools Adoption Summary

students were more responsive than average. In the same way, the mean rating of the effectiveness of working with students online when using a scale of 1 = not at all effective to 5 = very effective was 3.36 which is also significantly higher than the average score of '3', indicating better than average effectiveness, p<.0005. There was indication that they were reluctant to continue with online learning post the pandemic (mean=2.89).

The next section of the questionnaire focused on the forced work-from-home (WFH) scenario caused by the pandemic, and the impact this has had on the lives of the academics at this engineering college.

The most significant (p<.0005) challenge faced by academics in the 'forced' work-from-home arrangements during the pandemic was 'Internet connection for students' (85.7%). Other predominant challenges associated with the WFH scenario were 'My own Internet Connectivity' (49.5%); 'General anxiety about COVID-19' (47.3%); 'Access to technology-based teaching tools' (33%) and 'Keeping a regular schedule' (28.6%), as presented in Figure 6. The type of Work From Home (WFH) arrangements academics were adopting for communicating with students and colleagues during the pandemic is summarised in Figure 7

Zoom, Email and WhatsApp were significantly adopted for communication with both students and colleagues during the pandemic, as summarised in Table-3.

Table 3	Commu	nication	Tools	Summary
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Student Communication			Cor	Colleagu mmunica	es Ition
Tool	Usage %	p-value	Tool	Usage %	p-value
Whats App	95	<.0005	Whats App	98	<.0005
Zoom	82	<.0005	Zoom	84	<.0005
Email	66	=.003	Email	79	<.0005





Figure-4: Perception of Challenges Faced by Students in Moving Online



Figure-5: Methods Adopted to Support Students during the Pandemic



Results from a chi-square goodness of fit test showed that a significant number of respondents (n=71, 87%) are able to sustain their current WFH arrangements for periods of greater than a week, to indefinitely, as illustrated in Figure-8. Results from a chi-square goodness of fit test showed that a significant number of respondents (46.7%) perceive that their Institution will adopt blended learning post the pandemic, as shown in Figure-9.

Discussion

This case study was undertaken to analyse the effect of the ongoing pandemic on teaching, learning and assessment activities at an Indian engineering college in a metropolitan location. The sudden shift from the physical mode to the online space was investigated. The main research question of 'how are academics at the selected engineering college responding to the COVID-19 pandemic' are answered by the results presented in three categories: academics' preferences of technology to support online teaching and assessment; academics' experiences with the shift to a forced 'work from home' situation; and the general impact of the pandemic on academics.

The results indicate adaptability, resilience and the willingness of academics to transition to the online environment from the typical face-to-face mode historically adopted at this college despite the challenges. As Motala and Menon (2020) outline "the suddenness of the total lockdown left little time ... to lay the groundwork for all academics to teach remotely and students to learn remotely." So, while there were a number of challenges faced by the academics in the shift online, some academics reported this as an incredibly steep learning curve.



Figure-6: Challenges with the Forced WFH Scenario

Figure-7 WFH Communication Methods Adopted



Figure 8 Duration that Respondents could Sustain their Current WFH Arrangements



Figure-9: Future shape of Institution



The well documented reports by Ramaswamy et al. (2020), OP Jindal Global University and Association of Indian Universities (2020), UNESCO (2020), and Leite et al. (2020) also resonate the fast adaptation to digital/virtual/online means of teaching and learning as the new necessity in various flavors.

In this study the demographics indicate a younger academic population (71.5%) having less or equal to ten years' experience in academia. As expected, younger academics are seen as quick to

adapt, leading to a significant increase in online learning during the pandemic. Hyndman (2018) stated that many teachers struggle with technology in classroom teaching and some even look it as a barrier. While Singh (2020) advocates that 'academic digital literacy' is a journey all academics need to take, this did not seem to be an issue with this sample. Most of the respondents rated themselves as better than average, tending towards excellent, in their proficiency in adopting technology for both teaching and assessment. There was a shift from adopting LMS based tools for teaching to interactive, social based tools like Zoom, Google and WhatsApp, for teaching during the pandemic. This correlated with the study by Mukhtar et al. (2020) which indicates that the most commonly adopted tools for teaching during the pandemic are Zoom, Skype for business, and WebEx - the socially interactive platforms. OP Jindal Global University and Association of Indian Universities (2020) also indicates that synchronous classrooms through virtual platforms can be of great use.

Access to connectivity and devices were perceived as the biggest hurdles to engaging with students online. This is highlighted by Mandal (2020) where he states that some students could not view live lectures from their home towns due to low internet speed, while, for other students, downloading a few online lectures consumes their daily data limit. Arora and Srinivasan (2020) outlined that the "lack of personal touch and interaction due to connectivity issues", was a substantial drawback of online classes, along with network issues. The recently published QS Report captured that during the initial weeks of pandemic, 42% of the total 400 global respondents indicated no to little interest in online modes of study (QS Quacquarelli Symonds, 2020). It has also been discussed by Sun and Chen (2016, 157) that in order to have effective online instructions, "motivated interaction between the academics and learners along with creating a sense of online learning community" are a must. With passing time, the pattern of its acceptance is gaining momentum.

Personal support given by academics to students through online mediums and phones was most effective. By the same token, technical concerns for both students and themselves (academics) were the most dominant challenges identified. To a large extent they were anxious about it. Concerns about lack of educational tools to support their teaching, as well as the inability to keep a regular schedule during the lockdown were raised. Kasrekar and Wadhavane-Tapaswi (2020) also reported that educators and learners across the societal cross sections are affected owing to nationwide lockdowns. Interestingly, WhatsApp facilitated the best communication between students and colleagues during the pandemic.

Despite not having any choice in where academics would be most comfortable to work from, they adjusted to the forced WFH scenario, with a large majority indicating that they could sustain these WFH arrangements for an extended period. According to Flaherty (2020) a few academics feel that WFH would be a boon for research productivity hinting at 'isolation breeds creativity'. Respondents feel that the institution will eventually accept new equilibrium in blended learning once the pandemic is under control. Similar projections have been well documented (OP Jindal Global University and Association of Indian Universities 2020; Leite et al. 2020; Ramaswamy et al. 2020; Research and higher education in the time of COVID-19, 2020, 583). However, Crawford et al. (2020), warn that migrating from traditional to fully online requires careful planning and time. They further added that the forced WFH layer brings with it many associated challenges "such as the lack of 'home office' infrastructure... student infrastructure...and general skillset" in an online environment. This is supported by Singh (2020a), who states that the transition cannot occur if academics do not willingly adapt to this unexpected change and "equip themselves with a new skillset for successful navigation of the online teaching, learning and assessment spaces". The ASSET© framework developed by the said author "outlines eight basic skills that lecturers need to develop to support a smooth transition from the face-to-face to the online space, which will most likely find its balance in a blended space post the COVID-19 pandemic".

Conclusion

The envisaged study provides encouraging outcomes in the swift adoption of online teaching and assessment from hitherto conventional means by the participating academics at the chosen Indian engineering college located in a metropolitan city. It showcases their fast adaptability and willingness in experimenting with new means for enabling curriculum completion and required academic activities. It also captures challenges being faced by the teaching fraternity themselves and the students in this transition phase, and the openness of academics in addressing the same via varied means such that semester tasks get seamlessly accomplished.

As the body of literature on the impact of COVID-19 on HEIs is still developing, the results of this study may prove interesting while providing an insight during the pandemic; they cannot be projected onto the general engineering academic population due to the limited sample size and the favourable location of the institution. Nevertheless, this study indicates the need for being resilient, open to communication and being agile to combat the challenges that have arisen in HEIs due to COVID-19.

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COMMUNICATION

An Ideal Education Part 1: Meaning of Education

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'Meaning of Education' is the first part of the Communication Series on 'An Ideal Education'. It is a series of excerpts prepared from the talk given by Shri Kamlesh D Patel 'Daaji' on Ideal Education at the inaugural function during launch of the Heartful Campus Programme at the Education Conclave organized by Heartfulness Institute on 12 January, 2021.Shri Kamlesh D Patel 'Daaji' is the Global Guide of Heartfulness. Further information can be accessed from www. heartfulness.org

Today is the very special and auspicious day of Swami Vivekananda Jayanthi. It is also National Youth Day. Swami Vivekananda was my hero, and he has a very important place in our Heartfulness lineage. The Noble Prize laureate and author, Romain Rolland, wrote of Vivekananda, "He was energy personified, and action was his message to men."

If there has ever been anyone who has advocated with passion and conviction that we are the creators of our own destiny, it is Swami Vivekananda. He did his immense work in his youth, and by the time he left this world in his thirties the extent and expanse of his time here was so monumental that no one can ever do justice to it. He was a role model for his time and for ours. I was often moved to tears when I was young, reading the words of his Guruji, Shri Ramakrishna Paramahamsa, and the way he would cry out for his mother Kali. One wonders just how moved the young Naren was when he came to see Ramakrishna. I am fascinated by the maker of Swami Vivekananda and the kind of training his Guru must have imparted to him to create the wonder that Swami Vivekananda became.

In his book, *Prophets of the New India*, Romain Rolland wrote, "Every body at sight recognized in him the leader, the anointed of God, the man marked with the stamp of the power to command." He glowed so bright that without saying anything, just by being in his presence, people would know his presence to be that of immense nobility and majesty.

Swami Vivekananda's views on education need * Gobal Guide, Heartfulness Institute. E-mail: info@ heartfulness.org not even be evoked in words, as it is sufficient just to bring up his image in our mind's eye, even for a moment, to realize just what kind of an education he embodied. It consisted of sheer moral training, moral strength, yogic sadhana, and profound moments of contemplation and *tapasya* in yogic sadhana, first and foremost that of meditation.

My Guruji, Babuji Maharaj, defined the meaning of education when he said that education is the ability to find an appropriate solution to many of the problems we face in life. My question to all of us is: Does our present day system of education have the capacity to bequeath such true education upon us? It is not the resources we have that define our life or our happiness; it is how resourceful we are and how resourceful we become. How much can we do with what we have? How dowe deal with what we cannot have? That is more important.

Today we are afflicted more than ever by new diseases, especially the one known as 'fear of missing out'. FOMO is now recognized as a serious psychological disorder and it is fanned by social media platforms like Facebook and Instagram. We become afflicted without knowing it and it robs us of the higher values that make us human. As a group who are gathered here today as educators, how do we consider it possible that the students we train, who spends precious hours and resources in our institutions, will become capable of that? Do we have vaccines against FOMO?

The foundation of life is a strong and sound moral character. Morality is the capacity to be precise in our thoughts, words and actions, meaning an exact dose, just as in medicine –not too little, not too much. Anything that weakens us physically, mentally and spiritually cannot be moral, per se, as there is no moderation there.

As many of us face life's challenges and find that scoring in exams and clearing curricula at university may be within our reach, things like the pandemic we are facing can throwour so-called educated world off balance. Just how do we pass the test of life's university? Does our education make us more like machines or more human? Do we learn to become kinder, more generous, cooperative, and more capable of empathy, or are we led into a competitive stance where success by any means is rewarded?

Such a competitive approach is not the way – by hook or by crook. Often it comes at the cost of those around us, our resources, and our planet's very fragile ecology. We all know deep in our hearts that there is something very vitally wrong with our world. India is on the brink of moral bankruptcy. Our moral back is broken, and our young ones are spending precious time on social media and degenerating media exposure that are corrupting entire generations. Unfortunately, even rural India is not spared from such influences. I am not against the use of technology or media. It is the blatant use of the negative and toxic side of the media that is perverting the minds of our youth, and not only them.

There are significant side effects, and I will share an example from my personal experience. We are building a great ashram near Hyderabad, and thousands of youths are working here, coming from Jharkhand, Bihar, MP, West Bengaletc. They walk around looking at their phones while carrying bricks on their head, sometimes half a dozen of them focusing on one particular video, laughing away. Do you think they are learning something new? I don't think so. They are watching something they should not watch.

Can you influence a young person to meditate, so that they can correct them selves with their own inner inspiration? Even a patent's advice is often not heard. Any advice will first have to pass through the filters of that young person's heart, so that they are inspired by their own thoughts and actions. No longer do we live in a time where children are inspired by parents. Earlier, when society was limited in its scope as far as knowledge was concerned, parents and grandparents would pass on the traditions to their young ones, who would depend on such knowledge from elders. Elders were revered for the knowledge they shared, whereas nowadays children are more knowledgeable - they just Google any topic. They think they are superior and, in the process, mutual trust and respect corrodes.

What happens when we begin to meditate? It is a matter of experience. Try it, so that you see for yourself what really happens when you do even 10 to 15 minutes of Heartfulness Meditation. It is not like any other meditation because it involves the flow of *pranahuti*, which changes the equation. Pranahuti will shift your consciousness. It is your consciousness that needs to change if you are to transform yourself. A positive shift in consciousness means making better and better decisions in life. No one can teach you how to face every situation in life – no teacher, no guru, no avatar, no prophet can make you so complete that you will not face problems. When you meditate, however, even without the support of a teacher, you will be able to tackle day-to-day issues through the inspiration that arises from your heart. Your life will become a blossoming life.

Emergence of New Technology is the Great Engine of Change

Narendra Damodardas Modi, Hon'ble Prime Minister of India delivered the Convocation Address at the 18th Convocation of Tezpur University, Assam on January 22, 2021. He said, "Today, the way new technologies are developing in India and the world, they are creating new possibilities in every sector. Today, we are witnessing many such experiments in day-to-day life like branchless banks, retail business without showrooms, cloud kitchens without dining halls, etc. It is also possible that future universities would be completely virtual and students and faculties from all over the world could become part of any university. We need to have an important regulatory framework for this kind of transformation. It is being continuously tried through the new National Education Policy. This policy encourages greater use of technology, multidisciplinary education and flexibility. The new National Educational Policy emphasizes the need to create our education system for Data and Data Analytics. With the help of Data Analysis, the whole process will be much better from admission to teaching and evaluation." Excerpts

Today is a life-long moment for more than 1200 students. Today is a very important day for your teachers, professors and your parents too. And the most important thing is that the name of Tezpur University has been affixed to your career forever from today. The happier you are today, the more I am. The more you are optimistic of your future today, the more I have immense faith in all of you. I am confident that what you have learnt at Tezpur University will give a new momentum and a new height to the progress of Assam and the country.

Friends, There are many reasons for this trust. First, the historical place of Tezpur and the inspiration from its mythological history! Secondly, the work you are doing at Tezpur University, which I am told, evokes a lot of enthusiasm. And, thirdly, not just me, but the country also has unwavering faith in the capabilities of eastern India, its people, its youth and their nation building efforts.

Friends, The spirit of the university anthem, which was sung before the distribution of awards and medals, salutes the great history of Tezpur. I want to repeat a few lines because these have been written by Bharat Ratna Bhupen Hazarika ji, the pride of Assam. He has written: अग्निगड्रस्थापत्य, कलियामोमोरारसेतुनिर्माण, ज्ञानज्योतिर्मय, से इस्थानतेबिराजिसेत्तेजपुरविश्वविद्यालय i.e., Tezpur University is established where there is Agnigarh (fire fort), where there is Kolia Bhomora Setu (bridge), where there is a light of knowledge. Bhupen Da has described so much in these three lines. The history of Agnigarh, which is associated with Prince Anirudha-Princess Usha, Lord Shri Krishna, the vision of the great Ahom General Kalia Bhomora Phukan, the repository of knowledge, is the inspiration of Tezpur. Along with Bhupen Da, great personalities like Jyoti Prasad Agarwala and Bishnu Prasad Rabha are the identities of Tezpur. Since you have studied in their 'karmabhoomi', in their birthplace, and, therefore, it is natural that you feel proud and your life is bubbling with self-confidence.

Friends, Our country is heralding 75 years of its independence this year. Countless people from Assam have contributed to the country's liberation from hundreds of years of servitude. People at that time sacrificed their lives for the freedom of the country, gave up their youth, now you have to live for a new India, for a self-reliant India, and to make your life meaningful. From now till the completion of 100 years of India's independence, these 25-26 years are also the golden years of your life. Imagine the dreams of the young guy, the daughter who would be of your age during the period of 1920-21. What were the things on their minds which they embraced and exhausted their life to achieve them? Try to imagine what the people of your age used to do 100 years ago, then it will not take you time to think what you have to do. It is a golden period for you. Spread the splendor of Tezpur all over India and across the world. Take Assam and the North-East to the new heights of development. The way our government is engaged in the development of the North East today and the way work is being done in every sector, including connectivity, education, health, etc is creating many new possibilities for you. Take full advantage of these possibilities. Your efforts show that you also have the capacity and the ability to think new and to innovate.

Friends, Tezpur University is also known for its Innovation Center. Your grassroots innovations also

give new impetus and strength to Vocal for Local. These innovations are effective in solving local problems, opening up new doors of development. As I am told, your Department of Chemical Science has developed a low-cost and easy to use technology to clean drinking water. It is benefiting a large number of villages of Assam. Rather, I am told that this new technology is being used in states like Chhattisgarh, Odisha, Bihar, Karnataka and Rajasthan, meaning that your fame is now spreading. The development of this kind of technology in India will help realize the dream of the Jal Jeevan Mission to provide drinking water to every household.

Friends, Apart from water, the task that you have taken to convert waste into energy in villages, its impact will be very huge. Crop residues are a big challenge to both our farmers and our environment. The work that you are doing at your university on an inexpensive and effective technology related to biogas and organic fertilizer can solve a major problem of the country.

Friends, I have also been informed that Tezpur University is also running a campaign to preserve biodiversity and the rich heritage of the North East. It is a very commendable job to document the languages of the tribal communities of the North East which are at risk of extinction. Similarly, you are engaged in so many miscellaneous works, whether it is the preservation of the art on the centuries-old wood at Batadrava Than in Nagaon, the birthplace of Srimanta Sankaradeva, or the digitization of books and papers of Assam written during the period of subjugation. Whosoever listens will feel proud that this devotion and practice is happening in Tezpur, the remote eastern end of India. You are really doing wonders.

Friends, When I came to know about so much, the question came to mind, from where do you get the motivation to do so much research on local subjects and local needs? The answer is also at the Tezpur University campus. Now like your hostels — Charaideo, Nilachal, Kanchanjungha, Patkai, Dhansiri, Subansiri, Kopili – these are names of mountains, peaks and rivers. And these are not just names. They are also the living inspiration of life. In the journey of life, we have to face many difficulties, climb many mountains and cross many rivers. This is not a onetime job. You climb one mountain and then move towards the other. With every mountain climbing, your information also expands, your expertise increases and your perspective is inclined for new challenges. Similarly, rivers also teach us a lot. Rivers consist of many auxiliary streams and then merge into the sea. We should also seek knowledge from different people in life, learn and achieve our goals by moving forward with those lessons.

Friends, When you move forward with this approach, you will be able to contribute to the development of Assam, North East and the country. You may have seen that the Atmanirbhar Bharat campaign has become an integral part of our vocabulary during this Corona period. It has merged with our dreams. Our efforts, our determination, our accomplishments, our efforts, everything are revolving around it, but what is this campaign? After all, what is the change? Is this change limited to resources? Is this change limited to physical infrastructure only?

Is this change only in technology? Is the change due to the growing economic and strategic might? The answer to each such question is yes. But, the biggest change is regarding instinct, action and reaction. Today, the mode and mood of our young country to deal with every challenge and problem is somewhat different. We have seen its recent example in the world of cricket. Many of you would have followed the Indian cricket team's Australia tour. What kind of challenges our team had to face during this tour? We lost so badly, but we bounced back immediately and we won in the next match. Despite injuries, our players remained steadfast on the field to save the match. Instead of being disappointed in challenging conditions, our young players faced the challenge, found out new solutions. No doubt, some players had little experience, but the morale was very high. As soon as they got the opportunity, they created history. Such was the belief in talent and temperament that they defeated a better team, a very experienced team and which boasted of so many experienced players.

Young Friends, the performance of our players on the cricket field is important not only in sports; it's also a huge life lesson. The first lesson is that we should have faith and confidence in our ability. The second lesson is about our mindset. If we move forward with a positive mindset, the result will also be positive. The third and most important lesson is if you have the option to play safe on one side and have the option of a difficult win on the other, you must explore the victory option. If there is occasional failure in a bid to win, there is no harm in it. Do not be afraid to take risks and experiment. We will have to be proactive and fearless. Once we come out of the fear of failure and the unnecessary pressure that we put on ourselves we will emerge fearless also.

Friends, It is not so that India seeped in morale and dedicated to its goals appears only on the cricket field. You are also the snapshot of it. You are confident and full of self-confidence. You are not afraid to think and walk offbeat. The same young energy like you has also given India a lot of strength in its fight against corona. You may recall, at the beginning of this battle, there were apprehensions that India, with such a large population, would be devastated by the corona in the absence of resources. But India proved that if you have resolve and resilience then it does not take time to develop resources. That is what India did. Instead of compromising with the situation, India took swift and proactive decisions, rather than waiting for the problem to escalate. This is the result that India was able to combat the virus effectively. With Made in India solutions, we checked the spread of virus and improved our health infra. Now, our vaccine-related research and production capability is giving confidence of a protective cover to India as well as many countries in the world.

Would this success be possible if we did not trust our scientists, researchers, scholars and the strength of our industry? And friends, why only the health sector, take our digital infrastructure for example. Could the government reach out to the poorest of the poor so effectively in a crisis like Corona if we were to assume that DBT and digital transactions were not possible in the absence of literacy in India? Would it ever be possible if we are among the world's leading countries in fin tech and digital inclusion today? The India of today is not afraid to experiment to solve the problems and is not deterred to work on a large scale. The biggest campaigns on banking inclusion, building toilets, providing houses to every family and providing door-to-door drinking water are taking place in India. Then there is the largest health assurance scheme and now the largest vaccination campaign is taking place in India. All these have benefited the North East and the people of Assam. Such plans can only be run if the country and society is brimming with confidence and the country is putting all its might to innovate and to change the status quo.

Friends, today, the way new technologies are developing in India and the world they are creating new possibilities in every sector. Today, we are witnessing many such experiments in day-to-day life like branchless banks, retail business without showrooms, cloud kitchens without dining halls, etc. It is also possible that future universities would be completely virtual and students and faculties from all over the world could become part of any university. We need to have an important regulatory framework for this kind of transformation. It is being continuously tried through the new National Education Policy. This policy encourages greater use of technology, multidisciplinary education and flexibility. The new National Educational Policy emphasizes the need to create our education system for Data and Data Analytics. With the help of Data Analysis, the whole process will be much better from admission to teaching and evaluation.

I am confident that Tezpur University will play an important role in realizing these goals of the National Education Policy. I have full confidence in the track record and the potential of Tezpur University. And I would particularly say this to my student colleagues that you work not only for your future but for the future of the nation when your formal education is completed. Remember just one thing, if your purpose is high, you will not be affected by the highs and lows of life. The next 25-26 years of your life are going to determine your career as well as the destiny of the country.

I am sure all of you will take the country to new heights. In 2047, when the country celebrates 100 years of independence, this period of 25-30 years will be replete of your contribution, your efforts and your dreams. Imagine how big a role your 25 years is going to play in the centenary of independence. So friends, let us be conscious of those dreams and march ahead with those resolutions, dreams and achievements. See, life will make its way across each height of success. On this auspicious occasion today, I convey my best wishes to your family members, to your teachers, faculties, to your dreams, to everyone. My infinite wishes!

Many many thanks!!

FITE Virtual Session to Observe World Environment Day and Pay Tributes to Noted Educationists

Forum of Indian Teacher Educators (FITE) organized a Virtual Session on June 5, 2021 to observe World Environmental Day and to pay tributes to three noted Educationists --- Prof. B.P. Khandelwal, Former Chairperson, Central Board of Secondary Education, and Former Director National Institute of Educational Planning and Administration (NIEPA); Prof. Sandhya Gihar, Professor, Indira Gandhi National Tribal University, Amarkantak and Dr. Nisha Singh, Deputy Director, IGNOU who succumbed to COVID-19 recently. The theme of discussion during the Virtual Session was, 'Environmental Education in Teacher Education'. Nearly 100 educationists from different parts of the country participated in the Session.

Prof. Saroj Sharma, Chairperson, National Institute of Open Schooling (NIOS) chaired the Session In her introductory remarks, Prof Sharma spoke about the significance of environment vis a vis World Environment Day in the lives of everybody and how the celebration of Word Environment Day is a befitting tribute to the three departed souls. While grieving about untimely demise of Prof. B.P. Khandelwal, Dr. Nisha Singh, and Prof. Sandhya Gihar, Dr Sharma said that the whole education fraternity of the country is feeling disheartened and bereaved. Speaking about Environmental degradation, she said that there is a significant threat to all the living beings on the plant, most importantly on the health and survival of human beings. Humans and their activities are a major source of environmental degradation, she said, adding that there is an urgent need to sensitize each and every individual towards environmental conservation. She spoke about the crucial role which Teacher Education can play in realizing Environmental Education and said that the theme for discussion in the Virtual Session is therefore very apt in this scenario.

Prof. Pradeep Kumar Misra, Chaudhary Charn Singh University, Meerut, introduced the guests and detailed about the programme. He also spoke on significance of teaching environmental education for preparing students as responsible citizen. Prof. Seema Dhawan, Professor HNB Garhwal University, Srinagar compered the programme. In her Commencing Note Dr Dhawan highlighted the professional journey and academic accomplishments of Prof. B.P. Khandelwal, Prof. Sandhya Gihar and Dr. Nisha Singh. She also highlighted about the rationale and significance of the theme for discussion.

Prof. R.S. Dubey, Vice Chancellor, Central University of Gujarat and a Noted Environmental Scientist was the Keynote Speaker on the occasion. In his Keynote address, Prof Dubey informed that India accounts for 17% of the total world population but it has only 3% of the land and 5% of drinking water available on the earth. Prof. Dubey also said that out of 17 Sustainable Development Goals (SDGs), ten are related to the environment and we should make sincere efforts at personal and community level to save and protect the environment. Environmental protection is one of the basic prerequisites for the overall development of any country or society, he said and there is no country in the world that does not want to do so. As awareness of environmental protection is developed, human awareness is also developed about the need to preserve the environment by preventing adverse impacts on nature. He concluded his speech by saying that teaching as a discipline, plays a significant role in developing environmentally literate citizens. Environmentally literate person is someone who makes informed decisions concerning the environment and acts accordingly. It is therefore essential to have enough content on environmental literacy in teacher education programmes.

Prof. Nageshwar Rao, Vice Chancellor, IGNOU addressed the gathering on the occasion. that that teacher education can play and must play a vital role in environmental protection. Prof. Rao suggested that the teacher education programs must essentially contain the methods, content and practical skills for teaching Environmental Education to the prospective teachers so that they become environmentally conscious, and further carry on this consciousness to their students who will be future citizens of the planet. Environmental Education, people develop questioning, analysis and interpretation, skills and knowledge of environmental processes and systems; skills for understanding and addressing environmental issues; and personal and civic responsibility, he said. Environmental education develops environmentally literate citizen who are

more conscious towards environmental protection and conservation leading to a more sustainable planet.

Prof. Shri Prakash Mani Tripathi, VC, Indira Gandhi National Tribal University, Amarkantak, said that it should be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures. Prof. Tripathi insisted that to attain sustainable development, we have to bring Sanskriti (culture) and Prakriti (nature) together. He highlighted that nature was an integral part of literature and the traditional knowledge system in India for ages. IT has been abundantly reflected in a variety of traditional practices, religious beliefs, rituals, folklore, arts and crafts, and in the daily lives of the Indian people from time immemorial. Many plants and animals have from historcial times been considered sacred in India by various communities. The most outstanding examples are the peepal tree, banyan tree and these have been traditionally revered and therefore never cut. Similarly aminals are worshipped, he said. Such traditional cultural attitudes, though based on religious faith, have made significant contribution in the protection and propagation of various species of trees and plants in India.

Prof. B. R. Kukreti, Former Dean and Head, MJP Rohilkhand University, Bareilly, who worked closely with Dr Sandhya Gihar spoke at length about her passion, concern and consciousness towards plants, animals and environment. He apprised about the voluminous contribution of Prof. Sandhya Gihar in the area of environmental education, environmental research and publication. He informed the house that Dr Gihar always used to prefer gifting a sapling to the people on important occasions. Prof. Kukreti suggested that planning new activities and programs related to environmental education will be a fitting tribute to all the departed academicians.

Prof. N.K. Ambasht, former Chairperson NIOS, fondly remembered his association with Prof. B. P. Khandelwal and bewailed that he is feeling as if he lost an arm of his own. Speaking about the academic and administrative acumen and contributions of Prof Khandelwal, he said that it is a great loss to the country. He revealed that Prof. Khandelwal was very enthusiastically involved in preparing plans for implementation of National Education Policy -- 2020. Prof Akash Khandelwal, son of Prof B P Khandelwal, who is also an Educationist spoke about the contribution of Prof B P Khandelwal towards Indian Education. Prof. Manoj Saxena from Central University of Himachal Pradesh paid tributes to noted academics and said that their demise is a great loss not only for their families but for the country also. He strongly advocated integration of environmental education and SDGs in the curriculum of teacher education.

Dr. S. Rama Devi Pani, Editor, University News, Association of Indian Universities informed the house about her close association with all the three noted Educationists who lost their lives fighting with COVID-19 Pandemic. While admiring their contributions towards Indian Education System, she said that the country lost three prolific writers who used to contribute articles for various national and international journals including the University News, a Weekly Journal brought out by Association of Indian Universities. She spoke about the works and achievements of all three Corona Warriors. Speaking about the integration of Environmental Education in Teacher Education, she said that the newly launched National Education Policy -2020 is also in the line of United Nations Sustainable Development Goals (SDG 2030), which clearly believes equal access to education is the base of sustainable development. It is therefore the responsibility of all the educational institutions, particularly the forums like Forum of Indian Teacher Educators (FITE) to work towards it in letter and spirit.

Prof. Pankaj Arora, from University of Delhi presented a summary of the discussions and gave a clarion call to perceive environment conservations from both the perspectives, Social Sciences as well as Physical Sciences.

Prof Saroj Sharma in her concluding remarks reiterated that all the SDGs are relevant to education and education system has the potential to impact on accomplishment of all the SDGs. She motivated the house to unanimously resolve to work towards integration of Environment Education with Teacher Education in order to create environmentally cognizant teachers who in turn can produce environmentally conscious graduates vis a vis citizens. Prof. Sharma maintained that planning and implementing new academic activities and researches in the memory of all the departed souls will be the best tribute to them.

Prof. Usha Sharma, from National Council of Educational Research and Training (NCERT), New Delhi, presented a vote of thanks.

International Conference on Looking at the Pandemic Through Gender Lens

A One-Day International Conference titled 'Looking at the Pandemic through Gender Lens' was organized by the Women Development and Empowerment Cell (WDEC), KES Shroff College in collaboration with Mahila Arthik Vikas Mahamandal (MAVIM), Government of Maharashtra and Beti Bachao Abhiyan, Department of Students' Development, Shivaji University, Kolhapur.

Principal of KES Shroff College Dr. Lily Bhushan in her Welcome Address lamented that the lockdown has thrown open many challenges for women who have borne the brunt of the pandemic. She further stressed that social assistance programmes were necessary to help families. She also highlighted the fact that the Conference had paper presenters from the length and breadth of the country as well as from other countries which had enriched the deliberations.

Dr. D. T. Shirke, Vice Chancellor, Shivaji University, Kolhapur in his address appreciated the aptness of the theme of the Conference. He mentioned the fact that absolutely no sector had been spared in the pandemic and it is a true global issue where everyone was struggling. He astutely quoted the recent research papers in the peer reviewed journals which highlighted the adverse impact of pandemic on women in terms of livelihood, domestic abuse, and access to resources and the quality of life.

During the COVID 19 pandemic, women were specially affected due to their marginalized status in the society. In this situation, groups like Mahila Arthik Vikas Mahamandal (MAVIM), headed by Dr. Jyoti Thakare, believed in the philosophy that if there was a woman behind every successful man, there had to be a family behind every successful woman. Thus, instead of highlighting the plight of the women, or giving them a helping hand, teaching them to empower themselves would yield better results. As a result of this, MAVIM mobilize resources of around 50 lakh rupees to help women across Maharashtra in various ways. Women were trained online to produce masks and they created 30 lakh masks with 5 crore turn-over. Women were appealed to contribute just a rupee of their day's earning and they gave 11.5 lakh towards Chief Minister's Relief fund. With the help of MAVIM, women assembled into 1.4 lakh self-help groups across Maharashtra and distributed 2100 ton rice and vegetables to the COVID-19 centers across the state.

Dr. Pam Rajput, Professor Emerita, Punjab University, opined that the COVID-19 laid bare the structural inequalities in the social system by impacting women disproportionately. It is important to take into cognizance recently discovered facts like differential effect medicines and vaccine on men and women. These points are important in policymaking. Looking at COVID-19 from a gender lens would also mean realizing that when we say that male mortality is higher than female mortality due to COVID-19, it is adding to the number of widows in our country. 70% of the frontline workers are women and they face greater mortality due to the ill-fitting PPE kits which are made unisex, or rather, to fit a male body. One study indicated that after the job loss due to COVID-19, if more women are given jobs in government schemes than of men, more money will be utilized towards the family.

Unpaid care work by women is also an issue intensified by the pandemic. In Indian urban area, women's participation towards unpaid care work is 63% whereas in rural areas it is 85%. The panel discussions within the plenary session focused on the strain put by the COVID-19 pandemic on the economic, social, educational, and cultural systems globally and the response of the administrators of these systems. It was shown how the COVID-19 pandemic deepened the pre-existing gender gap throughout the world with women, and especially the working class, rural, less formally educated, migrant, women of certain ethnic or racial minorities suffering the most. Their sufferings were:

- Economic, as statistics showed that women globally, as well as in India were mostly involved in the informal economy and were disproportionately affected by layoffs during the pandemic.
- Health related, as women were at a higher risk due to occupational sex-segregation, with a higher impact on reproductive health and maternal mortality.
- Related to the unpaid care work, as the main burden of the household fell upon women due to the hospitals focusing on the pandemic response, schools closing and children being home schooled, and the presence of COVID-19 patents in the extended families.
- Related to gender-based domestic violence, as it rose during the lockdown.

The plenary session included short presentations by renowned feminist internationals, scholars, and activists, followed by a question answer session. The discussion was moderated by Prof. Habil. Roxana Marinescu, Bucharest University of Economic Studies, Romania. In the Session, Dr. Sangeeta Desai, Faculty, Research Centre for Women's Studies (RCWS), SNDT Women's University, Mumbai, referred to the gendered social norms during the pandemic which deepened the pre-existing inequalities, especially regarding age, disability, reproductive rights and digital access.

Dr. Vibhuti Patel, Economist, Women's Rights Activist, and a former Professor, Tata Institute of Social Sciences (TISS), Mumbai, tackled the area of women and work, focusing on the situation of India, with only 6% of women in the formal economy, an increased unpaid domestic care burden, and legal discrimination against women - especially the ones working in the agriculture sector and tribal women. Dr. Chitra Sinha, Women and Gender Studies Expert, Centre for Gender Research, Uppsala University, Sweden, explored the legal challenges women faced, with high inequalities of earnings, and in property ownership in three countries: India, Bahrein and Sweden. Dr. Mariam Seedat Khan, a Clinical Psychologist from the University of KwaZulu Natal, South Africa discussed the mental health implications of the pandemic, with references to the "new normal" and unpredictable changes in the bio-cycle social model.

The Question-and-Answer session that followed included a fruitful interaction between the panelists and the audience, with discussions regarding strategies for livelihood during the pandemic, especially for the women in rural areas, intersectional inequalities of gender, caste, region, age, (dis)ability, literacy, etc., and the future of affirmative action, among others. To sum up, the panel session of the Conference contributed immensely to the intellectual and academic discussion of gender related issues exacerbated by the COVID-19 pandemic. The panelists and the international audience brought in their perspectives on how the pandemic affected women's lives.

International Online Conference on Challenges and Opportunities of Online Teaching-Learning

An Online IAIAER-IFORE International Conference is being organised by the Institute of Professional Studies, Gwalior, Madhya Pradesh on the theme 'Challenges and Opportunities of Online Teaching-Learning during COVID-19 Pandemic' on July 16-18, 2021. The subthemes of the Conference are :

- i. The major barriers of online learning during COVID-19.
- ii. Advantages of online learning during covid-19.
- iii. Impact of online teaching on Teachers during the covid period.
- iv. Impact of online teaching on students during the covid period.
- v. COVID-19 and online teaching in higher education.
- vi. Characters for teachers and students in online learning.

Abstract limited to 250 words either in English or Hindi language, having one sentence each for Objective of the Study, Methodology of Conducting Study, Findings and Conclusion may be submitted by June 30, 2021. References and in-text citations in the papers are to be typed as per Journal of All India Association for Educational Research. Last date for submission of full papers is July 10, 2021. Manuscript submission guidelines are available at https://aiaer. org/ or https://aiaer.org/journal-of-aiaer/

National Workshop on Research Methodology

A five-day Online IEEE National Workshop on 'Research Methodology' is being organized by the Indian Institute of Information Technology Design & Manufacturing (IIITDM Kancheepuram), Chennai during July 20-24, 2021. The Faculties, Research Scholars, Students and Industrial participants may participate in the event. The faculty members from IIITD & M Kancheepuram/IITs/NITs/IIITs are invited to deliver lectures during the event. The workshop aims to improve the research skills and competence among the researchers by strengthening their knowledge as well as improving researcher's technical writing skill, etc.

The research methods and techniques dealt with in the research methodology covers both quantitative and qualitative approaches in scientific research. Quantitative methods aim to classify features, count them, and create statistical models to test hypotheses and explain observations. Qualitative methods aim for a complete, detailed description of observations, including the context of events and circumstances. An experiment is a research method for investigating cause and effect under highly controlled conditions. When conducting an experiment, researchers will test a hypothesis and hypothesis is a statement of how two or more variables are related. A survey is a research which target some population, which are the people who are the focus of research. The objectives of the event are to:

- import a comprehension on the fundamental system of research process;
- enable the participants, define research problem, developing an approach to research problem and selection of suitable research design;
- impart capabilities for formulation and testing of hypothesis based on the nature of research;
- approach a research problem and planning research;
- practice hands-on exercises and examples (LaTeX, Beamer, Overleaf and other drawing tools); and
- enable the participants to understand research paper writing and writing research proposals.

For further details, contact Dr B Chitti Babu, Indian Institute of Information Technology Design and Manufacturing, Kancheepuram , Chennai– 600 127(Tamil Nadu), Phone: 044-2747 6377, E-mail: *ieeesb@iiitdm.ac.in*. For updates, log on to: *www. iiitdm.ac.in*.

CECAR9- International Conference on Sustainable Design and Eco-Technologies for Infrastructure

The triennial International Conference of Asian Civil Engineering Coordinating Council (ACECC) namely 'Civil Engineering Conference in the Asian Region' (CECAR) is being hosted by Institution of Engineers (ICE(I)) at Goa from 21-23 September 2022. CECAR9 is expecting nearly 800 professionals that includes engineers providing leadership in the establishment of a collaborative partnership amongst Academia, Industry and Government from over 15 member economies. It will advance global solutions to meet the needs for livable communities for everyone, anywhere through resilient and sustainable infrastructure systems. Infrastructure is a prime mover and catalyst for realising SDGs. This Conference will deliberate on strategies and best practices in the field, which will evolve into knowledge and suggestions for policy reforms both at national and international level. The themes of the subthemes of the Conference are:-

I. Civil Engineering Education

- 1. Sustainability of Civil Engineering Education in the context of UN SDG
- 2. Ethics an important component of Civil Engineering curriculum.

II. Infrastructure Design and Construction Technologies

- 1. Innovative Infrastructure, design practices and construction technology for sustainability.
- 2. Infrastructure development for smart and sustainable cities and affordable housing for developing economies.

III. New Construction Materials

New construction materials and sustainability of infrastructure.

IV. Geo Technical Engineering

Geo technology management, operation & safety.

V. Transportation

- 1. Eco-technologies in pavement design & construction of roads & airports.
- 2. Traffic Management, operation & safety.
- 3. New frontiers in Railway technology.

VI. Environmental Engineering

- 1. Green building concept, design & construction technology & their impact on carbon rating.
- 2. Landfill management technology for energy production.
- 3. Industrial waste treatment technologies & water pollution.

VII. Water Resource Management

- 1. Water resource management techniques & technologies.
- 2. GIS and water shed management techniques.

VIII. Renewable Energy

Renewable energy, its storage & use.

IX. Application of IT & Modeling

- 1. Application of IT in Civil Engineering projects.
- 2. Modeling for efficient design of Civil Engineering projects.

X. Disaster Management

Disaster preparedness, mitigation & rehabilitation.

The Proceedings for CECAR9 will be published in an open access publication with Springer under International Peer Reviewed Refereed proceedings series "Lecture Notes in Civil Engineering", indexed in SCOPUS and EI Compendex database, having high Impact Factor. It will be a valuable reference for beginners, researchers and professionals (Academic and Field functionaries) interested in sustainable development of infrastructure and allied fields.

The last date for receipt of Abstracts of Papers is 31st July, 2021 and full papers from the selected authors by 15 December, 2021. It can be submitted to any of the following committee members: -

Dr. S.D.Sharma Chair M-9810632054	shivdutt_sharma@rediffmail.com sdsharma@ice.net.in directoracademic@ice.net.in
Dr. Trishna Choudhury Member M-9678921169	trishnachoudhury18@gmail.com trishna.choudhury@thapar.edu
Dr. Raju Sharma Member M-9779218545	rajuenter@gmail.com

It will provide a unique opportunity for the Delegates/Paper Presenters to get an excellent exposure to see the Civil Engineering World through the lens of the Experts. For further updates please log on to www. cecar9.com

Manodarpan Programme at NCERT

After the outbreak of COVID-19 last year, Ministry of Education, Government of India had initiated many activities to protect the academic interests of the students as well as for their physical and mental wellbeing. The 'Manodarpan' initiative under the 'Atmanirbhar Bharat Abhiyan' to provide psychosocial support for mental health and well-being to students is one among them. 'Manodarpan' covers a wide range of activities to provide psychosocial support to students, teachers and families for Mental Health and Emotional Wellbeing during the COVID-19 outbreak and beyond. As part of the initiative, a web-page named 'Manodarpan' has been created which contains advisory, practical tips, posters, videos, do's and don'ts for psychosocial support, FAQs and online query system.

Immediately after the launch of Manodarpan initiative by the Union Minister for Education, Shri Ramesh Pokhriyal Nishank on the 21st July, 2020, the Manodarpan Cell was constituted in Department of Educational Psychology, National Council of Educational Research and Training (NCERT). Dr Anjum Sibia, Head, Department of Educational Psychology and her team, took the lead in carrying out the Manodarpan activities throughout the country. A National Toll-free Helpline (8448440632) has been set up through NCERT for a country-wide outreach to students from schools, colleges and universities to provide them tele-counselling to address their mental health and psychosocial issues.

To further strengthen the process, NCERT is in the process of developing Directory of Counsellors to be put up on Manodarpan Webpage. All those who are working in the field of Counselling and have interest in registering may submit the following proforma to NCERT.

Enter your Name *
Your answer
Gender *
Male
Female
Other
Date of Birth (DD-MM-YYYY) *
Your answer
E-mail ID *
Your answer
Mobile Number *
Your answer
Whatsapp Number *
Your answer
Complete Address of School/College/Institution, where employed *
Your answer
Type of Present Employment * Government Organisation School College Hospital Private Practice Other:
City *
Your answer
Rural / Urban *
Your answer
District *
Your answer
State/UT *

Your answer	Any Professional Training (Please specify - Name o the Organisation and Year) *		
Institute *	Your answer		
Your answer	The format is available on following link: https://docs.		
Year of Completion of Diploma *	google.com/forms/d/e/1FAIpQLSc4UYkTG17hDN 5Hky6XQ4uBCD3f8CEz03PtWyMNWxbtd2LlxQ/ viewform?usp=pp_url		
Your answer			
Fluency in Language(s) *	For further details contact Prof. Anjum Sibia, Dean (A) & Chairperson , Manodarpan Cell, NCERT,		
Your answer	New Delhi on email : anjumsibia@yahoo.com or		
Area of Expertise *	browse NCERT Website ncert.nic.in		
Your answer	L		

Prof. M Anandakrishnan Passes Away

Prof. Munirathna Anandakrishnan (July 12, 1928–May 29, 2021) a well-known Educationist and an icon of technical education passed away due to COVID-19 related complications on May 29, 2021. Hislast assignment in his career was being the Chairman of Board of Governors at Indian Institute of Technology, Kanpur. Earlier, he served as Vice Chancellor of Anna University for two terms; Advisor to the Government of Tamil Nadu on Information Technology and e-Governance; Member, Executive Council of the Central Universities of Haryana; Member, Board of Management, National Institute of Educational Planning and Administration (NIEPA); Vice Chairman, Tamil Nadu State Council for Higher Education; First Science Counselor, Embassy of India Washington, D.C.; Deputy Director, Centre for Science and Technology for Development, United Nations, New York; Chairperson of Madras Institute of Development Studies.

Prof. Anandakrishnan was chaired several committees of Ministry of Education, University Grants Commission, Association of Indian Universities, All India Council for Technical Education and various other apex bodies. He was in the panel of experts in Committee on Specification of Degrees, Expert Committee to review the Maintenance Grant Norms for Delhi Colleges and the Expert Committee to examine the proposals for starting new Academic Staff Colleges. He headed AICTE Committees like Sectoral Committee of the National Board of Accreditation, Southern Regional Committee, Standing Committee on Entry and Operation of Foreign Universities in India and All India Board of Under Graduate Studies in Engineering and Technology. He was associated as a member with the Academic Advisory Council of Pondicherry University and with the National Assessment and Accreditation Council (NAAC), Bangalore.

Prof Anandkrishnan was a scholar who had a deep understanding of Indian Higher Education. The Government of India awarded him the civilian honour of Padma Shri in 2002. He was conferred with National Order of Scientific Merit from the President of Brazil. The Centenarian Trust, Chennai selected him as the *Man of the Year 1999*. He recieved Distinguished Leadership Award by the University of Minnesota in 2003; Platinum Jubilee Award of the Indian Ceramics Society and the ICCES Outstanding Achievement Award from the International Conference on Computational and Experimental Engineering and Sciences conferred upon him in 2004. The University Grants Commission awarded him the *UGC National Swami Pranavananda Saraswati Award* in 2006.

Prof Anandkrishnan's interest in higher education was evident in his writing. He has been a frequent contributor the University News and other publications of AIU.

Prof Anandkrishnan's demise is great loss not only for his family but also for Higher Education System of the country. Indeed, it is a great loss to University News along with its contributors.

AIU fraternity expresses profound grief on his demise.

THESES OF THE MONTH

HUMANITIES A List of doctoral theses accepted by Indian Universities (Notifications received in AIU during the month of April-May, 2021)

Geography

1. Barman, Bhupen. A study on rural outmigration in Koch Bihar District, West Bengal: A geographical analysis. (Prof. Ranjan Roy), Department of Geography and Applied Geography, University of North Bengal, Darjeeling.

2. Das, Rituparna. An assessment of the level of rural development in Jalpaiguri District, West Bengal. (Dr. Indira Lepcha), Department of Geography and Applied Geography, University of North Bengal, Darjeeling.

3. Ghosh, Anamika. Socio-economic condition of tribal population of Dakshin Dinajpur District, West Bengal. (Prof. S Rohatgi), Department of Geography and Applied Geography, University of North Bengal, Darjeeling.

4. Lalhruaitluanga, David. Assessment of natural resources and land use planning in Chem Lui Sub-Watershed, Kolasib District, Mizoram. (Prof. P Rinawma and Dr. Ch Udaya Bhaskara Rao), Department of Geography and Resource Management, Mizoram University, Aizawl.

5. Vanlaltanpuia. **Dynamics of land degradation in Tuirini Watershed Mizoram**. (Dr. Ch Udaya Bhaskara Rao), Department of Geography and Resource Management, Mizoram University, Aizawl.

History

1. Brijendra Kumar. Bundelkhand ke shaikshik vikas mein sthaniye nikayoan kee bhumika 1947-2009 isvi Sagar Sambhag ke vishesh sandarbh mein. (Prof. B K Shrivastava), Department of History, Dr Harisingh Gour Vishwavidyalaya, Sagar.

2. Rao, M Suseela. **History of Masulipatam Municipality 1866-1947**. (Dr. Kambapu Venkateswara Prasad), Department of History and Archaeology, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Ravi, Anuradha. Forest administration under British India: A study. (Dr. K V N Raju), Department of History, Acharya Nagarjuna University, Nagarjuna Nagar. 4. Vijayalaxmi. Role of ports and forts in the economy of Coastal Karnataka (1500-1800 A D). (Dr. Peter Wilson Prabhakar), Department of History, Sree Sankaracharya University of Sanskrit, Kalady, District Ernakulam.

5. Yadav, Sharmila. **Mewat ka samajik etihas: Nirantarata aur parivartan 1947 esvi-2005 isvi**. (Dr. J S Dhankhar), Department of History, Maharshi Dayanand University, Rohtak.

Languages & Literature

English

1. Brahmaiah, Narayanapuram. Attitudes of ESL speakers towards the phenomena of code switching and code mixing in Andhra Pradesh. (Prof. K Ratna Shiela Mani), Department of English, Acharya Nagarjuna University, Nagarjuna Nagar.

2. Dhamsania, Shailee Chatrabhubhai. Process of urbanisation as reflected in the select works of Kamala Markandaya, Ruth Prawer Jhabwala and Anita Desai. (Dr. Nila Shah), Department of English, Saurashtra University, Rajkot.

3. Dwivedi, Sumedha. Cultural torpes of contemporary Parsi Community: A selective study of Parsi fiction. (Dr. Alka Singh), Department of English, Dr. Ram Manohar Lohiya National National Law University, Lucknow.

4. Joshi, Khushali Vinod. Civil disobedience: A critical study through historical and literary documents. (Dr. Ketan Vyas), Department of English, Saurashtra University, Rajkot.

5. Kakani, Veerabhadra Ravindra Babu. Using scaffolding as a technique to enhance learners' language proficiency at tertiary level: A task-based approach. (Prof.K Ratna Shiela Mani), Department of English, Acharya Nagarjuna University, Nagarjuna Nagar.

6. Khan, Peenaz. Trans-lation, poetics and politics: Reflections on Clinton B Seely's The Slaying of Meghanada: A Ramayana from colonial Bengal and William Radice's The Poem of The Killing of **Meghnad**. (Dr. Binayak Roy), Department of English, University of North Bengal, Darjeeling.

7. Kulkarni, Bhagyashri Balwant. Elements of naturalism and revolutionary spirit in select plays of Anton Chekhov. (Dr. Mahesh Bhatt), Department of English, Gujarat University, Ahmedabad.

8. Naresh Kumar, Vanapalli. Social concerns in the select plays of Badal Sircar. (Prof. K Ratna Shiela Mani), Department of English, Acharya Nagarjuna University, Nagarjuna Nagar.

9. Rahaman, Obayedur. Indian nationalism in Indo-English poetry from Derozio to Manmohan Ghose: A critical study. (Dr. Atul Chandra Ghosh), Department of English, T M Bhagalpur University, Bhagalpur.

10. Rao, Nandanavanam Srinivasa. Deciphering the dramatic and philosophical ideas in Iris Murdoch's fiction. (Prof. Rajasekhar Patteti), Department of English, Acharya Nagarjuna University, Nagarjuna Nagar.

11. Raval, Dhruti Udaykumar. **Contemporary African fiction: A study in the postcolonial perspective**. (Dr. Darshana Bhatt), Department of English, Gujarat Technological University, Ahmedabad.

12. Roy, Prasenjit Datta. Dynamics of power and sexuality in selected texts of Khushwant Singh: A study. (Prof. Sarangadhar Baral), Department of English, Mizoram University, Aizawl.

13. Shaik, Shaheen. Ethno-religious consciousness in the works of Boman Desai, Rohinton Mistry and Firdaus Kanga. (Prof. K Ratna Shiela Mani), Department of English, Acharya Nagarjuna University, Nagarjuna Nagar.

14.Singh, Durgawati. Philosophical foundations of literary theory: A study in relation to the influence of Nyaya and Samkhya on structuralist and post-structuralist movement in art. (Prof. B I Guru), Department of English, Dr Harisingh Gour Vishwavidyalaya, Sagar.

Hindi

1. Chahal, Amit. Govind Mishra ke upanyasoan mein Sangrash Chetna. (Dr. Sanjiv Kumar), Department of Hindi, Maharshi Dayanand University, Rohtak.

2. Mamtora, Vaishali Sureshbhai. Usha Priyevanda ke katha sahitye mein nari vimarsh. (Dr. Manhar K Goswami), Department of Hindi, Saurashtra University, Rajkot.

3. Pandey, Madhubala. Swatantryottar Hindi upanyasoan mein vyakat sampardaikta. (Dr. Mahendra

Guha), Department of Hindi, S.N.D.T. Women's University, Mumbai.

Kannada

1. Kamath, Ashoka. **The bases of school education in Kannada autobiographies**. (Dr. Nikethana), Department of Kannada, Kannada University, Hampi, District Bellary.

2. Shivaprakash, N. The transitions in Kannada language text books: With reference to high school text books of Karnataka. (Dr. Nagaveni N), Department of Kannada, Kannada University, Hampi, District Bellary.

Sanskrit

1. Mishra, Krishna Kumar. **Arya sanskriti mein sanskaroan ka vaigyanik mehtav**. (Mahadev Mishra), Department of Sanskrit, Jai Prakash University, Chapra.

2. Sasikala, K. A socio-cultural analysis on crime and punishment in ancient India based on Sanskrit sources. (Dr. V R Muralidharan), Department of Sanskrit Sahitya, Sree Sankaracharya University of Sanskrit, Kalady, District Ernakulam.

3. Sooraj, R S. Retrieving the tradition of Kerala astronomy and Mathematics: K V Sarma's contribution. (Dr. E Sreedharan), Department of Sanskrit Sahitya, Sree Sankaracharya University of Sanskrit, Kalady, District Ernakulam.

4. Shukla, Anuj Kumar. Hindi sant kavye aur Marathi santoan kee Hindi rachnaoan ka tulnatamak adhyayan: Pratinidhi santoan ke sandarbh mein. (Prof Virendra Mohan), Department of Sanskrit, Dr Harisingh Gour Vishwavidyalaya, Sagar.

Telugu

1. Srinivasarao, Kommalapati. **Prakasam Jilla Pamba Kathakula Samskruthika jeevana vidhaanam: Oka pariseelana**. (Dr. Busi Venkata Swamy), Department of Telugu, Acharya Nagarjuna University, Nagarjuna Nagar.

2. Venkata, Sudheer Kumar J. Acharya Gangappa navala sahityam- charitraka, samajika drukpadhalu. (Dr. Busi Venkata Swamy), Department of Telugu, Acharya Nagarjuna University, Nagarjuna Nagar.

Urdu

1. Hasan, Gulzar. **Abid Suhail Hayat shakhsiyat aur karname**. (Prof. Fidaul Mustafa and Dr. Waseem Anwar), Department of Urdu, Dr Harisingh Gour Vishwavidyalaya, Sagar. 2. Nouman, Mohamed Manzoor. Roznama Salar ke adabi edition kee tanqeedi ahmiyath: Dhoop Chaun Ke Hawale Se from 2009 to 2014. (Dr. C Syed Sha Madar), Department of Urdu, Mizoram University, Aizawl.

3. Thameem, Ahmed V. **Tamil Nadu ke Mantaqab Shora ke kalam ka taqeedi jayeza**. (Dr. C Syed Khaleel Ahmed), Department of Urdu, Kuvempu University, Shankaraghatta.

Linguistics

1. Trivedi, Devashree Nitin. Adjectives in Gujarati language: A cognitive perspective. (Dr. Nilotpala A Gandhi), Department of Linguistics, Gujarat University, Ahmedabad.

Performing Arts

Drama

1. Majiatar, Bharatkumar Jethalal. The origin development and the present situation of Indian theatre. (Dr. Bharatiben Rathod), Department of Drama, Saurashtra University, Rajkot.

Fine Arts

1. Upadhyaya, Seema S. **Pravasi Kanda narthana lokha** Department of Fine Arts, Kannada University, Hampi, District Bellary. (**D. Lit.**)

Music

1. Sharma, Priyanka. Bhartiya shastriya sangeet ke aadhaar stambh swar, laya, bhaav kee saarthakta mein bhotik vihyan, ganit avom manovigyan vishayoan ka antarsambandh. (Dr. Bharti Sharma), Department of Music, Maharshi Dayanand University, Rohtak.

Philosophy

1. Saha, Sangeeta. Feminism and philosophical aspect of Simone's The Second Sex: A critical restudy. (Dr. Punendu Shekhar), Department of Philosophy, T M Bhagalpur University, Bhagalpur.

Religion

Buddhism

1. Aggasara. A historical study of the Buddhist

cultures of India and Myanmar from 1st C B C to 11th C A D. (Prof. J Sita Ramamma), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

2. Jeyyasurajoti. An analytical and comparative study of defilements (KILESA) in Theravada Buddhism and Patanjali yoga sutras. (Prof. J Sita Ramamma), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Katta, Joseph. Debate on Buddhist and Christian ethics on empathy: In the context of philosophy of religion. (Prof. L Udaya Kumar), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

4. Kundalacara. The philosophical exposition on the salient features of six temperaments (Cha Caritas) and its application in Theravada Buddhism. (Prof. L Udaya Kumar), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

5. Pothula, Chandrasekhar. **Buddhist environmen**tal philosophy in the contemporary society. (Prof. L Udaya Kumar), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

6. Sobhita. Buddhist concept of Sila, Samadhi and Panna and their relevance to modern society. (Prof. Ch Swaroopa Rani), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

7. Sumana. Buddhist practical ethics on human relationship in connection to the Theravada philosophical thought. (Prof. L Udaya Kumar), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

8. Thepa, Phramaha Chakrapol. **Role of Buddhist WAT towards society in Thailand during Sukhothai to early Ratanakosin (1238-1910 A D)**. (Prof. Challapalli Swaroopa Rani), Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Nagarjuna Nagar.

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VVA		Ľ.	ν

Applications are invited for the post of **Principal** to be filed in Late Ramrao Patil B.Ed College, Udgir, Dist. Latur permanent non granted Run by Adarsh Bahhuuddeshiya Sevabhavi Sanstha Loni, Tq. Udgir, Dist. Latur eligible candidates should submit their applications along with all necessary documents **within fifteen days** from the date of the advertisement registered post only.

Sr. no.	Name of the post	No. of post	Reservation
01	Principal	01	Unreserved

Educational Qualification

- 1) Ph.D Degree.
- Professor/Associate Professor with a total services/ experience of atleast fifteen years of the Teaching/Research publication in Universities, colleges and other Institution of Higher Education.
- 3) A minimum of 10 Research publication in peer reviewed or UGC listed journals and
- 4) A minimum of 110 Research score as per appendix II, Table-2.

B) Tenure

A College Principal shall be appointed for a period of five years extendable for another term of five years on the basis of performance assessment by a committee appointed by the University constituted as per these rules.

Desirable:-Diploma/Degree in Educational Administration or Educational leadership.

Salary and Allowance Pay:- Scales as per UGC, State Government and Swami Ramanand Teerth Marathwada University, Nanded rules from time to time.

Note :-

- 1) Prescribe application form is available on University website (www.srtmun.ac).
- 2) No TA/DA will be paid at attend the interview.
- Eligible candidates those who are already in services should submit their application through proper channel.
- All attested Xerox copies of certificate and other relevant documents should be attached with the application form.

Address of Correspondence Secretary

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Hemchandracharya North Gujarat University



Accredited by NAAC with "A" Grade (CGPA 3.02)

North Gujarat University which was established by the Government of Gujarat on 17th May 1986, with geographical jurisdiction over five districts of North East Gujarat i.e., Banaskantha, Sabarkhantha, Aravlli, Mehsana and Patan, has its headquarters at the historical place of Patan. North Gujarat University was named in 2003 as Hemchandracharya North Gujarat University as a token of respect for the great jain scholar and grammarian "Hemchandracharya". At present after an academic journey of more than 35 years, this University has modern infrastructure for higher studies in all the Departments. At present, this University has more than 430 affiliated colleges and more than 27 departments and center functioning in this campus. This University is situated on the posh university road locality in Patan and University is spread across approximately 221 acres of land and all the Departments are connected by RCC road. The NATIONALASSESSMENT AND ACCREDIATION COUNCIL awarded a "A" grade with 3.02 CGPA in 2016.

• This University Achievements :

- Affiliated colleges: 369
- Ph.d awarded: 1766
- Research and Consultancy Projects: 5
- Number of students (2020-21): close to 1.5 lac
- Number of colleges with N.S.S. Program: more than 100
- Number of Books in Library: close to 11ac.

- MOUS signed: (9 Universities, 8 Corporate/ Institutions)
- Last year Funded Research/Consultancy Projects: 5 (ICSSR, UGC, DST, GSBTM, IIPA)
- Last year Research papers publication in Journals : 11
- Planned publication: 20

In this way, this University has been catering the academic needs of this North Gujarat region successfully.

Dr. J. J. Magdum Trust's Dr. J. J. Magdum Pharmacy College, Jaysingpur (Permanent Non- Grantable)

Shirol-Wadi Road, Jaysingpur, Tal. Shirol, Dist. Kolhapur 416101 Affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere 402103

RECRUITMENT

Applications are invited from eligible candidates for the following **Permanent Non-grantable** positions:

Designation of the position	Total vacancies	Category-wise vacancies
Principal	01	Open

Conditions:

- 1. Educational Qualifications, Experience, Pay Scales etc. applicable for the post is as per the norms specified by AICTE/PCI/ COA, Govt. of Maharashtra & Dr. Babasaheb Ambedkar Technological University, Lonere, Dist. Raigad & as modified from time to time.
- 2. Those who are in service should apply through proper channel.
- 3. Application received after the last date will not be considered. The college will not be responsible for any delay including postal delay, if any.
- 4. Incomplete applications or applications without the attested copies of supporting documents will not be entertained.
- 5. No T.A. D. A. will be paid for attending the interview.
- 6. The application giving full particulars and attested copies of all the supporting documents should reach to the undersigned within 15 days from the date of publication of this advertisement.

Place:	I
Date:	Dr. J. J. M

President/Secretory/Director Dr. J. J. Magdum Charitable Trust's Jaysingpur

Sd/-

Devi Sharvani Education Society's

V. M. SALGAOCAR COLLEGE OF LAW P. O. Caranzalem, Miramar, Panaii, Goa, 403 002.

aranzalem, Miramar, Panaji, Goa, Ph. No. 0832-2462225/2464211

Website: www.vmslaw.edu.in, Email: vmscl@rediffmail.com

Applications with Full Bio-Data are invited from Indian Citizens for the POST OF **PRINCIPAL** (Unreserved Category) to be filled in Government Aided College from the Academic Year 2021-2022 onwards:

The required minimum qualifications for the post of Principal are as follows:

- A) Eligibility
- i) Ph.D. degree
- ii) Professor / Associate Professor with a total service / experience of at least fifteen years of teaching / research in Universities, Colleges and other institutions of higher education.
- iii) A minimum of 10 research publications in peer reviewed journals as approved by Goa University from time to time OR UGC-listed journals out of which at least two should be in Scopus / Web of Science Journal.
- iv) A minimum of 110 Research Score as per Appendix II, Table 2.

B) Tenure

A College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment by a Committee appointed by the University, constituted as per these Statutes.

Essential Requirements:

a) Knowledge of Konkani Language, b) 15 years of residence certificate in Goa

Desirable Requirement: Knowledge of Marathi Language.

Scale of Pay: As prescribed by UGC, Goa University, Directorate of Higher Education, Govt. of Goa from time to time.

Service Conditions: As prescribed by the UGC, Goa University, Directorate of Higher Education, Govt. of Goa and other competent authorities.

Application completed in all respects along with self-certified photocopies of statements of marks of all public examinations from SSC onwards, API Score sheet and other certificates should reach the President, Devi Sharvani Education Society's V. M. Salgaocar College of Law, P.O. Caranzalem, Miramar, Panaji, Goa, 403 002, within 20 days from the date of publication of this advertisement by superscribing on the envelop "Application for the post of Principal". No TA/DA will be paid for attending the interview. Persons who are already employed shall send in their applications through proper channel.

Date: 10/06/2021 Place: **Panaji, Goa** President Devi Sharvani Education Society

WANTED

Applications are invited for the Post of Principal to be filled in Shri Shivaji Law College, Kandhar, Tq. Kandhar, Dist. Nanded (Grant in aid) Run by Shri Shivaji Mofat Education Society, Kandhar, Tq. Kandhar, Dist. Nanded (Maharashtra). Eligible Candidates should submit their applications along with all necessary documents within Fifteen Days from the date of the Advertisement by Registered post only.

Sr. No	Name of Post	Number of Post	Reservation
1	Principal	01	Unreserved

A. Educational Qualification

The Candidate shall possess the following qualification:

- 1) Ph.D. Degree.
- 2) Professor / Associate Professor With a total service/ Experience of at least **Fifteen** years of Teaching/ Research in Universities, Colleges and other institution of Higher Education.
- 3) A minimum of 10 Research publications in peer -reviewed or UGC-listed journals and
- 4) A minimum of 110 Research Score as per appendix II, Table-2.

B. Tenure

A College Principal shall be appointed for a period of Five Years, extendable for another term of five years on the basis of performance assessment by a Committee appointed by the University constituted as per these Rules.

Salary & Allowance: Pay Scales as par UGC state Government & Swami Ramanand Teerth Marathwada University rules from time to time.

Note:-

- 1) Prescribe Application form is available on University Website (www.srtmun.ac.in).
- 2) No T.A./D.A. will be paid to attend the interview.
- 3) Eligible Candidates those who are already in services should submit their application though proper channel.
- 4) All attested Xerox copies of certificates and other relevant document should be attached with the application form.
- 5) The Post well be recruited subject to the decision of the Hon'ble High Court Bench, Aurangabad in Writ petition No. 12051/2015.

Address of Correspondence:-

Secretary,

Shri Shivaji Mofat Education Society, Kandhar

C/o Shri Shivaji Law College, Veer Nagoji Naik Chowk, Panchalpur Nagar, Kandhar,

Tq. Kandhar, Dist. Nanded (Maharashtra) Pin-431714

Secretary Shri Shivaji Mofat Education Society, Kandhar, Tq. Kandhar, Dist. Nanded



VIKAS PARISHAD MANDRE MANDRE COLLEGE OF COMMERCE, ECONOMICS & MANAGEMENT

Mandre, Goa – 403527, **Phone No: 0832-2247269** (Recognised by Govt. of Goa, Affiliated to Goa University)

Applications with full Bio-data are invited from Indian citizens for the post of PRINCIPAL (unreserved category) to be filled in the above Government aided college from the academic year 2021-22 onwards. The required minimum qualifications for the post of Principal are as follows:

A) Eligibility:

- i) Ph.D. degree
- ii) Professor/Associate Professor with a total service/experience of at least 15 years of teaching/research in universities, colleges and other institutions of higher education.
- iii) a minimum of 10 research publications in peer reviewed journals as approved by Goa University from time to time or UGC listed journals out of which at least two should be in scopus/web of science journals.
- iv) a minimum of 110 research papers score as per appendix II, Table-2.

B) Tenure:

College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment by a committee appointed by the university, constituted as per the statute.

Essential Requirements:

a) Knowledge of Konkani language.

b) 15 years of residence certificate in Goa issued by competent authority.

Desirable Requirement: knowledge of Marathi language.

Scale of Pay:- As prescribed by UGC, Goa University and Directorate of Higher Education, Government of Goa from time to time.

Service Conditions: As prescribed by the UGC, Goa university, Directorate of Higher Education, Government of Goa and other competent authorities.

Applicants who are already employed shall send in their applications through proper channel.

Applications completed in all respect along with self-certified photo copies of statement of marks of all public examinations from SSC onwards, API score sheet and other certificate should reach the Secretary, Mandre College of Commerce, Economics and Management, Mandre–Goa. 403527 **within 21 days** from the date of publication of this advertisement.

No TD/DA will be paid for attending the interview.

N.B. Person who has applied earlier should apply again.

Sd/-CHAIRMAN VP's Mandre College of Commerce, Economics and Management, Mandre, Goa

Place: Mandre, Goa Date: 08/06/2021



Raj Bhavan, Goa



SUBJECT : APPOINTMENT OF VICE CHANCELLOR, GOA UNIVERSITY

The Search Committee constituted by Hon'ble Governor of Goa and Chancellor of Goa University, to recommend suitable names for the post of Vice Chancellor of Goa University, hereby invites applications from distinguished academicians fulfilling qualifications and experience prescribed for the post of Vice Chancellor of Goa University as per Goa University Statute SA-6(1)(b)(i), reproduced below:-

"A person of the highest level of competence, integrity, morals and institutional commitment shall be appointed as Vice-Chancellor. The Vice-Chancellor to be appointed should be a distinguished academician, with a minimum of ten years of experience as Professor in a University system or ten years of experience in an equivalent position in a reputed research and/or academic administrative organization."

The term of office, service conditions, powers and duties of the post as prescribed under Statute SA-6 of the Statutes of the Goa University can be accessed on the Goa University **website : www.unigoa.ac.in.**

The applications should be made in the prescribed proforma which is available on the **website: www.rajbhavan.goa.gov.in.** Completed applications should be submitted by email to the address of the Secretary to Governor email ID : **secy-governor.goa@ gov.in.** The candidates should also submit hard copy of the application by Speed Post addressed to **"The Secretary to Governor, Governor's Secretariat, Raj Bhavan, Dona Paula, Goa–403004".** The applications in hard copy as well as soft copy should reach by 9th July, 2021. Applications received thereafter shall not be entertained.

Shortlisted candidates may be invited for personal interaction with the Search Committee.

Secretary to Governor, Governor's Secretariat, Raj Bhavan, Dona Paula, Goa – 403004

Date : 10th June, 2021

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