REIMAGINING INDIAN UNIVERSITIES

Editors

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Association of Indian Universities
New Delhi (India)

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FOREWORD

We are living in excitingly turbulent times buffeted by emerging 'disruptive technologies'. In such a scenario, education, more specifically Higher Education, can act as a panacea in tracking the emerging changes and tackling the upcoming challenges and prepare mankind for unexpected future realities. The book, Reimagining Indian Universities, containing the writings of some of the best minds in the country, underscores the deep conviction of the Association of Indian Universities to prepare a roadmap on what the future of Indian universities should be and how we prepare our universities to be future ready. It is an apt time for release of such a publication in view of the recently launched National Education Policy–2020.

I am delighted that *Reimagining Indian Universities* is about transforming education to prepare learners to face and overcome the unexpected life challenges in an increasingly competitive world. Human nature has multiple dimensions and multiple needs. Aims and purposes of education must correlate to the needs and ideals of life and, therefore, have to be dynamic. They change from age to age, place to place and with the societal advancements. Thus, the important prerequisite for education in the 21st century and beyond is the integration of employability-oriented soft skills as an integral part of the higher education system. This education-employment connect, calls for strong industry engagement with equal emphasis on domain knowledge and humanism so as to restore to India her ancient place of pride in the global educational rankings.

According to Indian philosophy, the ultimate aim of higher education is development of the universal human beings having a healthy inter-relation, interdependence and integration with everyone considering the Earth as a family—*Vasudhaiva Kutumbakam*. Ancient India, which climbed the highest pinnacle of education by emerging as *Vishwaguru*, has left a rich heritage of teaching learning system for us. I am happy that there is a strong view of scholars that our ancient Indian knowledge system, which has reached sublimal heights, should be the basis for re-imagining our universities.

I am confident that these suggestions from the captains of Indian universities would be very helpful in re-envisioning our universities in sync with the educational needs of the 21st century and beyond.

Ramesh Pokhriyal 'Nishank'
Union Minister
Ministry of Education
Government of India

PREAMBLE

"The old order changeth, yielding place to new, and God fulfills himself in many ways, lest one good custom should corrupt the world". This line from the poem 'The Passing of Arthur' by Alfred Lord Tennyson leads us towards optimism of change. Nothing in life or in nature is ever constant. Change is the law of life and we all have to be accustomed to change. The matter of concern is not the change but it is the pace of change which is increasing exponentially day by day outpacing the past and bringing us close to the future prematurely. We stand today where the noon of tomorrow is shining. The way we adopt and adapt to new technologies is leading to disruptive changes causing disorientation and complexity in the society. This complexity is characterised by uncertainty and unpredictability. In this scenario, it becomes the responsibility of universities to guide the change and reshape the attitudes and beliefs of people at large, to prepare them for emergence of new norms and complexities. This constitutes the most important task of the future ready universities. The most pronounced dimension of reimagining universities in India is to have future ready universities that nurture personal qualities such as breadth of mind, courage, self reliance, flexibility, adaptability, and resilience in students so that they understand the complexities, deal with them, cope with them and respond to uncertainty.

India is one of the fastest growing economies today, and its workforce is among the youngest, globally. In fact, by 2030, when majority of the countries will have middle-aged or elderly workforces, India will still have the advantage of a relatively young workforce. India is rich in the repertoire of traditional knowledge as well. For reimagining Indian universities, all of us who are serving in the field of higher education should try to embrace the old wisdom and unite it with all that is new and fresh to stretch into new vistas of knowledge and application. It is a task to create something new from old culture. Culture too is continuously growing with some new angle of vision, some new organ of research and some new mirror of reflection. Alvin Toffler is famous for popularising the field of futurism with his influential book *Future Shock* (1970) in which he says "a future facing

higher education system can help create the consciousness needed for man to undertake the control of change and the guidance of his revolution. For by making imaginative use of change to channel change, we can spare ourselves the trauma of future shock and can reach out to humanise distant tomorrows". By the term future shock, he meant the sense of disorientation that we are feeling due to rapid changes in our world today. This state of confusion is similar to culture shock that anybody feels when they visit some new place and have to live with new norms and taboos of the culture they are visiting.

Reimagining Indian Universities is the leading collection of contemporary essays by the some of the great thinkers in the field of Indian higher education. The book enlivens the argumentative Indian who dare question the contemporary practices which are crumbling our universities. It also provides new solutions and methods in the form of reforms and innovations to elevate Indian universities to world-class top ranking levels. The book is an attempt to carry forward the Indian universities to the next phase of its evolution where they can coexist with their counterparts which are presently enjoying the status of worldclass universities at an equal footing. It generates a corpus of new ideas that are significant for the reforming the Indian higher education system. Each chapter examines one or more of the critical topics that had turned out to be the Achilles' heel of Indian higher education system.

Various chapters of this book integrate into their analyses the conceptual, political, pedagogical, and practical histories and tensions that are responsible for the present state of mediocrity and chaos in the Indian higher education. Simultaneously, they provide rich resources in the country which shall enable us to tread this path of uncertainties to land on a more secure future where Indian higher education will again be the *Vishwaguru.*

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Tej Partap
President
AIU, New Delhi

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PREFACE

Universities have always been a reflection of the progress in our societies and form the microcosm of cultures and subcultures, and batons of development. The importance of universities cannot be overstated in the process of development as they are the places where the best of human resources – ranging from high quality educators, doctors, lawyers, technologists, researchers and a host of such professionals, who constitute the pillars of the society – are created, nurtured and equipped for present and future needs. Emergence of new fields of knowledge theories are because of the efforts of universities in providing solutions to the societal problems and thereby, contributing to the development of humankind. When technology was needed for mankind, universities took the responsibility to develop it; when health issues emerged before us as a problem, universities shared the responsibility; when social system demanded attention, our universities and institutions came forward to the rescue. In a nutshell, universities are and will always remain committed to the recurring problems and issues of the society, as well as progress and development of humankind.

India takes the credit of being a pioneer in creating knowledge systems and universities. It is well acknowledged across the world that the first university on this planet i.e Takshashila University was established in India in 6 BC. The knowledge systems of India in the form of Vedas and Upanishads can be traced back to as early as 1800 BC and 800 BC respectively. The versatility and perpetual significance of Indian knowledge systems make them relevant forever. But things have changed with changes in the regimes. The 'modern universities' came up in 1857 under the British regime. The first university was established in India on 24th January, 1857, at Calcutta and in the same year two more universities, University of Bombay and University of Madras, were established. These universities were xenogeinic transplants in British India, mainly set up to suit the needs and demands of the colonial power. This led to fading and near extinction of the indigenous educational system in India. The objective was to create a set of graduates to serve and fulfill the needs of the colonial

government. This has defined the nature and character of the modern universities in India which continues even today.

Meanwhile, the number of universities grew and by 1947, when the country became independent, the number rose from 3 to 20 universities. Thereafter, the number grew continuously with increasing pace with every passing decade. Now, the Indian Higher education system happens to be the third largest higher education system in the world with more than 1040 universities and 39, 800 colleges as per University Grants Commission data. An even more dramatic increase took place in technical and professional instititions. Yet, in terms of the Gross Enrollment Ratio(GER), the country stands at about 26.3 per cent, far lower than the GER for most developed countries and less than the average GER in most developing countries. With a target of a GER of 50 by 2035, there is still a huge gap in the number of higher education institutions.

Now, the Indian universities are laden with several tribulations which are impeding their growth and development. Most importantly, they are grappling with the challenges of the five "Es": Enrolment, Excellence, Equity, Employability and Entrepreneurship. Access and Equity is a massive challenge in India. There are gross inequities in terms of rural and urban, rich and poor, and the so-called upper castes versus the socially and economically challenged classes which has affected the very social fabric of the country. Excellence, Employability and Entrepreneurship pose big challenges. The situation warrants immediate intervention to address these essentials through the university system. Else, the country as whole will face the brunt of it.

Albert Einstein once said, "We cannot solve our problems with the same thinking we used when we created them." We also felt that for higher education to succeed in addressing the problems faced by the society, there must be a certain freshness in knowledge which must either be new in itself or must be constructed with changing times. We are now living in an epistemic and inquisitive new world where knowledge and truth are not definite. Yesterday's universities are not good enough for today and today's universities are not good for the forthcoming new globalised and entrepreneurial world. Everyone in country shares this common feeling that the education sector needs to gear itself towards the demands of the 21st century and the needs of the people and the country. This necessitates reimaging the universities with a fresh outlook. To address this, the Ministry of

Human Resource Development, Government of India, has come out with a New Education Policy envisioning a complete overhaul and re-energising of the higher education system. When the Government of India has undertaken the initiative of such a great significance, we at Association of Indian Universities as a think tank body felt the obligation to come out with a book *Reimagining Indian Universities* containing the collective wisdom of academia of the country on the topic. The book is aimed at providing a roadmap to government as well as the universities to gear themselves towards becoming more responsive to the present and future demands of higher education.

The National Education Policy-2020 (NEP 2020) envisions an education system rooted in Indian ethos that contributes directly to transforming India – Bharat – sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower. Great enphasis has been laid in the policy on equipping the students with '21st century skills'.

The policy highlights on having multi-disciplinary universities and colleges – public as well as private – in every district by 2030 each populated by 3000 students. Universities will continue with research as well as postgraduate and undergraduate teaching, some research intensive and others teaching intensive, while colleges will be largely teaching at the undergraduate level, a number of them having medium of instruction in local/Indian languages or bilingual. This will bring a paradigm shift to the whole ecosystem of Indian higher education. It will renew the countries' focus on arts, humanities, and a multi-disciplinary form of education to ensure that our students are skilled, sensitised and equipped well for the career ahead. Multiple entry and exit options at the undergraduate level, academic credit banks to store credits will provide the students more freedom to experiment with what they have to learn and have the flexibility in it. Higher education institutions will eventually become 'independent self-governing institutions' institutions with considerable 'faculty and institutional autonomy', having complied with a series of regulatory exercises that are 'light but tight'.

Setting up of National Research Foundation (NRF) will be actualising the significant dimension of university education, i.e., Research. It lays particular emphasis on the development of the creative potential of each individual. The vision of the policy is to instill

among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting attributes of a true global citizen. While the new policy aims at making progressive changes in the Indian higher education system, the main question is: how does one work to succeed in this goal. This book, *Reimagining Indian Universities* has been conceptualised on providing solutions to precisely these issues and we are positive that it will certainly provide a way out towards a brighter future of higher education in India.

The book is organised into various subsections namely, Governance Reforms, Research and Innovation, Employability and Entrepreneurship, Internationalisation of Higher Education and Teaching Learning Process, apart from a main subsection on New Vision for Reimagining Indian Universities. Skill development for employment and entrepreneurship; creating technology-enabled learning ecosystem in our universities for upscaling our universities to global standards; and improvement in research and innovations – the all-pervasive concerns towards higher education, were the key areas projected by most of the authors in the book.

One of the major concerns expressed by many in the book was that of the Indian universities not figuring in the top of global university rankings. India would be left behind in this competitive world if internationalisation does not become a National Policy at par with the National Education Policy. At the same time, India needs to focus not only on internationalisation abroad, but also internationalisation at home, and even within the campus, by improving academic and infrastructural resources; achieving standardisation with international comparability; and initiating pedagogical reforms with special focus on technological advancement of instructional delivery.   It also needs to take a number of steps including building world class infrastructure, simplifying visa rules, easy entry and exit provisions, international hostels, curricular revision with international orientation, etc. to attract international students.

Major tribulations afflicting higher education as per the authors of different articles in the book are: outdated and rigid curricula; large numbers of vacant faculty positions; poor quality of faculty in terms of both commitment and competence, poor systemic enablers for

student mobility; near absence of a culture of research; minimal and poor research work; a flawed and rigid system of examination; poor methods of teaching and learning; low levels of skill development among students resulting in low employability; dominance of vested interests; inadequate provision and poor management of educational services; and problems in governance. These issues and a lack of accountability have taken a great toll on the quality of higher education and research in India. This is notwithstanding the fact that the problem is not as much about resources as it is about the absence of effective governance.

Autonomy and accountability are critical building blocks for ensuring good governance in higher education institutions. To bring excellence in higher education through professional management, we need new governance models incorporating transparency, equity, accountability and inclusiveness in the plans and policies. It is refreshing to see an overwhelming agreement of the authors, with the view that universities and other higher education institutions should be led by academicians and those with academic background, besides their general leadership skills and managerial competence.

Creating a technology-enabled learning ecosystem in our universities is a must for upscaling our universities to global standards. Concerted efforts need to be made by universities, ministries, and other apex bodies of higher education towards this. The learning system needs to be made students centric to enhance learning experience. The methods of teaching and learning must change for the 21st century learners through adaptation of technology, training of teachers on technology enabled teaching-learning, institutional support, investment of resources, etc. to alter the prevailing teaching practices. Through technologies, we can improve, supplement, reinvent and transform the teaching-learning process.

Global forces of change are disrupting the ways of learning and working. The advent of the fourth industrial revolution has ushered in an impending skills gap. There would be a shift in the way students would consume higher education: instead of attending a single institution, students will receive credit in multiple ways, including from early college/dual degree programmes, online providers, and multiple universities. Building a credit system in e-learning will be important to encourage students to draw benefit from these courses as part of their overall education. Industry 4.0 will be/mark a major shift in

the future of jobs with human skills and Emotional Quotient as key attributes. Future of learning in education will incorporate Industry 4.0: The Digital Revolution. Digital libraries, simulation software and accessibility to the latest digital technology have enhanced the quality of existing curricula, academic freedom in curriculum for dynamic teaching pedagogy, and practical approach. There is a strong case for the shift from teacher-centric teaching paradigm to a student-centric learning paradigm. This blended approach covers both the online learning approach closely aided by the smart phones, and also the collaborative and cooperative learning-based constructivism approach. To survive in the competition with other top institutions of the world and to enhance quality, adoption of blended learning will be a good option.

The measures to enhance research and promote research quality at our higher education institutes should include: increase in funding for research from our national agencies, industries, NGOs, PPPs, etc.; developing our research infrastructure drastically for enhancing our research and improving its quality; focused research policies at institutions, regional/state and national levels for enhancing research and its quality; and incentivising researchers with fellowships and funds for research, etc.

The book is overwhelming with conglomeration of the ideas of some of the greatest minds in the country, mostly Vice Chancellors and other eminent educators with similar ranks who are either former or presently serving in Indian universities. It is an honour to have the Foreword by Dr Ramesh Pokhriyal 'Nishank' Hon'ble Union Minister of Education, which stresses on transforming our universities in line with the digital age while keeping our ancient Indian knowledge system as the basis. The message certainly will enthuse all of us to play a meaningful role in this feat of reimagining and re-shaping Indian universities while implementing the recommendations of the National Education Policy–2020.

It is aptly said that there is no such thing as a coincidence and everything happens for a reason. Little did we imagine when we thought of the title, '*Reimagining Indian Universities*' just a few months ago that world will take such a sudden somersault with an onslaught of the COVID-19 pandemic. Perhaps, no time would have been the best time than this for the Association of Indian Universities to come out with the book on '*Reimagining Indian Universities*' containing the

scholarly articles of most experienced and internationally renowned scholars in the field of Indian higher education than this time when New Education Policy is launched after 34 years and a 'new normal' is setting in due to the pandemic.

This publication is the result of contribution of many experts and scholars. We express our gratitude and thanks to all the contributors who obliged us with their insightful writings. We are also thankful to Mr N C Nath, Under Secretary, AIU for his efforts in production of this book; and Dr Yogita Thakur, Research Fellow, AIU and Ms Anurima Roy, Director, Creative Connect for their editorial assistance. In the end, we thank all those who have contributed in bringing out this Book.

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Pankaj Mittal
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PANKAJ MITTAL

The accelerating changes in the field of Information Technology that are leading to faster and more profound changes in social and cultural milieu, have necessitated the higher education to keep pace with the emerging trends and prepare students for life in the expected as well as unexpected future reality. The trend indicates that the future world will be technology dominated, interconnected and perhaps, stressed for natural resources. Higher education, post COVID-19, will be an entirely different world with students having access to many online resources, and hence information dissemination won't be expected from the teachers. The challenge in front of us today therefore, is to create future ready universities to take care of our upcoming generations and reap the benefits of its demographic dividend with which we are rich today but is not going to last forever. Universities of the 21st century, while producing knowledgeable and skilled graduates with a good value system, must ensure that they contribute to the social, cultural and economic development of the country at large while moving towards achieving 17 sustainable development goals set by the United Nations. We have to reimagine the Indian higher education from this perspective as well.

PRELUDE

"The end-product of education should be a free creative man, who can battle against historical circumstances and adversities of nature. Books are means by which we build bridges between cultures".

— Dr Sarvepalli Radhakrishnan

The historic Universal Declaration of Human Rights adopted at the United Nations General Assembly in 1948 declared, "Everyone has the right to Education". The International Commission on Education for the Twenty-first Century chaired by Jacques Delors mentioned in his report, *Learning: The Treasure Within,* which was submitted to the UNESCO in 1996 also emphasised the fact that education must result

in the overall development of the human personality (Delors, 1996). The report also mentioned about the four pillars four of education: (i) *Learning to know*: acquiring a body of knowledge and learning how to learn, so as to benefit from the opportunities education provides throughout life; (ii) *Learning to do*: acquiring not only an occupational skill, but also the competence to deal with many kinds of situations and work in teams, along with a package of skills that enables one to deal with the various challenges of working life; (iii) *Learning to live together*: developing an understanding of other people and an appreciation of interdependence with a spirit of respect for the values of pluralism, mutual understanding and peace; and (iv) *Learning to be*: developing one's personality and being able to act with autonomy, judgement and personal responsibility, while ensuring that education does not disregard any aspect of the potential of a person, which could be memory, reasoning, aesthetic sense, physical capacities and communication skills.

In India, the emphasis since times immemorial has been on holistic development of a person, leading to the complete realisation and liberalisation of self. To quote Swami Vivekananda, "Education is not the amount of information that is put into your brain and runs riot there, undigested, all your life. We must have life-building, man-making, character-making, assimilation of ideas". Education for him meant the process by which character is formed, strength of mind is increased and intellect is sharpened, as a result of which one can stand on one's own feet. India is a land of great diversity with intellectual wisdom, rich heritage, culture, multiple languages and dialects, various dance forms, folk arts, music, pottery, architecture, cuisines, textiles and much more. We need to preserve this rich heritage for posterity, while concentrating on the development of contemporary times. We have to reimagine the Indian higher education from this perspective. Ancient India, which climbed the highest pedestal to become *Vishwaguru,* has left a time-tested heritage of the teaching-learning system for us. We need to demonstrate the applicability of this indigenous heritage to the world.

CREATING FUTURE READY HIGHER EDUCATION INSTITUTIONS: THE WAY FORWARD FOR INDIA

As per Indian Philosophy, the best education is that which emanates into meaningful, happy, healthy and resonating existence for every entity of the universe. The ultimate aim of higher education is the development of the universal beings having healthy inter-relations,

interdependence and integration with all. These aims of higher education can be realised only through the appropriate pedagogy and teaching-learning processes. The best Teaching-Learning Process are those that use participatory and personalised approach, along with collective wisdom through reflective dialogue. There is also a need to shift progressively from teacher-designed and teacher-driven pedagogy to teacher-designed and learner-driven pedagogy and ultimately to learner-designed and learner-driven pedagogy.

Today, in the technology-driven, higher education space, abundant resources are available in the form of Open Education Resources (OERs) and Massive Open Online Courses (MOOCs) with Quick Response Codes (QRCs) providing pointers to many a learning resource. The use of online resources using remote learning tools has gained all the more relevance and prominence in the post COVID-19 era when social distancing has created a 'new normal'. In this scenario, where using online mode is inevitable, one needs to be prudent to adopt the most appropriate resources amongst all. The faculty needs to be trained to be enthusiastic, innovative, experimentative and well-equipped for teaching with an innovative approach while adopting technology. There is a need to create a natural interest in teachers to teach. The universities need to create a well-developed infrastructure and online resources with sufficient facilities for greater accessibility.

Relevance is one of the most important aspects which need much emphasis in higher education. It gives students the motivation to align oneself with a purpose that is meaningful and helpful in their survival and success. For promoting relevance, the connectivity between 'world of work' and higher education needs to be strengthened. In particular, 'industry-institute-society' tie-ups need to be increased. The curriculum has to be updated continuously, as per the industries' requirements at local as well as global scenario. At the same time, the skill learning has to be integrated along with theoretical knowledge. Inculcating dignity of labour in the students as well as society is one more important aspect for increasing the utility of higher education to the society. This is possible only when all kinds of the jobs – blue collared, white collared, pink collared, gold collared, etc., – are treated with same respect and dignity. Relevance can also be enhanced by creating multi-faculty universities where subjects like agriculture, community engagement, value education, sports and skill-development etc. are included along with main courses to address the needs of the society and the country as well. Long-term and short-term objectives need to be defined. Short-term objectives may cater to employment,

entrepreneurship etc. whereas long-term objectives may include inculcation of responsible citizenship, social sensitivity, inclusivity, cultural inclusion, etc.

India is a country of diversities and higher education system should cater to the needs of all the sections of students coming into its ambit. While admitting students, higher education institutions should promote diversity while appreciating and acknowledging the individuality of each pupil. Innovative ideas and perspectives of the students should be the criteria for admission, rather than choosing a handful of (so-called 'the cream') students on the basis of their marks in the qualifying examinations/entry tests. In India, universities have the privilege to celebrate the multilingual, multicultural diversities and create vibrant campuses while creating bridges between different cultures. Universities should make best use of this opportunity.

In view of rapid changes in almost all walks of life, higher education of today may not be applicable to the needs of tomorrow. Thus, the challenge in front of us today is to create future ready universities to take care of our upcoming generations and reap the benefits of its demographic dividend with which we are rich today but is not going to last forever. Some of the areas which need special attention of Indian Higher Education Institutions in this regard are bringing governance reforms, enhancing access and equity, ensuring best global teaching-learning processes, promoting innovation and research, increasing employability and entrepreneurship, and internationalisation of higher education. The measures which India need to take in these areas to create future ready higher education institutions constitute the crux of this article.

GOVERNANCE REFORMS

The present governance models – both for sectoral as well as internal governance, may not be very effective for 'New India', which calls for new governance models for bringing excellence in higher education through professional management. Institutions need to practice the key characteristics of good governance, which includes transparency, equity, accountability, and inclusiveness. They must act strategically in formulating plans and policies needed for good governance. Autonomy, accountability, flexibility, effective communication, trust, and transparency within the system at different levels of operation must be ensured to progress towards decentralised governance.

Sectoral Governance: Ensuring Autonomy for Excellence

The issues concerning Sectoral Governance are: lack of autonomy to the higher education institutions; over-centralisation and micro-management of universities by government and regulatory bodies; minimal role of State Councils of Higher Education as buffer institutions; weak quality assurance mechanisms; funding not linked to the performance of the institutions; absence of uniform transparent mechanism for appointment of vice chancellors; establishment of universities for populist reasons; and the overlapping role of regulatory bodies like University Grants Commission (UGC), All India Council for Technical Education (AICTE) and various other statutory professional councils. These issues need to be resolved to create efficient future ready universities. Most importantly, the regulators must function as enablers for contributing to the progress of universities rather than controlling or policing the universities. Thus, there is a need to give more autonomy to HEIs while ensuring accountability and transparency.

In India, 'Education' is in the concurrent list and therefore the centre as well as states have shared responsibility towards discharge of higher education in the states. Many states have constituted State Councils for Higher Education to act as buffer institutions between centre and state to manage state higher education institutions. But many of these councils are not playing their role properly in connecting Central Government, State Government, State Universities, Colleges in the State to ensure smooth and seamless functioning. There is therefore a need to ensure greater participation of State Councils of Higher Education to enable them to act as effective bodies to ensure quality of higher education in the states.

Government of India should come out with 'Directives for Establishing New Universities' containing clear guidelines to ensure that new universities are established solely on the basis of necessity. The affiliation system followed in the Indian universities is proving detrimental to the system due to its inherent defects. The number of affiliated colleges for certain universities goes as high as 1000, which makes it very difficult to manage and regulate. To tackle this issue, either the affiliation system should be abolished as proposed in the National Education Policy-2020 or there should be a cap of 100-200 on the number of colleges that can be affiliated with any university.

Reforming Internal Governance of Universities

In the wake of the internationalisation of education, coupled with globalisation and competition, Indian higher educational institutions need to do away with traditional university administration being run with 19th century tools and adopt modern professional approaches of governance. Administrative machinery, which is not equipped with the necessary skills, knowledge and attitude, and is not in harmony with the needs of progressive society can retard the pace of development of a university. On the other hand, flexible, transparent, decentralised, autonomous and accountable governance, responsive to the changing needs of the society and global trends, can be a powerful factor in accelerating progress. This can be realised only by collective efforts of professionally trained pro-active administrators and academics who can foresee the needs of fast-changing world and act in accordance. This creates the need for creating avenues for professional training of the educational administrators and academics.

Educational administrators in the Indian higher education institutions include Vice Chancellors/ Directors, Registrars, Deputy Registrars, Assistant Registrars and other secretarial staff for whom there is no provision for professional and administrative training as of now. The result is poorly functioning higher education institutions that are far from being professionally managed. For effective management of our higher education system, we need to shift the focus from 'Management of Higher Education' to 'Professional Management of Higher Education'. For vice chancellors there should be compulsory leadership programmes; for other administrative staff, there should be compulsory formal training programmes in university administration; and for academic staff, there should be compulsory faculty development programmes. Recruitment, training and retention of proactive administrators and academics who constitute the mainstay human resource of the university depends upon efficiency of the governance models adopted by the university.

To ensure efficient governance, universities may be encouraged to establish Human Resource Management Departments as service departments to take care of the human resource, both academic and administrative. Like in most foreign universities, this department shall be responsible for academic planning, recruitment methodologies including headhunting, retention strategies, staff development and training, personal and professional counseling and gracious exit on superannuation and need-based re-employment. An effective grievance

redressal system also needs to be there in place to address the problems of students and employees of the HEIs in the areas of safety, security, facilities etc. so that they can focus on quality teaching, research and learning without any distractions.

There is also an urgent and strong need to conceive and concretise the e-governance programmes and develop an Enterprise Resource Planning (ERP) for universities to provide a smooth flow of information between the university administration and the students, staff and public so as to enhance the speed and quality of internal functioning as well as to provide a user-friendly access to outsiders. Extensive use of ICT enabled tools would improve the productivity, efficiency and customer satisfaction with measurable results in terms of a substantial reduction in the use and movement of paper, time taken to provide information, reduced delays, cost saving as well as environmental conservation.

ENHANCING ACCESS

After globalisation and liberalisation, India has witnessed an unprecedented expansion of the higher education sector. As per the UGC (2020), at present there are 1040 universities/university level institutions and 39,931 colleges catering to 37.4 million students. Although this is a huge expansion as compared to 0.2 million students and 20 universities in 1950-51, the Gross Enrolment Ratio of Higher Education remains low at 26.3 per cent as compared to GER of about 36 per cent for countries in transition, 54.6 per cent for developed countries with an overall world average of 29 per cent.

There are many reasons for low GER in India but the primary one is that a large population of students in the relevant age group, i.e., 18-23, is simply not eligible to enroll in higher education as they have not successfully completed higher secondary education. Therefore, it is felt that due to a large gap between the number of students available in the age group of 18-23 and those eligible, *inter alia*, to enter in higher education, GER may not be the right indicator for measuring access for developing countries like India. Eligible Enrolment Ratio (EER) based on eligible population may therefore be considered a more appropriate indicator to measure the access or level of participation in higher education for developing countries like India. A comparison of EER and GER shows that India fairs much better if EER is used as it provides a level playing field for all nations (Mittal et. al., 2020).

To improve access with quality, the innovative concept of National Academic Credit Bank (NACB) has been initiated by the University Grants Commission to create a repository of credits and allow its accumulation from different institutions which are easily transferrable among institutions, for earning a degree. This needs to be promoted because it will allow admissions in a university for specific courses, in addition to full degree programmes. The degree can be awarded by the university from where student has earned maximum number of credits on fulfilling the minimum benchmark.

The approach of a synergistic effect among universities shall be to plan and work together so that access, equity and quality can be properly sustained and enhanced. This will need redesigning and rethinking of the higher education system. Recruiting good teachers and improving teacher quality at the school level will have a direct impact on the gross enrolment ratio and quality of higher education.

Also, in a country like India where population is diverse and huge, it is imperative to adopt technology-based learning system including open and distance learning, online programmes, and Massive Open Online Courses (MOOCs) to reach the masses. Regulations have been issued for online and Open and Distance Learning (ODL) to ensure maintenance of quality. Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM), an Indian MOOCs platform has also been created by Ministry of Education (MoE) erstwhile Ministry of Human Resource Delvelopment (MHRD), keeping in view the need to deliver quality education to all the students in all the areas including rural, backward and remote areas. Higher education institutions must take utmost advantage of these platforms to enhance access.

ENSURING BEST GLOBAL
TEACHING-LEARNING PROCESSES

The effective teaching-learning process is critical for ensuring that all students attain the defined learning outcomes and the expected graduate attributes that make a sustained, substantial and positive influence on their thinking, conduct and attitude. Teaching- learning processes lie at the core of the education system and are critical for fostering quality higher education. The methods of teaching and learning must change for the 21st century learners through adaptation of technology, training of teachers on technology-enabled teaching-learning, institutional support, investment of resources, etc., to alter the prevailing teaching practices. It is also essential to ensure that the

HEIs adopt global best teaching-learning processes. Promoting effective global pedagogies and assessment practices, continuous professional development of faculty, and creating technology-enabled learning ecosystems suitable for the present and future needs are the key factors for ensuring best teaching learning processes in HEIs.

Promoting Effective Pedagogies and Assessment Practices

The pedagogical practices in most HEIs continue to remain centred predominantly around rote learning and lecture methods with little opportunity for participative and collaborative learning methods that promote critical thinking, analysis and application. The syllabi and structure of programmes/courses of study remain rigid and narrow, and lack a holistic approach to knowledge and skills acquisition, which in the contemporary times is multi-disciplinary, inter-disciplinary and cross-disciplinary. There is a strong case for the shift from teacher-centric teaching paradigm towards a student-centric learning while ensuring that the learning paradigm is more experience-based, capable of igniting the imagination of the students.

Over-emphasis on the external assessment of students with inadequate formative assessments is an issue which prominently figured during the COVID-19 crisis. There is a mismatch between degrees and the competencies assessed, leading to a crisis of legitimacy of the examination/qualification systems. The 'assessment of learning' must shift to 'assessment for learning'. We must appreciate that the human brain has a self-organised learning system and every student learns in a different way. Teachers' role in this context is to facilitate each student to have their own style of learning. Learning will happen when learning opportunities will be created for the students with clear goals with involvement of teachers and taught with the subject. Individuals need to be assessed about their innate qualities based on their interest, skill, personality, competence and capability for achieving excellence.

Social media like Google, WhatsApp, etc., can be used in the regular teaching-learning to shift from 'centralised learning' to a 'learning centric' system, which will not only help students but also the teachers. The emphasis should be on blended education with a mix of flipped classroom and online activities in teaching. Continuous training and capacity building of teachers will be needed for the implementation of this approach. The effective pedagogies may be achieved through adoption of emerging modern approaches of teaching involving higher-

order thinking, outcome-based learning, and blended learning. The 5E model of constructivist approach to learning i.e. engage, explore, elaborate, explain, and evaluate will help in a big way to achieve the learning outcomes.

Continuous Professional Development of Faculty

The opportunity for induction training for initial professional preparation of newly recruited assistant professors and continuous professional development of incumbent faculty is limited in Indian universities. Consequently, adequate opportunities are not there to: improve their performance in the core areas of teaching, research, and scholarship; learn about new fields/frontiers; apply new pedagogies, instructional delivery models, and use of technologies to enhance learning; and achieve excellence in research and scholarship. Teaching is a profession where the personality of teachers impacts the students. So, proper orientation should be given to teachers at the time of joining and also during the career through professional development programmes regarding do's and don'ts and portfolio management as important components of the personality of teachers.

One of the important tasks of a teacher is to inculcate a constructive mindset and positive attitude in students towards the society and environment, and encourage them to think and learn beyond facts for creating a sustainable future. The capacity building of teachers in this direction is essential. A conducive academic and learning environment needs to be created and maintained in our universities and colleges for building capacities of the faculty members. For this, a proper policy should be framed and implemented. The policy should contain the breakup of workload and time required for teaching, research, extension as well as in-service continuous professional development of teachers. The needs and competence of each teacher and student are different, and hence the training programmes for their capacity building and development have to be customised accordingly.

Government should set up a 'Higher Education Research and Development Centre' to provide solutions for all the teaching related problems in the universities and to identify and create technology-enabled solutions for teachers to integrate technology in teaching-learning process. This centre can impart frequent training in pedagogy and assessment practices through in-service programmes for faculty members of university and affiliated colleges by including

continuous training and orientation programmes for understanding the developments taking place at a global level.

Creating Technology-enabled Learning Ecosystems

In this era of Information and Technology (ICT) and also in view of its future scope, it is necessary to ensure that all HEIs have the state-of-the-art academic infrastructure, including a technology-enabled/ assisted learning ecosystem that is required for effective organisation of teaching-learning activities. The role of technology (video, ICT, open education resource, self-learning modules, etc.) in education for enhancing skills and the learning process among teachers and students need to be encouraged and promoted. Creating a technology-enabled learning ecosystem in our universities is a must for up-scaling our universities to global standards. Post COVID-19, this realisation is even higher. Smart phones have penetrated largely among students and one need to figure out its utility in teaching-learning among them. The faculty needs to be continuously updated about new developments in technology for improving their teaching skills. Specially crafted programs should be offered to the faculty for promoting technology-enabled teaching.

The learning management system needs to be made student-centric to enhance the learning experience and for addressing problems faced by multilingual students in accordance with their learning style and language. To improve the teaching-learning process, use of videos, movie clips, TV clips, animations, Modular Object-Oriented Dynamic Learning Environment (MOODLE), Learning Management System (LMS), online attendance system, and others can be promoted. Open sources tool kits can be used to merge technology and education cohesively. Through proper use of technologies, we can improve, supplement, reinvent and transform the teaching-learning process.

PROMOTING RESEARCH, INNOVATION AND EXCELLENCE

India has to be at the forefront of knowledge creation, Research and Innovation (R&I) as it aspires to progress through sustainable development and be a world leader. India's young demography must be made an effective dividend in this mission. This will need focus on three aspects. First, we need to produce high-quality human-resource, comparable to the global best with a good understanding of research and innovation methods, trained for critical-thinking and taking out-of-the-box initiatives. Second, there is a need to create substantial

numbers of interconnected centres of global excellence as drivers of research and innovation, with deep connections to society and the economy. Third, there is a need to shift the focus of funding for research and innovation from the fundamental to the applied in all while focusing on areas of national importance. India needs to invest in research and innovation to emerge as a front runner in knowledge creation if it aspires to progress through sustainable development, while making use of its demographic dividend.

Creating a Research and Innovation Ecosystem

As per the report of Economic Advisory Council to Prime Minister in 2018, India spent 0.69 per cent of its GDP on Research and Innovation as compared to 2.8 per cent by USA, 2.1 per cent by China, 4.3 per cent by Israel and 4.2 per cent by South Korea (NITI Aayog, 2019). As a direct consequence, India lags behind in the number of patents and publications produced. Its share of scientific publications was 4.8 per cent in 2016 as compared to 17.8 per cent of USA and 18.6 percent of China.

The number of researchers per lakh of the population is only 15 in India as compared to 111 in China, 423 in the United States, and 825 in Israel (Economic Survey of India, 2016-17). Reportedly, World Intellectual Property Organisation (WIPO) in its report in 2017 mentioned that China made as many as 13,81,584 patent applications, with just 9.8 per cent being made by non-resident Chinese, the USA made 6,06,956 patent applications while India made a mere 46,582. Considering our emphasis on promoting R&I activities of global standards in our HEIs, a more comprehensive approach needs to be taken for transforming the quality and quantity of research in India.

Universities need to create an ecosystem for research and innovation by including the structure and functions of innovation and ideation cells in its research policy. The concept of undergraduate research in groups should be introduced in universities and colleges in India as they form the feeder line for carrying out research at higher levels. To promote innovation, universities and institutions should adopt and implement the National Innovation and Startup Policy launched by the Government of India in 2019, and accordingly provide opportunities for incubation cells and share the cost of filing of patents. Students' inventions supported by faculty members while making use of university infrastructure should be patented by the university. Faculty should be incentivised for good quality research and patents through fast track career advancements. Faculty-friendly

governance policies need to be adopted and financial freedom given to the faculty. Innovation centres in universities should act as an interface between 'problem space' and 'solution space' in identifying problems for industry, government, society and universities, and presenting them to faculty and students for research and/or consultancy.

Universities should collaborate with industries and a policy of at least one industry for every university shall be adopted. Basic minimum scientific infrastructure must be created in all the state universities and more research fellowships should be allocated. For increasing publications in high end international journals, the universities need to enhance collaboration with institutes and universities in India and abroad. Multi-disciplinary research activities need to be encouraged with collaboration among HEIs. International collaboration in good quality research work needs to be encouraged.

The scheme of National Research Foundation with an initial funding of Rs. 20,000 crores proposed in the National Education Policy–2020 can substantially contribute in creating a research and innovation ecosystem in the country.

Promoting Excellence and Improving International Rankings

India at present does not fare well in international rankings. In the QS rankings of 2020, there was no Indian institution in the top 100; there are 3 in top 200; 8 in top 500; and 21 in top 1000, which speaks volumes about our international standing. India needs to give a multipronged boost to its Higher Education System to ensure that it is ranked among the global best. To improve excellence in higher education, the government has taken several steps. These include launching of both centrally sponsored schemes like Rashtriya Uchchtar Shiksha Abhiyaan (RUSA) and targeted projects such as increasing the number of institutions of national importance; making international faculty available for short term through Global Initiative of Academic Network (GIAN), a National Institutional Ranking Framework (to enable institutions to assess themselves and get motivated to improve), Impact Research Innovation and Technology (IMPRINT); Scheme for promotion of Academic Research Collaboration (SPARC), Uchchtar Avishkar Yojana (UAY), Study-in-India, Prime Minister's Research Fellows (PMRF), Institutions of Eminence etc. For excellence in global rankings, the HEIs need to focus on:

- Academic reputation by enhancing, quality of teaching, quality of research, doctorate-to-bachelor's ratio, doctorate awarded

to academic staff ratio, institutional income, research income, international collaboration, fields medals by alumni and faculty and count of faculty awards, honours, and prizes.

- Employer reputation with focus on producing effective and innovative graduates for the employment market and linkage with industry.

- Make an effort to bring faculty/student ratio to be 1:10.

- International students ratio with focus on internationalisation by admitting more international students, specifically from neighbouring countries.

- International faculty ratio with focus on internationalisation by hiring more foreign faculty from all over the world.

- Innovation and entrepreneurship with focused funding for innovation and entrepreneurship.

- Individual performance by launching special drive to hire extraordinary faculty and students across the country and world.

Indian higher education institutions need to look at the changing education dynamics internationally and aligning curriculum with emerging challenges with a definite industry interface. There is need to hire thinkers and innovators with enhanced skills at par with international standards. There is a strong need for branding and marketing of Indian institutions through various means including social media. Faculty and student exchange programs within the country and internationally need to be encouraged to forge collaborations. For improving the rankings, mapping of skills and industry expectations is required to ensure that students are adequately equipped for employability and entrepreneurship. The research outputs in terms of publications in high impact factor journals is most important.

DEVELOPING EMPLOYABILITY AND ENTREPRENEURSHIP

Universities play a significant role in terms of contribution to the economy of a country as they are the key drivers of growth, performance and prosperity. Therefore, when we talk about reimagining Indian universities, we must ensure that universities contribute to knowledge-based economy based on highly skilled, well-educated, and technical-minded workforce.

Developing Future Skills

The ancient system of education in India emphasised on holistic development of learners by introducing students to the higher order cognitive skills, developing critical thinking, challenge prejudices, preparing them to earn a livelihood, and develop value systems to produce humans of higher intellect and ethics. Universities of the 21st century, while producing knowledgeable and skilled graduates with a good value system, must ensure that they contribute to the social, cultural and economic development of the country at large while moving towards achieving 17 sustainable development goals set by the United Nations. Universities and institutions of higher education need to prepare students for the future world, which will be technology dominated, interconnected and stressed for natural resources. Hence, technology-enabled, student-centric educational paradigm with due emphasis on employability needs to be created as base of future higher education.

Students of the 21st century need to be equipped with skill sets comprising of skills of complex problem solving, critical thinking, creativity, coordination, people management, negotiation skills, cognitive skills, flexibility, judgment, and decision-making skills. Therefore, in the paradigm of new challenges, institutions of higher education need to curate the pedagogies and teaching in order to develop these skills to bridge the skill gap between graduates and the industry requirements. Lifelong learning and learning according to the capacity and need has to be the key characteristics of education to take care of entrepreneurship, innovation, vocation, passion, and aptitude. Students of the 21st century will require a lot of flexibility in teaching-learning pedagogies with multiple entry and exit paths. Keeping in mind the dynamism of the environment and ever-changing landscape, universities would be required to focus on a blended approach of teaching learning where students would have the liberty to design their own learning path and learn at their own pace. Higher education, post COVID-19, will be an entirely different world with students having access to many online resources, and hence information dissemination won't be expected from the teachers. Instead, students would required to be introduced to creativity and design thinking to equip them for complex problem solving. Keeping in mind the dynamism of the environment and ever-changing academic landscape, universities need to focus on a blended education approach providing liberty to learners to design their own courses as per their aptitude, need and desire. All

modern-day technological solutions like AI, Robotics, Virtual and Augmented Reality, Big Data Analyse, 3D Printing, Internet of Things (IoT), Block Chain Technology, etc., need to be introduced in the curriculum.

Learning from International Models

Vocational Education and Training (VET) models adopted by many countries like China, Germany and Switzerland need to be adapted to promote vocationalisation of higher education. A provision needs to be created for external exposure of students and faculty at different stages to incorporate international experience in training of students/ scholars. Universities should ensure movement of youth both ways, i.e., sending faculty and students to different countries and inviting faculty and students from different countries to Indian universities. This may eventually translate in designing courses, training programmes, better pedagogies, improving research and innovation and in developing an entrepreneurial mindset of students. International events can be arranged in the universities to give international exposure to the students on different aspects covering not only academics and research but also areas like culture, habits, customs, geographies, climatic conditions, linguistics, culinary, dressing etc. of different countries. In nutshell, Indian universities should learn, adapt and integrate best practices from international academic experiences.

Entrepreneurship activities in the universities ought to be paired with international funding organisations and local communities to promote innovation in local skills and traditions. Entrepreneurship development courses need to be offered among the Choice Based Credit System to students at the graduate level. Specialised orientation and training should be imparted to the faculty of all subjects. The focus has to be on incubation and handholding of budding entrepreneurs sector specific skill-based learning may be designed for employment and entrepreneurial growth at national and international levels.

Structural and Regulatory Reforms

Regulatory reforms are required to ensure that the skill curriculum can be introduced in the universities with a lot of flexibility to allow students to opt for the skill sets as per their individual interests and preferences. A mechanism has to be created to enable universities to understand the strength and interests of individual students and imbed the required components in the curriculum (flexible curriculum complementing one's interest). Liberal education is required to boost inter-disciplinary

learning in students in order to make them capable of finding solutions to problems from different perspectives. Continuous upgradation of the curriculum involving multi-skilling, continuous upgradation of skills and knowledge, soft-skills, life skills etc. as per changing requirements of jobs is very important. Skill orientation should be inculcated from the primary level of education itself and carried forward to higher education. For this, a continuum in educational qualification frame works needs to be created jointly by the Department of School Education and the Department of Higher Education.

The governments and regulatory bodies need to give a lot of autonomy to the HEIs for promoting skill education, which should be treated as an integral part of the HE system rather than a standalone scheme. A strong mechanism to strengthen academia, industry linkages and engagement is the need of the hour.

INTERNATIONALISATION OF HIGHER EDUCATION IN INDIA

India during ancient times had an important place in the internationalisation of higher education. The University of Nalanda established in 4th century BCE, was one of the world's greatest universities. In the 7th century AD, Nalanda University had some 10,000 students and 2,000 teachers from China, Indonesia, Korea, Japan, Persia, Turkey, and other parts of the world. Internationalisation of higher education has become an inevitable dimension of higher education in the era of globalisation, and in generation of new knowledge and its application. However, when we talk of internationalisation, it should be kept in mind that internationalisation must not be a goal in itself, but a means to enhance the quality of education and research.

To promote internationalisation in India, we need to take a number of steps like improving infrastructure, internationalising the curriculum, easing out visa rules and addressing Foreigners Regional Registration Officer (FRRO) issues, appointment of foreign faculty, forging international collaborations, flexibility in admission cycles, multiple entry and exit rules, etc. There is a need to understand the perception of the international audience about Indian education and promote brand building with a proactive approach while highlighting achievements and strengths of India, especially in fields like Yoga, Indian Knowledge Systems, Ayurveda, Value Education, Spiritual Studies etc. Universities must create international facilities in the campuses for

foreign faculty and students. They should essentially invite experts from foreign universities and continuously hold workshops, seminars, conferences, webinars, and various other activities to promote Indian education. Alumni must be significantly leveraged for brand building of Indian Higher Education in India and abroad.

Dual degrees and training programmes in collaboration with universities other than the parent university should be facilitated. Internationalisation requires a lot of support from the government and embassies for visas and FRRO, which should be provided with less formalities and fees. Government of India initiatives towards promoting Indian higher education abroad through 'Study in India' programme needs to be popularised through international collaboration, workshops, seminars and social media etc. Promotional campaigns like 'Incredible India' need to be launched to promote the best Indian universities/institutes for higher education abroad. In order to move forward to capture the South Asian market to leverage from the operation of Act East Policy, reorientation of the course curricula is required to be consistent with market trends, self-employment avenues and industry requirements.

Research areas need to be identified and prioritised for international collaboration, keeping in view the international trends of academic research and the national interests. An online portal to form national and international collaborations in the areas of teaching and research would be worth considering by central bodies.

Attracting International Students to Indian Universities

At present, around 800,000 Indian students go abroad to study in foreign higher education institutions as compared to an inflow of only 46,000 foreign students to India that too with more than half of them from Nepal and Afghanistan. India is yet to harness the full potential of its wide education network to attract international students. The initiatives in India to promote the internationalisation of higher education have been very limited. So far, the only significant efforts from the government to attract international students to Indian institutions have been the Indian Council for Cultural Relations (ICCR) scholarships (around 4,000 scholarships given per year) and Indian Technical and Economic Operation (ITEC) fund support from the Ministry of External Affairs (MEA), Government of India. To increase the number of inbound students and to brand India as an educational destination, the 'Study in India' programme was launched

in April, 2018. However, the number of international students enrolled in HEIs in India continues to be low.

India needs to take a number of steps including building world class infrastructure, simplifying visa rules, easy entry and exit provisions, international hostels, and curricular revision with international orientation to attract international students. The important factors that play crucial roles in attracting foreign students include: enriching classroom experience with focus on learning pedagogy; a robust evaluation process, innovative courses, outreach at a global level; the flexibility in teaching-learning; internationalisation of entrance examinations; issuing work permits for international students; international curriculum good quality faculty; research facilities; acceptability of grades and credits on international pattern; and comfortable and affordable hostels. Non-Resident Indians (NRI) quota and foreign students quota on supernumerary basis needs to be created in HEIs to attract international students.

Academic credit exchange needs to be systematised, and seamlessly aligned internationally, so that a uniform process of credit transfer can be developed. This will facilitate international student mobility – both in terms of inflow and outflow of students. Conducive regulations to facilitate cross border movement of academic stakeholders in higher education are essential.

There is a need to set up a network of international educators like National Association of Foreign Student Advisers (NAFSA) in India to assist universities in promoting internationalisation. A draft policy on internationalisation of higher education is a must to clearly spell out measures and regulations on various aspects of internationalisation. The policy must include modalities for promoting internationalisation like making it compulsory for all universities having international students to put a mechanism in place, including an International Students' Office to address the concerns of international students and cultural sensitivity. Provision of home stays and involving international students in various cultural activities to familiarise them with the local or indigenous culture, is desirable. The counseling bureaus of universities must take the onus of organising workshops for the cultural orientation of such students, while balancing the indigenous and global knowledge systems of India.

All academic programmes must have international orientation without losing sight of the indigenous values and national interests.

In the post COVID-19 time, it is all the more important and an opportune time for Indian higher education institutions to promote internationalisation to achieve the desired credibility and visibility among relevant national and global circles. Collective efforts need to be made in this regard by the universities, government and apex bodies of higher education. Enriching students experiences – both inside as well as outside the classrooms – are critical factors to attract foreign students to Indian higher education institutions. There is also a need to sensitise our diplomatic missions abroad to attract the foreign students who are looking for educational opportunities in India. Universities should involve Indian embassies actively in highlighting the strengths of the Indian higher education system in foreign countries. To stand out in the international market, the role of policy makers is just as important as that of universities. Interaction of officers of MoE and apex bodies with various ministries in India for ease of policies, regulations and for providing infrastructure and human resource support for encouraging foreign students to study in Indian universities can work as a catalyst in this endeavour.

CONCLUSION

The accelerating changes in the field of Information Technology that is leading to faster and more profound changes in the social and cultural milieu, has necessitated the higher education to keep pace with the emerging trends and prepare students for life in the expected as well as unexpected future realities. Hence, teaching ought to be futuristic with a mission to prepare students for an unknown tomorrow in which the rules of the game would have changed. Simultaneously, it should seek to preserve our traditional knowledge base, skill base, values, virtues, and culture. Higher education shall not be considered as a medium to get a degree for a job but a tool for manifestation of ones potential. In fact, education channelises an individual towards critical thinking, as well as to acquire skills like problem solving, reasoning, rationalisation, visualisation, design thinking, innovativeness, etc. Ultimately, the core objective of the higher education is to create the best minds as per the demand of time, society, and the future. It is high time for India to introspect and create a teaching-learning and research ecosystem for higher education in tune with the needs of society with the capacity to respond to real-time situations and future challenges. Indeed, this is the time to reimagine Indian universities and build universities that matter.

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REIMAGINING INDIAN UNIVERSITIES
LEARNING FROM THE GLORIOUS PAST FOR BUILDING A NEW INDIA

BHUSHAN PATWARDHAN

The university system after COVID-19 will be very different. Future education will be blended and technology enabled. The Indian education system in the 21ˢᵗ century requires a new model of a forward-looking university system rooted in Indian culture. The new model of university system needs to be based on a transdisciplinary approach bringing academic excellence, flexibility, professionalism, and self-reliance and integrating traditional and modern knowledge to make it locally relevant and globally competitive to serve not only national development but the larger cause of humanity as well. The Indian knowledge systems comprising Darshanas *(philosophical world-views),* Vidyas *(knowledge sources), and* Kalas *(specialised skills) can be integrated with the present-day mainstream university education. Insights from our cultural past can help us to re-imagine and re-model 'New Universities' to meet the vision of 'New India'.*

PRELUDE

The 21ˢᵗ century is essentially dominated by the information/ knowledge driven society. India is well equipped with a critical outlook to discover its contemporary relevance in the global milieu from its own intellectual and cultural traditions. Those who are well read and can see and understand the vast magnificent backdrop of India's past, have for long rejected the colonial myth that inspiration for modernity can only be imported from the West. History is a continuum, not an event or an era, and the true nature of modernity in all societies has to be derived from evolving traditions. Today, the mono-culture dominance in knowledge systems is already being replaced in disciplines like philosophy, history, archaeology, linguistics and fine arts by transdisciplinary or cross-cultural perspectives, which widen intellectual frameworks for comprehension of nature and society. Knowledge leaders are increasingly becoming aware that the monopoly of any particular knowledge tradition to comprehend reality is limited and is a politically conditioned assumption about the past.

Globally, universities need to break out of the stranglehold of a single cultural and intellectual tradition that has dominated knowledge institutions since the 19th century and become multicultural. They need to urgently engage in critical review and discovery of contemporary roots in their own indigenous cultures in fields like health sciences, agriculture, social sciences, architecture, mathematics, logic, philosophy, and the fine, visual and performing arts. A modern university in any society need not follow a uniform design. They need to adopt transdisciplinary approaches respecting both indigenous and western scholarships for bringing in innovation, academic excellence, flexibility, professionalism and self-reliance. They can do so by integrating traditional and modern knowledge systems to be locally relevant and globally competitive in order to serve the national development and the larger cause of humanity. Although India became independent in 1947, its history, its culture, its science extends back to thousands of years in antiquity. The Indian knowledge systems are a rich source of evolving knowledge. They comprise diverse schools of philosophy that offer mature propositions and sophisticated logic for understanding and experiencing a relationship between the observer and observed. They embody fourteen knowledge categories or *Vidyas,* which classify differently multiple dimensions of knowledge about nature and society. The knowledge systems include sixty-four *Kalas* or specialised skills. This rich heritage needs careful examination to identify the fields that should be an integral part of the modern Indian university education system. Learning from an ever evolving tradition can help us to reimagine and remodel new universities to construct and support the vision of a New India. It must be emphasised that reimagining Indian universities does not mean discarding or replacing the existing system entirely with the Indian knowledge system. This is an intellectual exercise to understand value and contemporary relevance of Indian knowledge systems in the modern world. The quote of William Bruce Cameron: "Not everything that can be counted counts, Not everything that counts can be counted," is worth remembering here. Also, let's not forget what Charles Darwin said about evolution: "It is not the strongest, it is not the smartest, but it is the most adaptable and resilient of the species that survive and prevail in the long run."

Ancient Indian knowledge sources, *Vidyas* and *Kalas* can be sources of new ideas and innovation. It is important for our university system to critically review, revise, regain and promote these sources of knowledge, art and skills as an integral part of education system. While adopting these sources we should not become dogmatic by taking a stand that 'we know everything'. We must avoid 'self-pride-past-glory'

syndrome. It is important to keep open mind to welcome new ideas and our quest to add new knowledge must continue.

LEGACY OF INDIAN CIVILISATION

The evolving Indian civilisation excels in Metaphysics as also in Science, Mathematics, Astronomy, Pharmacology, Numerical, Geometry, Algebra, Trigonometry, and Medical Sciences. Indian knowledge has an evolving legacy from Indus valley civilisation, from Vedic, Buddhist, Jain and hundreds of local knowledge traditions. Until the advent of foreign invasions, Indian civilisation was a center of learning in several branches of knowledge for scholars from all over the world especially South East Asia, Middle East and Europe. The origin of various branches of Mathematics, Science, Art, and Philosophy attributed to this civilisation are truly remarkable. Indian scholarship aspired to know everything that the mind can comprehend from the atom to the universe.

Indian legacy in scientific disciplines is profound. Panini, a Sanskrit Grammarian, gave a comprehensive and scientific theory of phonetics, phonology, and morphology (near 600 BC) which even today is recognised to carry the most unambiguous rules of grammar for machine translation. *Charaka* introduced systemic perspectives for understanding biological change, cause-effect relationship and evidence-based approach to medicine, *Sushruta* is the pioneer of surgical tradition all over the world (near 400 BC). Kautilya was an Indian teacher, philosopher, economist, jurist and royal advisor whose *Arthashastra* is considered as a classic in political economy. Original contributions of master Astronomer and Mathematician, Aryabhatta (476 AD) are well recognised. In his classic text, *Aryabhatiyam*, he describes the process of measuring the motion of planets and eclipses. Aryabhatta proclaimed that the earth is round, that it rotates on its axis, that it orbits the sun, and is suspended in space. Aryabhatta's most significant and well-known contribution is the concept of zero. Varahamihira (499–587 AD), in a classic text, *Pancha Siddhanta*, notes that the moon and the planets are lustrous, not because of their own light, but due to sunlight. In the *Brihad Samhita*, he detailed many discoveries in the domains of Geography, Botany, and Animal Science. Nagarjuna (800 AD), in the classic text, *Rasa Ratnakara*, outlined many interesting experiments in metallurgy, and bio assimilable drugs made from metals and minerals. Another great scholar and master of Arithmetic and Astronomy was Bhaskaracharya (1114–1183 AD). In his classic text, *Surya Siddhanta*, he made a note on the force of gravity. The appreciation of ancient knowledge and scholarship can help us

to rediscover our own roots by tracing the history and philosophy of Indian medicine as an example (Patwardhan, et. al., 2015). These are merely but glimpses indicating intellectual legacy of Indian civilisation.

It is noteworthy that recently, prestigious national institutions such as the Indian Institute of Technology at Gandhinagar and Kanpur have started offering full courses on Indian knowledge systems. A lucid introduction to philosophy and characteristic features of Indian knowledge system is provided by Kapil Kapur and AK Singh (2005). A good orientation to these knowledge systems can provide valuable insights for reimagining Indian University system.

INDIAN UNIVERSITY SYSTEM

Historical evidences show that over fifteen ancient universities existed from the period 6th century BC to 1200 AD. Takshashila is known to be the oldest. Nalanda was established in 5th century and remained the center of excellence till it was destroyed in the 12th century AD. Other lesser known universities include Vikramshila, Mithila, Valabhi, Pushpagiri, Odantipuri, Somapura, just to name a few. Dominant schools of thought-systems represented by various *Darshanas* form the philosophical foundations of Indian knowledge and education system. It is estimated that sometime during 600 BC the *Ashram* system gradually evolved in several multidisciplinary universities such as Takshashila, Nalanda, Vikramshila and many more. Takshashila was a centre of learning for several centuries best known because of its illustrious alumni such as Kautilya, Panini, Charaka, Vishnu Sharma, Jivaka.

The modern application of the *Guru Kula* system which involved close and highly personalised interaction between *Guru* (teacher) and *Shishyas* (disciples) is worth exploring to restore value education. Ancient Indian university campuses such as Takshashila or Nalanda were essentially multidisciplinary hubs with several spokes for specialised studies. The depth, diversity and rigour of education in ancient Indian universities were exemplary. The pedagogy was based on inquisitiveness, enquiry, dialogue, discourses, debates, critical thinking, rationality and evidence-based approach. The universities in ancient India had a unique structure akin to 'hub-and-spoke' model that were able to ensure holistic development of students to make them highly skilled professionals, artisans, thought leaders, warriors, nation builders, responsible citizens and humble human beings. Almost till 12th century, Indian universities used to attract students from different parts of the world.

The period from 6ᵗʰ century BC to 12ᵗʰ century AD may be considered as the golden period of Indian scholarship and education. However, frequent invasions, conquests, gradually led to destruction of Indian universities. Ironically, entangled with internal and external adversities, India remained isolated from benefits of the industrial revolution and was gradually entombed by colonial rule. Even after seven decades of independence, India still has not been able to come out of these influences to rediscover its own roots, strengths and knowledge sources. While reimagining Indian universities for the future, these philosophical and historical underpinnings must be carefully considered. While one cannot live today only on past glory, it is worthwhile to draw inspiration from these achievements to demonstrate contemporary relevance and explore future innovations.

EDUCATION TRANSITIONS

English dominated universities were established in India during the British Raj primarily to create a bandwagon of clerks and bureaucrats to serve the rulers. These universities primed by Macaulay's strategy ensured erosion of local languages, culture and Indian knowledge systems. During the colonial period, British Raj started universities mainly to distort cultural identity of locals and to develop human resource needed as workforce for the rulers. This was the beginning of Macaulayism.

During the British regime, Indian education system was completely distorted to suit the requirements of rulers. Macaulay identified that the prevalent education system in India was responsible for the attachment of Indians to their own tradition, culture and rituals. He recommended a policy of introducing English language dominated education system. Indian knowledge systems were completely sidelined or replaced with western systems, be it sciences, humanities, engineering and medicine. This resulted in suppression of Sanskrit and regional languages endorsing supremacy of English. Establishment of convent schools, colleges and universities in Mumbai, Kolkata, Chennai and many other cities triggered process to establish British education system in India. It must be acknowledged that a few well-meaning British officers also helped to preserve Indian knowledge systems including Sanskrit and also introduced technology education, which lead to establishment of institutions such as Sampurnanand Sanskrit Vishvavidyalaya in Kashi, Hindu College in Pune, and Thompson Engineering College in Roorkee.

The dominance of the English became so powerful that many educational institutes established through nationalist movements also had to fall in line with the British model. The main objective of university education shifted from scholarship, knowledge generation and innovation to assembly line production of graduates who could serve in colonial establishments more as bandwagon of clerks and *babus*. During this period, India witnessed a transition from *Guru Kula* to *Kula Guru* system consisting of universities led by vice chancellors. The present *Kula Guru* system focuses more on power of position, imposed regulations and memory recalls as measures of academic rigour rather than actual learning and personality growth as the gold standard. Buildings, departments and laboratories were organised more for compliance with insufficient evidence supporting their actual use. The earlier rigour and spirit of scientific inquiry for discovery are largely missing in the current conventional education and practice. While reimagining Indian universities it is necessary to understand comparative characteristics of *Guru Kula* and *Kula Guru* systems (Figure 1).

FIG. 1: CHARACTERISTICS OF THE *GURU KULA*
AND *KULA GURU* SYSTEM

Guru Kula	*Kula Guru*
Master - Disciple Relationship	Teacher - Student Requisite
Spontaneous Life-oriented Learning	Structured Teaching of Syllabus
Learning by Doing	Rote Learning
Personality and Individual Potential	Uniform and Mass Education
Philosophy Lineages	Technical Expertise
Shastra-based *Adhyayan*	Sciences based *Adhyapan*a
Ethical Growth	Professional Excellence
Compassion: Driving force	Commercial Success: Key motivation
Yogic Calmness	Competitive Stress
Contentment	Disenchantment
Curiosity and Creativity	Conformity and Imitation

EDUCATION POLICIES

Educational system in India has gone through major challenges since the infamous Macaulay's Minutes in 1835, followed by the Wood's Dispatch in 1854 and the Hunter Commission in 1882. After independence, the Indian higher education system has gone through several phases. A careful review of major recommendations starting

with Dr Radhakrishnan Commission–1948, followed by: Kothari Commission–1966; National Education Policies (NEP) of 1968 and 1986; Yashpal Committee–1993; National Knowledge Commission –2006; Tandon Committee Report–2009; and the third National Education Policy–2020 reveal that the challenges in education were identified and possible resolves were recommended long ago.

Most of the earlier commissions and committees regarding the university system and education have visualised similar reforms. For instance, the Kothari Commission Report's covering letter dated 29th June, 1966, has the following statement: "In a science-based world, education and research are crucial to the entire developmental process of a country, its welfare, progress and security." It highlights importance of a built-in flexibility to adjust to changing circumstances and underscores the importance of experimentation and innovation. Prof Kothari further writes in the covering letter, "If I may say so, the single most important thing needed now is to get out of the rigidity of the present system. In the rapidly changing world of today, one thing is certain: yesterday's educational system will not meet today's and even less so, the need of tomorrow." He hoped that the report would provide some basic thinking and framework for educational revolution in the country. A few excerpts from Kothari Commission can make this point amply clear. "Introduction of work experience (which includes manual work, production experience, etc.) and social service as integral parts of general education at more or less all levels of education; stress on moral education; and inculcation of a sense of social responsibility. Schools should recognise their responsibility in facilitating the transition of youth from the world of school to the world of work and life; vocationalisation of secondary education; the strengthening of centers of advanced study and the setting up of a small number of major universities, which would aim to achieve the highest international standards; special emphasis on the training and quality of teachers for schools; education for agriculture; and research in agriculture and allied sciences should be given a high priority in the scheme of educational reconstruction; energetic and imaginative steps are required to draw a reasonable proportion of talent to go in for advanced study and research in the agricultural sciences; and development of quality or pace-setting institutions at all stages and in all sectors." It is seen that the Indian education scenario visualised in 1966 by Prof Kothari still remains more or less the same. Interestingly, it has striking similarity with the 3rd NEP 2020 report submitted by a committee chaired by eminent Scientist Padma Vibhushan Dr K Kasturirangan. Striking similarity between recommendations of all the

three NEPs indicate immediate need for their long-awaited effective implementation.

One of the special features of the 3rd NEP is its emphasis on study of Indian knowledge systems should not be studied only to know about our glorious history and feel proud of. It is crucial to discover their contemporary relevance and potential for future innovations through serious academic study and rigorous transdisciplinary research.

UNIVERSITY EDUCATION

A university is considered as an institutional space where a community of teachers and scholars is engaged in higher education and research. Universities award academic degrees in various academic disciplines. They are temples of knowledge where ideas, innovations and skills are nurtured. Universities are seats for scholarship, statesmanship and universal brotherhood; they are not to be reduced to degree factories. University education is holistic in nature and inculcates knowledge and skills necessary to shape an individual's personality and career. For a young country like India, university education plays a vital role to ensure benefits of demographic dividend. Meeting aspirations of the young population and empowering them to contribute to nation building are the most urgent priorities for India. University education is expected to prepare young students as skilled professionals and responsible citizens. It is also expected to produce employable graduates by focusing on social, academic, cultural, professional and intellectual development to enable students to earn respectable livelihood and emerge as responsible global citizens. The university education will have to continuously innovate to address the changing needs of humanity, civil society etc. and not just markets.

ROLE OF A TEACHER

To be able to reimagine Indian universities, it is necessary to re-discover the role of a teacher from Indian traditional perspective. A typical university teacher is designated and described only in one category i.e. 'Professor'. Further distinction is based on seniority as assistant, associate and full professor. The ancient Indian tradition has shown remarkable wisdom to define the role of teachers with help of unique titles with profound meaning that the current modern system has not been able to articulate. A teacher who merely gives information is designated as *Adhyapak*; one who imparts knowledge combined with information is designated as *Upadhyaya*; one who

also imparts skills is designated *as Acharya*; the one who is able to give deep insights in specialised subject is known as *Pandit*; and the one who brings visionary views, promotes criticality and thinking is known as *Drashta*. The highest level of teacher is a *Guru,* who is able to awaken wisdom and liberate pupils from darkness to light. In the *Guru Kula* system, education was about educing the latent capacities and potentialities of the pupils concerned. It was treated as a process of biological development and not a mere mechanical process which is operating on the basis of a collective drill and training.

Typically, teaching during the colonial period was a one-way process where teachers used to teach students mainly by providing information with the help of textbooks and notes. Of late, while teachers have started using technology, it is limited more to use of word processing, power point presentations, videos and internet sources. Most of the time, we are using 21st century technology with an 18th century mindset and continue to bombard students with an overload of information. Today, teachers are not needed to provide information because it is easily available and students are much smarter to get it faster. Today's students cannot be considered as empty boxes where a teacher is authorised to fill information as per set curriculum. With the advent of electronics, computers and multimedia, one-way passive teaching process, which was dominated for several decades, is getting obsolete. The new way of education is based on interactions and the spirit of collaborative learning, video conferencing, skype, wikis, blogs and other social networking tools in the classroom. Teachers need to change and adopt these new pedagogical ways. There is an urgent need for faculty to come out from the passive style of teaching. They cannot continue to be mere information providers. Advances in Artificial Intelligence (AI) and social robotics can actually make such teachers redundant. These are real disruptive threats confronting conventional teaching faculty in the university system.

At present, faculty that is particularly related to undergraduate programmes is involved more in monotonous, monologues and monopolised delivery of education. The average full-time permanent teacher remains largely insulated from the broad changes that are taking place in higher education. There is a widespread perception that development and control of content is shifting from conventional stand-alone institutions to communication networks. Colleges and universities may not remain sole providers of education. Teachers will have to respect capabilities and aspirations of students. They

need to engage with students and become part of the active learning process. In addition to imparting knowledge and skill, they need to create an environment of self-discipline, trust, and accountability by inculcating values and enhancing principles of ethics and integrity among students, who join a university primarily to study, to build their careers and to experience collaborative learning. Education should shape their minds and lives, encourage inquisitiveness, nurture human values, inculcate tolerance, environmental sensitivity and passion for peace. Teachers must inspire young students to take education seriously. They must present themselves as role models to ensure that students stay away from any kind of violence. Teachers must protect universities and students from antisocial elements. They must channelise their energy towards nation building and creativity to promote a civil society. They need to be the facilitators and mentors to emerge as *Gurus* to be looked at as role models.

FUTURE EDUCATION

The contours of future education are becoming visible with the advent of automation and smarter social robots. The future education will require an entirely different knowledge base and skill sets to develop students as global citizens (Figure 2). It will need more creativity, cognitive ability, critical thinking, passion and compassion. In future, disruptions emerging through technology and content will be readily available, making way for the new university system that is ready for Industry 4.0 revolution. It should be technology-enabled, flexible, modular, collaborative, cross-institutional, cross-cultural, where

FIG. 2: UNIVERSITY STUDENT AS GLOBAL CITIZEN
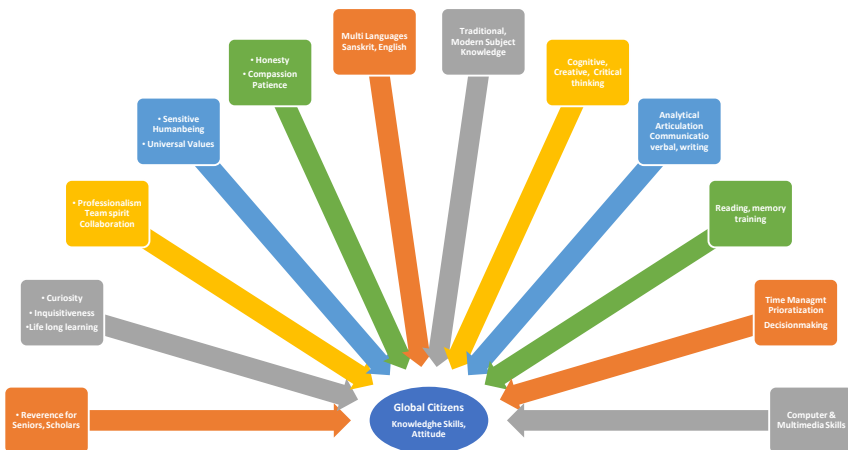
learners can play a key role as creators of knowledge challenging the monopoly of teachers. Very soon, Artificial Intelligence (AI), Machine Learning (ML), Deep Learning, Cybernetics and Robotics will dominate the education content and delivery. This is supposed to be more of self-directed and self-paced learning triggered by interest learning where problem-solving, innovation and creativity drive education. Future education will have to be competency-based instead of mere information or knowledge-based, demand-driven instead of supply-driven, by incorporating skills that are capable of adapting disruptive technologies. Education in the future will be more flexible, modular, lifelong with more emphasis on Emotional Quotient than Intelligence Quotient. This new education will have to meet the needs of industry, economy and development, enabling collaborative convergence of man and machines as CoBots to explore new pedagogies.

Future universities will have to maximise the power of digital technologies, Massive Open Online Courses (MOOCs), animated laboratories and personalised data from the interconnected world. The advances in automation, AI, ML and robotics may soon take over several functions of professionals including teachers and doctors. Eminent Entrepreneur and Investor Vinod Khosla predicts that robots might replace doctors by 2035. This prediction is also applicable to conventional teachers. Just last year, a robot named Xiaoyi, developed by Tsinghua University and a leading AI company iFlytek Co. Ltd., had taken the national medical licensing examination in China. Xiaoyi not just passed the test but got a score much above the highest percentile. Recent studies indicate that robots show great promise in teaching restricted topics with the effects almost matching those of human tutoring. The future education may be dominated by collaborative robots where teachers and students together become CoBots. Already AI-based voice assisted devices like Siri, Alexa, chatbots like Eliza, and humanoid robots like Asimo, Sophia and our own Indian Mitra are in action. Microsoft's recent AI-based hologram technology can immensely help to remove language-linked knowledge barriers and open possibility of education in mother tongue as well. It is possible that classrooms of the future will feature social robots to assist a human teacher and actually help them to enhance their capabilities. It is now amply clear that the education sector can no longer ignore the technological advances that are real and present. The early signs of disruption are already palpable. The future universities will have to adopt, survive and thrive taking advantages of this disruption.

BLENDED PEDAGOGY

The future education will be blended and technology-enabled. Universities will have to adopt online learning component in every programme. The future education will be a mix self-learning, co-learning and learning-by-doing. It will be an appropriate blend of online, open-and-distance, classroom-based, community-based, internship-apprentice-based pedagogy. Advances in technology are likely to disrupt the monopoly of teachers and universities.

The current silos such as campus-based, correspondence, external, distance learning, online, etc will slowly disappear. The futileness to offer education exclusively by any one of these modes will be intensely realised. The future education and pedagogies can be best built on four stages of teaching-learning as described by Indian knowledge system as follows:

- **Adidhi** (information and theory): This is about gathering information and learning theory. This can be attempted by students through self-study modules exclusively with MOOCs. This may require teachers as facilitators.

- **Bodha** (understanding and analysis): This is about gaining knowledge, deeper awareness, understanding principles, theory, comprehension and analysis based on available information. This can be attempted by students through assisted learning with MOOCs. This may require social robots and teachers as mentors.

- **Acharana** (performance and practice): This is about using acquired knowledge, testing principles, experimenting and practicing. This can involve intense interaction between students and teachers.

- **Pracharana** (propagation and preaching): This can involve community-based learning, internship, apprenticeship, seminars and presentations.

Educational experience in the lines described above can give a holistic, participative, proactive model of teaching-learning. A substantial component of most programmes involves delivery of information. At one point, 'lecture notes' giving information to students was a power of teacher. Today, in the 5G world, teachers are not required to do this job. Students are much smarter to get information if they are properly mentored. This component can be handled by creating online information repository where students

can self-learn. Social robots can do this job effectively and efficiently. Every programme involves a theory component where the available information needs to be used to understand the basic principles of the respective subjects. This can be done by developing high quality MOOCs supported by teachers as mentors. Understanding the importance of theory requires intense interaction with teachers. This component will have to be in the classroom where the teacher is in command. Hands-on experience, practical training, internship, apprenticeship programs which can happen on the campus laboratories, workshops, industry sites or any other suitable place.

Broadly, any education program can be divided in the four stages of teaching-learning mentioned as above. The actual need for 'Teacher on Campus' may require in about 50 per cent of the teaching-learning process of any programme. In case of general education undergraduate programmes, this may be higher while for some specialised professional programs it may be lower as well. In principle, it is possible to offer at least 40 per cent of the teaching with help from technology, be it online or otherwise. Of course, to implement this entirely different breed of teachers will be needed. Adopting such a blended approach may have several advantages: First, it may empower students to earn academic credits for component at their own speed and convenience. Second, the quality of education will improve because of a new focus on learning-by-doing in the blended mode. Third, infrastructural needs on the campus may be reduced. Fourth, mass production of poor-quality degrees under the pretext of open/distance/ online programs can be controlled. Fifth, access to education will be enhanced due to use of technology in delivery. Sixth, cost of education will be drastically reduced, making it more affordable.This approach will be very appropriate especially in the post COVID-19 era.

RE-BUILDING ON STRENGTHS

Indian knowledge system comprising of *Vidyas* and *Kalas* consists of knowledge and skills as well as theory and practical components. This is our strength. Ancient Indian universities such as Nalanda and Takshashila were offering holistic education with a unique blend of knowledge and skills. Indian knowledge system describes nine *Darshanas*, fourteen *Vidyas* as sources of knowledge and sixty four *Kalas* as specialised art and skills. Six sets of *Darshanas* offer various point of views as an open knowledge system (Figure 3). Fourteen *Vidyas* include 4 *Vedas*, 4 *Upavedas* and 6 *Vedangas* (Figure 4). *Kala* means performing arts in Sanskrit; it means specialised skills. In ancient India these

FIG. 3: INDIAN KNOWLEDGE SYSTEM I: DARSHANA (PHILOSOPHICAL POINT OF VIEWS)

Vedanta (Purva & Uttar - Mimansa)

Charvaka

Nyaya - Vaisheshika

Jaina

Sankhya - Yoga

Six Darshanas
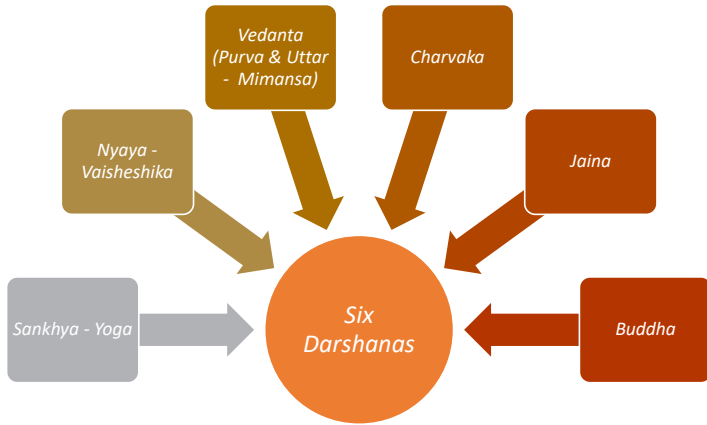
Buddha

Samkhya - Yoga, Nyaya - Vaisheshika, Purva Mimansa-Uttar Mimansa (Vedanta) are called *Astik Darshanas* because they believe in the authority of the *Vedas*, and the existence of the self (*Atman*). *Charvaka, Jaina* and *Buddh*a are called *Nastika Darshanas* because they do not believe in the authority of the *Vedas*.

FIG. 4: INDIAN KNOWLEDGE SYSTEM II: VIDYA (KNOWLEDGE SOURCES)

4 *Vedas*	4 *Upavedas*	6 *Vedangas*
• Rigveda • Samveda • Yajurveda • Atharvaveda	• Arthashastra • Dhanurveda • Gandharvaveda • Ayurveda	• Shiksha • Kalpa • Vyakarana • Jyotishya • Nirukta • Chhandas

In Indian knowledge system, the term *vidya* is paired with *darsana* and *jnana* in this sequence: *darsana*, (दर्शन), *jnana* (ज्ञान), and *vidya* (विद्या)。 *Darsana* literally means 'to see' and in the context of Indian knowledge systems it means 'to see' or a philosophical proposition. Such a proposition results into knowledge of reality which is organized or systematized in the form of *vidya* which means a discipline of thought which can be acquired by learning

skills were considered to be important for holistic development of a cultured individual. These specialised *Kalas* or skills are believed to be acquired by lord Krishna in 64 days in the *Ashram* of Guru Sandipani. In Indian mythology, Lord Ganesha, who is considered as a master of *Vidya* and *Kala*, is revered as the god of education, knowledge and

intelligence. The imagination and diversity of *Kala* is astonishing (Figure 5). Several *Vidyas* and *Kalas* remain very precious in current context as diverse dimensions of life. Some of the *Vidyas* and *Kalas* may not be alive, relevant, or may have become obsolete. However, it is necessary to protect, preserve, cultivate and enrich them by adding contemporary relevance.

FIG. 5: INDIAN KNOWLEDGE SYSTEM III: 64 KALA
(ART FORMS AND SKILLS)

Visual & Performing Art	Cognetive and Design Skills	Technical & Artisan Skills	Beauty & Hospitality Skills	Miscilineous Skills
• *Geet, Vadya, Vina-damaruka-vadya, Udak vadya,* • *Nrutya, Natya, Natakakhyayika darshan,* • *Aalekh, Vishesh Kacchedya, Udakaghata, Chitrayog*	• *Indrajal, Dharanmatruka, Kouchumaryog, Hastalaghav,* • *Suchikarma, Sutrakarma, Prahelika, Pratimala, Durvachakayog, Pustakvachan* • *Kavyasamasyapurti, Pattika vetra-ban-vikalpa* • *Samvachya, Akshar mushtikakathan, Deshbhashadnyan, Pushpa-shakatika-nimittadnyan*	• *Turkakarma, Takshan,* • *Vastuvidya,* • *Roupya ratna pariksha, Maniraagdnyan,* • *Dhatuvad, Aakardnyan, Yantramatruka. Chalitakayoga, Abhidhankosh chhandodnyan,* • *Vrukshayurvedyog, Kriyavikalpa*	• *Tandul kusumavali vicar, Pushpastaran, Manibhumika karma,* • *Malya grantha vikalpa, Kesha-shekhara-pidyojana* • *Nepathyayog, Karnapatrabhang, Keshmarjan koushal, Bhushanayojan* • *Shayan Rachana, Chitra Shabdapup Bhakshya Vikar Kriya, Panaka-rasa-ragasava-yojana*	• *Mesh-kukkut-lavakyudhha vidhi, Shukasarika prapalana,* • *Mlencchitkalavikalpa, Vastragopan,* • *Dyut visesha, Aakarshan krida, Balkridakarma* • *Vainayiki vidyadnyan, Vaijayiki vidyadnyan* • *Dashanvasanang raag, Sugandhayukti, Utsadan, Vyayamiki vidyadnyan*

Many *Kala-s* may not be relevant or even existing today. Many may be on the verge of extinction. Many can be contextualised to suit current needs. It is important to undertake their preservation and revival on mission mode before we completely lose them.

Sufferings during the invasions and suppression during the colonial period should give us strength and compel us to think in our own interest. Education shall remain the key driver for transformation and universities will have to own the responsibility. The aspirations of young India seem to be a great hope to break the elitist mindset deadlock and to regain confidence and respect for our own knowledge, languages and cultural heritage. While aspirations of young India are reaching tipping points, the response to change from academics is yet to gain the desired momentum. Role of the government, business and society in this process shall never be mutually exclusive. We must ensure that quality higher education does not become an exclusive reserve of the privileged, available only to children of the rich and powerful. Our efforts of inclusion address the problems of digital divide in addition to the economic divide, and bridge the gap between blue and white-collared professionals by seamlessly integrating knowledge and skills in education should yield positive results. We must build new universities using our past knowledge, experience and core strengths.

NEW UNIVERSITIES FOR NEW INDIA

India has to learn from its glorious past and regain its global leadership in education. This may not happen merely by achieving a place in the top 100 global rankings. India must rediscover, revisit and repurpose the basic tenets, philosophy, values, purpose and pedagogy to re-imagine the Indian university system. India has made some exemplary efforts in the direction of creating worldclass universities. This includes Banaras Hindu University established by Pandit Madan Mohan Malaviya and Visva Bharati, Santiniketan, by Gurudev Rabindranath Tagore. Although structurally different, both realised the intrinsic values strongly rooted in Indian ethos and scientific temperament. Even today, while several national institutes have been established, not a single university has reached even close to the vision of Pandit Malaviya or Gurudev Tagore in terms of holistic education in multidisciplinary environment coupled with Indian ethos and pedagogy.

India must remodel and rebuild current universities on the foundations of Indian knowledge systems by integrating advanced Science, Technology, Social Science, Contemporary Art and Humanities. The Indian university system can be reimagined and remodeled only by taking some bold steps, the first of which is to shed the colonial mindset and understand her own history and glorious heritage. Secondly, to respect her own value systems, culture, languages without losing sight of value of English at the global level. Third, to wisely embrace technology-led innovation path without losing sight of sustainability principles. Fourth, to revive and recognise diverse artisan skills among her diverse population as part of education. Fifth, to ensure respect and mainstream agriculture in university education. Sixth, to involve business, industry, governments, voluntary organisations and society in the teaching-learning process. Seventh, to scrupulously remove redundancy at all levels including academic faculty, courses, content, pedagogy, and governance. Eighth, to remove blue-collar and white-collar divide by ensuring equal weightage to skill mastery and degree education, thereby enabling equitable recognition to skill providing accountability linked autonomy and encouragement to deserving organisations to innovate new India-centric university models, which would integrate ancient and modern approaches. Finally, it is possible to simultaneously offer high quality education knowledge and skills that can meet aspirations of the youth to earn respectable living, at the same time, attend national needs and serve the cause of humanity. This is unlikely to happen in an incremental manner by doing the same things in different ways or merely by increasing the Gross Enrollment Ratio (GER). It will be disastrous

for a country like India if glorification of hollow degrees produced by existing university factories producing unemployable graduates on assembly line continues. Existing model of the university education must be changed before it is too late, for the future generation should not and will not wait.

Reimagining universities does not mean discarding the western approach or replacing current practices totally. The integration of Indian knowledge systems in education should not be done blindly in a dogmatic manner. The main purpose of this exercise should be to explore their contemporary relevance with an open mind and scientific temperament. This will require imaginative disruptive changes and a complete overhaul to prepare our university education system future ready.

NITI Aayog (2018) has articulated a strategy for New India. As we are engaged in progressing towards a New India, it is imperative to reform the education system and reimagine the New University. The quality of university education has to play a vital role in the proposed transformation. We should be able to face the future challenges better if we are able to learn from our glorious past and bring the best from eastern and western civilisations. The 'New' universities should be grounded on the strong foundation of Indian cultural ethos bringing multidisciplinary ecosystem where ancient and modern, *shastric* and scientific temperament, scholarship and global good coexist; where knowledge and skills, theory and practicum, research and innovation are well integrated (Figure 6). Let us hope that we will be able to

FIG. 6: NEW UNIVERSITY FOR NEW INDIA
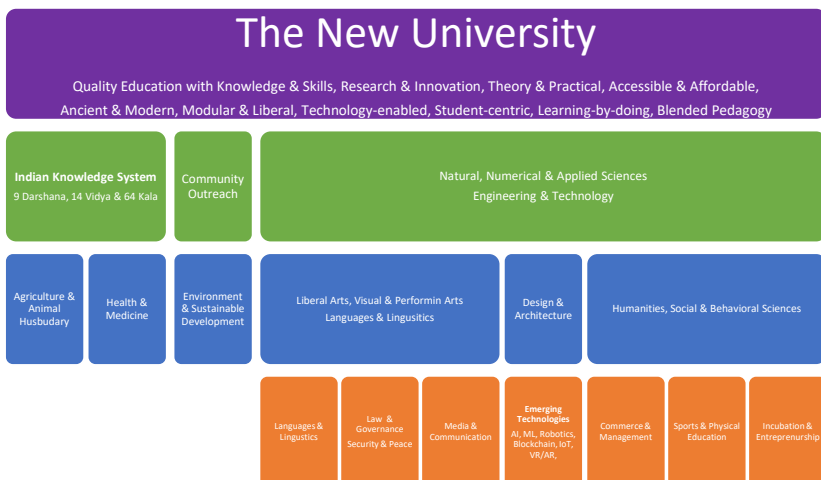
reimagine and remodel the New Universities that are complementary to the vision of New India in accordance to principles of justice, liberty, equity, sustainability and human values.

उत्तिष्ठत जाग्रत	*Uttisthata*	Arise! Awake! Approach
प्राप्य वरान्निबोधत ।	*Jagrata Prapya*	the great and learn from
	Varannibodhata	them.
क्षुरस्य धारा निशिता दुरत्यया	*Kshurasanna Dhara*	Like the sharp edge of a
दुर्ग पथस्तत्कवयो वदन्ति ॥ १४ ॥	*Nishita Durataya*	razor is that path,
	durgama Pathah tat	−hard to tread and difficult
—Katha Upanishad, 1.3.14	*kavayo Vadanti*	to cross; say the wise men

Let us remind ourselves once again, not only of our grand heritage, but also of the challenge and the responsibility that comes with its endowment, by rekindling our spirit and reviving the grandest of the grand invocation that the sage author of *Katha Upanishad* passed on to us eons ago.

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ENVISIONING AND RETHINKING
INDIAN UNIVERSITIES
EN ROUTE TO A BETTER FUTURE

MANIKRAO M SALUNKHE

India has had a very strong and functioning system of higher education – as early as 1000 BC – deeply rooted in religion and Vedic studies, fashioned for the dissemination of higher knowledge. The post-independence period witnessed expansion of the educational system in India due to greater emphasis on higher education. The role of education as an instrument of social change and development has been widely accepted. Change is inevitable in a society and education has been a fundamental factor in the development of a society. The rate at which new knowledge is created today has spawned demand for alternative education providers in the higher education realm who are developing low cost, on-demand customized learning solutions in an attempt to cover the growing skill gap. Educational institutions will have to play a pivotal role in helping the current digital society to be future ready by imparting knowledge and skills requisite for the changing job world.

PRELUDE

"Know your past … out of the past is built the future. Look back, therefore, as far as you can, drink deep of the eternal fountains that are behind, and after that, look forward, march forward and make India brighter, greater, much higher than she ever was".

— Swami Vivekananda

Growing from the rise of industrialisation to the expansion of a market economy, India of the 21st century is marked by transformations triggered by disruptive technological change and the onset of the Industrial Revolution 4.0. India has expanded its global stature in many fields and is poised to be a significant contributor. We need to augur the pursuit and speed at which the country is moving forward by way of our contribution through enterprising ideas, innovative approaches, creative abilities and entrepreneurial spirit.

The symbiosis of ideas presented here and elsewhere will enable us to prepare much needed pathways of growth that shall emphasise on quality of our approach, innovativeness in our systems and outputs, focus on need-based research and concentration on skill development so that we make effective contributions to our great country.

HIGHER EDUCATION IN INDIA:
A GLORIOUS PAST

India has had a very strong and functioning system of higher education – as early as 1000 BC – deeply rooted in religion and Vedic studies, fashioned for the dissemination of higher knowledge. Global exchange and student mobility are not new to India. India has an inspirational history of *Nalanda, Takshashila* and *Vikramashila* that served as educational destinations for scholars from across the world. These institutes attracted more than 10,000 students in more than 60 subjects as early as the 7th century. It has been observed through the works of Fa Hien and Hiuen Tsang about the Nalanda University that India had attained proficiency in the education field. The educational system of the past reflected its rich tradition and culture and attempted to fulfill the needs of the society, which was not borrowed from any other land but grew with the strong native origin.

The post-independence period witnessed an expansion of the educational system in India due to greater emphasis on higher education. In the recent times, we have seen a phenomenal increase in the number of universities and educational institutions. However, it is a matter of serious concern that though we have had quantitative expansion, the requisite qualitative growth, yet, is a major issue.

HIERARCHY OF CHANGING
SOCIAL NEEDS AND EDUCATION

Education has a played a great role in the transformation of society as man progressed from most primitive forms of occupation to the current information-based occupations. The role of education as an instrument of social change and development has been widely accepted. Change is inevitable in a society and education has been a fundamental factor in the development of a society. There is enough evidence that education, over the past, has raised people's productivity and creativity and has promoted entrepreneurship and technological advancement. It has played a crucial role in man's economic and social progress. From time immemorial, education has played a transformative role. The

history of civilisation was an era of primitive occupation wherein the need for writing and transmitting of vital knowledge made formal education indispensable. Societies further transitioned to a stage in history where the dominant type of economic activity was agriculture. The agrarian society improvised efficiency, productivity and advanced food production due to accumulation of knowledge and expertise. Some studies have shown the positive benefit of productivity due to education. Introduction of commercialisation and mechanisation during this period led to the Industrial Revolution, which brought about far reaching consequences on societal structures. During this period, educational institutions played a pivotal role in offering technical knowledge, which enhanced the focus on educational institutions and witnessed a radical transformation of the economy from farming to manufacturing.

Currently, we are witnessing how information technology has progressed in leaps and bounds and created new tools and techniques whose functions are revolutionising the conduct of individual and commercial activities. The digital society, which we are living in, has created connectedness and technological empowerment for people and communities. The young generation that is using technology for almost all work processes and other social connectedness, are a major part of the digital society. Smart technologies are promoting free use of information leading to the development of software systems that have created access to low cost tools and techniques, and are creating revolutionary changes in providing access to education and learning methods offered by educational institutions. Current technologies that have supported open source systems and created free encyclopedia have connected people over the globe that has led to creation of new knowledge, information and experiences that can be shared by all. The current social and commercial fabric – enabled by digitisation, virtualisation and mass-personalisation – is giving each one of us global access. All services and products of business organisations can be offered locally and globally by using both local and global sources.

The digital technology coupled with artificial intelligence will automate the entire process, be it manufacturing or other service-based processes, and will result in shrinking requirement of human efforts to conduct such activities or processes. Machines that artificially think and assist in our services are used in all devices and equipment. As we move forward in the technology-based hyper-connected world, there will be radical changes beyond our imagination that will fundamentally alter processes, systems and business models. Though these are great

opportunities to automate systems and increase productivity, they will pose challenges to us as there will be a massive shift of number and type of jobs and their skill requirements.

Educational institutions will have to play a pivotal role in helping the current digital society to be future ready by imparting knowledge and skills requisite for the changing job world. They need to keep abreast constantly of these developments. In fact, technology-based systems will enable robots to deliver teaching material and content and conduct discussion sessions to solve doubts and queries. The role of a teacher will be fundamentally altered and new methods and concepts will have to be thought of. The digital world will also help reduce cost of education and associated content to a bare minimum, which has been rightly pointed out by an eminent educationist and former vice chancellor of many Indian universities Prof Ram Takwale. In his view, digital content of the university should be downloaded/copied/used by anyone anywhere at zero or a marginal cost. Thus, the new education system will have to be reimagined with strong linkages to changing technology-based e-education and social development. All processes and systems of the digital society have to be a part of the new education system that shall always endeavor to transform teaching methodologies and learning systems.

HIGHER EDUCATION SECTOR: SOME CHALLENGES

Our institutions are growing, but only in terms of numbers, thus building discontentment due to irrelevancy and dysfunctionality. It is important to note that we cannot create a ritual out of our current systems where-in we pass on information to students so that they get through examinations and get credited with degrees. It somehow may seem that we conduct our activities without purpose. While setting objectives for our institutions, we should not set them as empty rhetoric, but rather articulate on its potential of building the individual, the institutions and the nation. Lofty objectives with low key implementation renders aimlessness of the academic system and with mere information offered as knowledge to students, it is difficult to tap the talent and potential of a student, which otherwise can be of immense benefit for the many. Current contexts are constantly changing and higher education institutes should be more flexible rather than develop inertia and be unresponsive to the changes occurring.

The inability to keep abreast of modern requirements might lead institutions to obsolescence, deficiencies in curricula and face

declining standards. Many books and journals of the libraries may be unread, which may hinder contributions to the body of knowledge due to intellectual apathy. It is a well-known fact that educational institutions are crucial to the progress and welfare of a country. The question is… Do our institutions contribute adequately to deserve the appreciation? In the current scenario, the need for competent and trained work force is demanded by industry; hence, institutions have this challenge of inculcating the much needed skills and capabilities in their students, rather than just awarding mere degrees with little capability of contributing at the workplace.

Some broader global challenges that are constantly posing a threat to educational institutions are:

- **Environmental** – climate change and the depletion of natural resources that require urgent action;
- **Economic** – unprecedented innovation in science and technology that forces creation of newer social and institutional models and processes;
- **Financial interdependence** – that has created global value chains and shared economy, which have made us vulnerable to economic risks and uncertainties; and
- **Social issues like population growth and urbanisation** – that are reshaping communities and nations and also inequalities in standard of living.

REIMAGINING EDUCATIONAL INSTITUTIONS

Education empowers individuals to realise their full potential, which indeed is the task of educational institutions in terms of accomplishing the goals of building capabilities and reimagining our role as institutions that impart academic excellence.

"Individuals or students won't learn to work – rather they will work to learn." This statement has strong connotations especially as continuous re-skilling and lifelong learning is the new norm; hence, transformative learning experience needs to be provided by our educational institutions. There is an urgent need to alter our academic and educational paradigm. Our educational system may seem to be oriented towards the industrial era; however, current businesses have moved far ahead towards the information era where cognitive abilities are the key tools required. In fact, society has further moved towards

augmented reality where key tools/skills required are development of creativity, agility, adaptability, and cognitive augmentation. In this scenario, since every institution has in some way or the other taken steps to conduct programmes and adopt methodologies to re-skill its students, they may construe that majority of its students may be ready for employment. However, the reality may not be encouraging enough as employers still maintain that they find it difficult to fill entry-level positions.

Our institutions, in order to achieve its goal of providing world-class education, need to reimagine by considering the following approaches:

- **Learner-centric Approach** – having real world learning/ experiential learning approaches;
- **Technology-centric Approach** – utilisation of emerging technologies;
- **Future-centric Approach** – focusing on future jobs and skills required thereof; and
- **Employer-centric Approach** – partnering with employers right from the beginning.

While there may be no single prescribed approach to bringing about changes in the way higher educational institutions function and develop competencies among its students, a variety of approaches may warrant consideration.

The landscape for higher education is beginning to evolve, triggered by the digital revolution. In choosing a college for study, students relied on reputation, ranking, advice from family and friends or counselors, which was the main source of information. However, very soon, students may use a data driven approach in selecting an institution through tracking views and information available on various social media platforms, as it is easy to trace the success of the alumni of an institution and the current position they hold, which may be key tools of decision making. Massive Open Online Courses (MOOCs) on new topics should be used as a medium through which interest should be generated in specific areas, as later, students may choose the institutions as part of their academic careers. Traditionally, higher education, is characterised by the lecture-based teaching methodology. Now, with the aid of latest technology-based systems such as learning management systems and a host of others, along with a deeper understanding of how students tend to learn, institutions should

initiate efforts towards offering personalised learning by combining the best of traditional teaching with digital technology. Institutions should also use data analytics to measure student success and focus on developing competencies and capabilities instead of clocking mere credit hours. The factory system of mass education or 'one size fits all' should be done away with, as educational institutions are not akin to manufacturing organisations that produce goods using a mechanised standard process. Rather, personalised experiences in the way students learn should be adopted as it is a well-known fact that no two students or individuals process information in the same way and that students are highly concerned about the kind and quality of education they receive. The ever-changing skill scenario due to fast-paced change in the industry, demands a competency-based learning methodology rather than traditional learning models. Institutions have to align to industry requirement rather than run on traditional lines due to new emerging job categories and opportunities, evolving work environment and changing nature of work, and the need for individuals to adapt to organisational change. Competency-based learning models aim at acquiring mastery of skills and knowledge through measurement of demonstrated proficiency irrespective of time taken. In essence, competency-based learning promotes learning by the students at their own pace and caters to students across various levels of learning.

The new education system should help students to think and create plausible future scenarios rather than be influenced by current options. Activities, projects, assignments, etc. should be undertaken that are linked to such future scenarios and ensure progress of work that may be useful to the society. It should be kept in mind that educational development of students and benefit to the society on account of this education of the students should go hand-in-hand. Students should be able to set goals that are not only personal in nature, but ones that will benefit and ensure progress for both the individual and the society. The higher educational institutions must emphasise on excellence, high performance and problem-solving. As an instrument of social change, it should prepare the young generation towards a new design of living that is both sustainable and feasible.

Institutions have to be ready to change to a scenario where the degrees earned will be based on how much the students know rather than how much time they have spent in the classroom. The traditional student and the traditional education model where students complete a degree programme full time on campus, involving all student activities,

is no doubt in vogue and shall remain so. However, the likely future scenario may require institutions to equip themselves with capabilities to offer degree programmes to non-traditional students; who may come from a variety of backgrounds and situations; who may have varying levels of experience; who may require programme flexibility and multi-disciplinary options; who may require customisation and personalised learning as the most preferred learning path; and who may work part time or full time and may have to manage other responsibilities while completing their studies.

Blended learning and flipped classrooms tend to increase interest, improve comprehension and result in better scores. The traditional teaching methods has to be bundled with asynchronous self-paced online learning modes so that students learn core curriculum online and spend class time for practical implementation and problem solving. Through this, students learn and get access to the latest knowledge and developments in the fields through digital modes and test this knowledge in an effort to push the boundaries of knowledge through immersive learning experiences.

Software platforms that use Predictive Analytics can offer our institutions more effective ways to track and calculate student progress. Notifications can be sent to students about their course progress and performance. This performance data helps faculty members to alter teaching strategy and interventions so that students are on the right track and they can pay attention to learners that need additional assistance. This may result in a higher success rate of students graduating a programme.

The rate at which new knowledge is created today has spawned demand for alternative education providers in the higher education realm who are developing low cost, on-demand customised learning solutions in an attempt to cover the growing skill gap. Our institutions of higher learning will have to create such small courses in the form of MOOCs. In fact, with our inherent capability, it is essential to create such short immersive programmes that shall provide in-person lectures, hands-on projects, networking opportunities in partnership with the industry so that students quickly acquire in-demand skills.

In a digitally networked society, collaborative commons are created by social movements that provide free access to learners. Thus, educational institutions should create systems of learning and

development that rely on Open Educational Resources (OER), which provide access to community groups for receiving free and open access to education for all. Educational institutions will have to adopt a stakeholder approach in developments occurring in the digital age. Social development in the new digital society cannot take place with individual contributions alone; rather, it is group contributions that will provide benefits to all. Platforms for interaction and collaboration will have to be created to invite contributions from all for overall social benefit and development. Even institutions need to come together to work collaboratively along with communities to progress and contribute for the common good.

Developing critical thinking and analytical reasoning skills will be of utmost significance. An international survey of CEOs conducted by IBM in 2010[1] states that creativity will be essential to navigate through an increasingly complex world. Thus, improving learning outcomes and connecting these higher-level competencies back to real-world applications will be extremely critical. Institutions of higher learning will have to find better ways to connect with their students to instill in them an ability to learn how to learn, unlearn, and relearn. They will have to create their unique proposition that can offer their students entry into a dynamic ecosystem, providing access to the latest knowledge and fostering relationships with important stakeholders for career growth and support to the students. With the advent of new educational technologies, institutions are now better positioned to experiment and adopt solutions that facilitate better student focused outcomes. Innovation labs may be initiated to experiment with either technology tools, academic offerings, new models required in business, or disciplines, and new models of education. Such outputs will be beneficial to the institution as well as the industry and provide immersive learning experiences to the learners.

Rather than following the pattern what other institutions have been doing, institutions may attempt to carve out unique niches thereby differentiating themselves from others creating a unique value proposition. However, it does not mean shedding off the other programmes available at the institution, but focusing on one essential programme, which could connect with all stakeholders.

We now live in a world where nearly half the jobs hadn't exist about two decades ago. With the emergence of entirely new types of jobs to be a common feature, lifelong learning will be recurring and

permanent solution for professional development of learners. Creating an enabling infrastructure to support such lifelong learning endeavours will have to be evolved. A study by Wagner T (2010) and the Change Leadership group at Harvard University titled, 'Overcoming the Global Achievement Gap', states that students need seven survival skills to be prepared for the 21ˢᵗ century work, such as:

    i.   Critical thinking and problem solving;

    ii.   Collaboration and leadership;

    iii.   Agility and adaptability;

    iv.   Initiative and entrepreneurialism;

    v.   Effective oral and written communication;

    vi.   Accessing and analysing information; and

    vii. Curiosity and imagination.

However, it must be noted that it will be difficult to navigate and determine the best option that may meet the needs of potential employers. Emphasis may be laid on helping learners to identify clear career paths, and provide the requisite skills and knowledge required by employers, so that learners may enroll for the right programmes to position themselves better for available job opportunities. In an attempt to bridge the skill gap, higher education institutions will need to work more closely with the industry to promote job-skill alignment and develop learning solutions to impart the identified skills likely to be needed for tomorrow's jobs. While focusing on the essential 21ˢᵗ century skills that may be imparted to the students by the institutions, the study by Griffin, McGraw and Care (2012), based on the assessment and teaching of 21ˢᵗ century skills' project, categorised into four broad categories: a) ways of thinking, b) ways of working; c) tools for working; and d) skills for living in the world. Thus, some or more courses /subjects within a programme should focus on competencies such as creativity, critical thinking and collaboration. Considering the value of imparting essential skills and competencies in the 21ˢᵗ century, the Delors' Report (1996) produced by the International Commission on Education for the 21ˢᵗ Century outlines essential pillars of education which are summarised below (Delors, 1996):

(i)   ***Learning to Know*** – Mastery of core subjects around 21ˢᵗ century themes is essential. The 21ˢᵗ century competencies must be identified on integrated content knowledge rather than being compartmentalised. Institutions must develop curriculum that

weave 21st century interdisciplinary themes into core subjects. It is essential that learners must commit to lifelong learning, and continuously re-skill as changes demand from them to adapt to newer requirements.

(ii)   *Learning to Do* – Based on what Carneiro (2007) stated, students need both academic and applied knowledge, must be able to connect knowledge and skills, learning and competence, and transform them into valuable skills. Critical thinking is considered fundamental in the present times that highly rely on the ability to examine, analyse, interpret and evaluate. Problem solving ability needs to be built so that students would be able to find solutions from multiple domains to solve complex issues. Students have to develop the skills to understand perspectives, and take creative action based on inter-disciplinary expertise and with flexibility and self-direction. Learning to effectively apply requisite tools and techniques in the face of obstacles, must be imbibed by students.

(iii)   *Learning to Be* – It is important to prepare the youth to face the 21st century equipped with not just cognitive skills that are fundamental, but also with personal qualities that will help shape identities of each individual student. Good social and cross-cultural skills are crucial to the success of individual students as it helps them interact effectively, work in diverse teams, and be open-minded to different ideas and values. The ability to empathise and develop emotional resilience is considered essential due to socio-cultural dynamics and the turbulent environment in which organisations operate.

(iv)   *Learning to Live Together* – 21st century learners must take part in educational activities that help them develop competencies in living and working together in culturally diverse societies and organisations. Cooperative learning through collaboration may benefit the students more than individual learning as it triggers increased transfer of learning, higher level of reasoning, better learning experience resulting in cognitive development. Institutions may have to collaborate with other institutions to facilitate such learning environments for its students.

Institutions of higher learning will have to go beyond the accreditation criteria and conduct honest assessments of the value they provide to its students. Institutions will have to constantly redefine themselves in order to clearly articulate and deliver unique value to its students and hence redevelop models of teaching and learning

to improve their outcomes, which may lead to a greater recognition among stakeholders.

Reimagining education is all about transforming 21st century education so that learners are prepared to thrive and succeed in a competitive world that will: provide many opportunities for highly skilled individuals; offer a work environment that requires far more thinking skills and content knowledge; need constant re-skilling and updating of competencies so as to enable learners to adapt to new expectations; and the need to navigate through complexities through lifelong learning.

Education has a vital role to play in developing knowledge, skills, attitudes and values that will enable learners to effectively contribute and benefit from an inclusive and sustainable future. Formation of clear and purposeful goals, and finding untapped opportunities and identification of multiple solutions to complex problems, will be the cornerstone of the future institutions so that they can create young individuals who will excel professionally and also be more engaged and responsible citizens of the country.

Taking into consideration the rapidly changing scenario in higher education and the challenges that we will be facing in the near future, faculty will have more important, probably more specific roles, to play. Therefore, the time has come to consider merit-based and need-based short-term or long-term contract appointments of quality faculty in preference to the conventional recruitments. This measure will go a long way in achieving the desired quality and standards in higher education.

TRADITION AND HIGHER EDUCATION

As we all know, technologies have been constantly improvised and undergone innovations for making human life more comfortable. It is important not to ignore the fact that the unwarranted, excessive and unethical use of many technologies have disrupted the rhythm of nature. Unprecedented transformations in various fields and changing dimensions of the society have triggered off the disturbance of ecology thereby affecting sustainability. In this context, we should try and utilise the relevant traditional knowledge along with innovation and technological advances to our benefit. It will also be in the interest of sustainability. Institutions must adapt to this quickly.

TRADITION AND INNOVATION

Innovation – thought to be associated with change that is incremental or disruptive – is a complex process and has a broader scope than just technological advancement. Past knowledge is often seen as a major contributor to the innovation process. Traditional knowledge – mostly composed of tacit knowledge – is complex, as it differs according to regions, practices, cultures, values imbibed, etc. The interplay between tradition and innovation involves two apparent paradoxes. First, institutions involve tradition and stability, but they also allow change and innovation. This stable and routine nature of institutions requires change and innovation. Second is the simultaneous constraining and enabling nature of institutions. Tradition and innovation are complex dynamics and not linearly related. Varied types of innovations emerge from mixing traditional and modern approaches (Cannarella and Piccioni 2011) and (Voyatzaki, 2013). Traditions may be supported by modern 'add-ons' and are not generally reinvented. Tradition and innovation together can also be considered as an opportunity to shape the future.

Changing towards modernity by keeping the positives of a value system will involve a thorough understanding of concepts and relationships underlying Innovation Through Tradition (ITT) – an approach that provides an integrative framework of how institutions and firms can develop something new by leveraging on its past knowledge. The dynamic capabilities view Helfat & Peteraf (2003) suggests that ITT is based on two key capabilities:

1. *Interiorisation* – allows as simulation and sharing of knowledge pertaining to firm's tradition or the traditions of its territory across the entire organisation, as reflected by the different forms of codified and tacit knowledge used to develop new systems/ products.
2. *Reinterpretation* – allows the combination of selected forms of past knowledge with up-to-date technologies to develop new systems/products.

This approach helps to identify gaps in understanding of ITT and outlines questions for future research so that institutions and firms will be in a better position to leverage on past knowledge to innovate.

Our education system has its roots in traditional values and constructs of the society. Higher education is the acquisition of knowledge, skills, and competencies that help an individual as well

as societies to achieve the aims of life. Our traditional knowledge and practices must be integrated in our higher education. Through higher education, we develop an environment of constant learning, researching, developing new ideas and contributing to the field of knowledge. A model of innovation through tradition is depicted in Figure 1.

FIG. 1: A MODEL OF INNOVATION THROUGH TRADITION
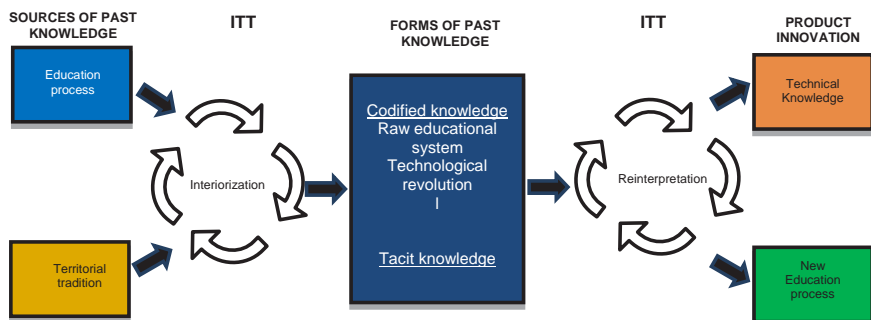
Source: Alfredo De Massis, Federico Frattini, Josip Kotlar, Antonio Messeni Petruzzelli, Mike Wright (2015)

Today, it is a challenge to attain a just and sustainable society. There are certain locally relevant and socially significant traditions, which educational institutions have not substantially engaged in. Those are expected to have greater community-university engagement for certain productive learning and de-learning purposes. A major role education system plays in this regard is to observe, study, analyse and evaluate the changing dynamics between traditions and innovations and attempt for maintaining a balance between two.

To have better understanding of the concept, some examples in this context presented during IAU International Conference held on 13-15 November, 2019 at Puebla in Mexico, are being reiterated below (Salunkhe, 2019):

Using Indigenous Traditional Knowledge Embedding Innovation for Sustainable Economy

In India, across the country, Ayurveda is an indigenous way of health treatment and life followed at individual and family level. Different parts of country have their own methods as a branch of traditional knowledge and practice. Kerala is a state that institutionalised the Indic Ayurvedic healing practices, embedded with certain innovation for strengthening the travel and tourism.

Though, initially, it was a subsidiary economic practice, now it is the prime attraction of tourism in Kerala illustrating innovation for sustainable economy.

Ice Stupa: Making Water available during Scarcity; Linking Tradition with Innovation

'Ladakh' is a cold desert of India in its Himalayan Range. Due to climate change, the region experiences hotter summers with increase in ice melts. Subsequently, during the spring season, water is scarcer which in turn affects agriculture and food supplies. Sonam Wangchuk, a Magsaysay Awardee, noticed that the ice under a bridge was not melted since it was not under direct sunlight. Wangchuk realised that ice could last longer in Ladakh if it could be shaded from the sun. Since providing shade to larger water bodies was not possible, Wangchuk thought of freezing and storing water in the shape of a cone that offers minimum surface area to the sun resulted into *Ice Stupas*; in turn, water from these *Ice Stupas* is used in spring for agricultural purpose.

Camel Pastoralists Community from Rajasthan

Nomadic Communities across the world have survived and grown while preserving their tradition embedded with innovation. The traditional camel pastoralists of Rajasthan State of India are at risk of extinction due to climate change, growing populations and decreasing farmland. But the traditional method of grazing was linked with innovation for creating biodiversity and combating desertification. 'Raika' a traditional camel pastoralist community live by an example of people-centered livestock development and the sustainable management of biodiversity rich agro-ecosystems in small areas where they grow the trees, which are and will survive not only in the desert but are also used as feedstock for their camels.

Here, it would be interesting to know what Yuval Noah Harari, an Israeli Historian and a professor at the Department of History at the Hebrew University of Jerusalem and the author of '*Homo Deus: A Brief History of Tomorrow*' (Harari, 2016), writes in his book. The book sets out to examine possibilities of the future of homosapiens. The premise outlines that during the 21ˢᵗ century, humanity is likely to make a significant attempt to gain happiness, immortality, and God-like powers. It goes on to speculate various ways ambition

might be realised for humans in the future, based on the past and present. Among several possibilities for the future, Harari develops the term 'Dataism' for a philosophy or mindset that worships big data.

From generation to generation, humans have prayed to God, angels and saints, and have invented countless tools, institutions and social systems, but they continued to die in their millions from starvation, epidemics and violence. After every few years, the outbreak of some potential new plague, such as SARS in 2002/3, bird flu in 2005, swine flu in 2009/10, Ebola in 2014, and the recent Coronavirus disease (COVID-19) alarm us. A small mistake or a bit of bad luck could easily be a death sentence for an entire family or village. Yet, now in the third millennium, humanity has been able to transform the numerous hardships and problems faced in the past from incomprehensible to manageable challenges. For example, smallpox has been completely eradicated.

We know quite well what needs to be done in order to prevent famine, plague and war – and we usually succeed in doing it. And, acknowledging our past achievements sends a message of hope and responsibility, encouraging us to make even greater efforts in the future. Earlier, knowledge of all systems around us, political, industrial economic etc., grew at a slow pace. In the current times, knowledge is increasing at an accelerated pace, so theoretically we should understand the world better. However, in an attempt to understand what is going on, there is an accelerated thrust on accumulation of knowledge, which may lead to bigger upheavals, which in turn will lead us to knowing less of the present and predict the future. In the coming future, when humans will have immense new powers that discoveries in science and technology will offer, the biggest question then, will be, what are we going to do with all the power? This power may be used to overcome epidemics; however, the same power can put humans into an unprecedented threat. It is within our power to make things better and to reduce the incidence of suffering even further. The big task then on all will be in finding the key to happiness, for, without the requisite economic resource, effective planning by the government and research, the quest for happiness by individuals will be a distant dream. All professional activities that are requisite in tomorrow's world, which can be termed as 'Production', provides the material basic for happiness, as people don't only want to be involved in production activities, rather, they want to be happy. Production is only the means and not the end. However, despite our unprecedented achievements, being happy may not be easy.

MODERNITY

Modernity is like a contract. Right from the day we are born till the day we pass away, we sign up to this contract. Modernity, at the first instance, looks like an extremely complicated contract, hence few try to understand what they have signed up for, just like when we download a software or an online application, we don't care to read the lengthy legal agreement, but just scroll to the last part and click on to agree. This connotes that we don't mind giving up the meaning in exchange of access and constant pursuit of power which has arisen due to association between scientific development and economic development.

The current times are such that there is constant research and discovery of newer theories, applications, etc., but there is also the danger of constant threat and anguish lurking. The need to seek new knowledge will throw open the gates of scientific endeavor and lead to novel inventions, better methods, revolutionary systems etc., in an attempt to reduce resource scarcity. However, in this pursuit of scientific and economic development, the dangers of social and ecological imbalance is always at risk leading to devastations, far beyond repair.

Despite our efforts, in an accelerated manner to avoid economic busts and ecological damages, the speed at which we may attempt to avoid the same may create complexities. Decades of economic and scientific developments have not brought any respite to life; on the contrary, there is unprecedented pressure to produce more, making it difficult to exist amidst chaos. With yesterday's luxuries becoming a necessity today, the modern world will value only growth putting all that we have to risks of dangers.

In our quest to impart knowledge to individuals, we need to constantly relook methods of acquiring new knowledge. Knowledge, in the modern world, can be gained through existing theory and literature. However, developing the element of logic is important to understand the exact meaning; it can be gained through lots of empirical data but in developing the right tools to interpret it; and it can be gained through experiences and increasing sensitivity to better understand the experiences. However, with the future poised to becoming a data-centric world, encircled in data flow and data processing, this will challenge the traditional learning patterns of converting data to knowledge and wisdom. The work of processing data will no longer

rest with humans, but with algorithms, whose capacity of processing data will far outnumber the human brain capacity.

While we need to plan our short-term strategy, for some of the measures which are described above, we also have to start thinking of a long-term strategy for the time to come, say 20-30 years from now. Nobody knows what will happen in the coming decades. Fast advances in technology make it very difficult to predict the number and kind of jobs, the skills required for the same, and the teaching-learning methods in future. Let us stretch our imagination and try to visualise the possible scenario in 2040s-2050s. A possibility is what Harari (2018), has to say on education in his book, *21 Lessons for the 21st Century*.

He claims that "change is the only constant". In a turbulent environment that is full of radical uncertainties and unprecedented transformations, the challenge remains as to how we can better equip ourselves and our students to face them. What skills and expertise should we impart right now so that youth and individuals can survive, say in 2050? These questions may seem difficult to answer given the unpredictable nature of the forces that are currently prevalent and the rampant use of technology to artificially think and alter; however, that shouldn't deter us in reimagining plausible scenarios, understand nuances and requirements and atleast trigger thoughts towards that direction.

SOME PERTINENT POINTS IN VIEW OF CORONA AFTERMATH

After the outbreak of COVID-19, the world has transited into a new epoch in which the rules of the game are altogether different. Answers to some of the questions are pertinent for reimagining new institutions in the context of post COVID-19 revolution of the world:

(i)   Post-Corona, at least for one or two years, we'll need to depend more on net-based teaching and learning. The students will prefer to join online programs. How are we poised to cater to these needs, especially for practical-based programs? Isn't the poor and non-continuous internet connectivity in many areas, especially in the interiors, a problem?

(ii)   As many have expressed, the Corona pandemic will have a disruptive short- term and long-term effects on many sectors. To talk about higher education, there will be a major shift towards

inevitable technology driven e-teaching and e-learning, resulting in reduced contact between teachers and students. In fact, there will be drastic change in the role of a teacher, from that of traditional teacher, trainer or a *Guru* to that of an assessor or an evaluator. Our culture is deeply rooted in the traditional *Guru-Shishya Parampara*, which inculcated fundamental values among the students and enabled our country to scale greater heights in the past. With reduced contact between teachers and students, are we not set to lose out on our culture and values which are our strengths? What will be the long term consequences?

(iii)   It is difficult to predict the future job scenario and skill requirements a decade or two from now in the light of sweeping technological advances taking place. What kind of strategies we should adopt in higher education?

(iv)   With technological developments and digitalisation, it can be visualised that the number of jobs for our graduate and postgraduate students will be much less in future. At the same time, one of our policy goals is to increase the Gross Enrolment Ratio (GER) in higher education which will in turn result in more and more graduates and postgraduates coming out every year. Don't we need to think differently?

The questions are many. We'll need to think, plan and work together to find the answers.

CONCLUSION

The strengths that each of our institutions possesses is unique. With these, we can draw a roadmap of success for our institutions, given the formidable set of challenges that we are faced with constantly. Let our focus on quality, innovation, entrepreneurial spirit combined with our glorious rich past help carve out solutions that will truly transform the society and our country into a land of immense capabilities and uniqueness.

Individually, we are one drop. Together, we are an ocean.

– Ryanunosuke Sataro

Awake, Arise! Strive for the Highest and Be in the Light.

– Katha Upanishad

Notes

1. The cited IBM 2010. Global CEO Study is from the fourth edition of IBM's biennial Global CEO Study series. To better understand the challenges and goals of today's CEOs, IBM consultants met face-to-face with the largest-known sample of these executives. Between September 2009 and January 2010, IBM interviewed 1,541 CEOs, general managers, and senior public sector leaders who represent different sizes of organisations in 60 countries and 33 industries. According to it more than rigor, management discipline, integrity or even vision -- successfully navigating an increasing complex world will require creativity. For access to the full study findings and case studies, visit: http://www.ibm.com/ceostudy.

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TOWARDS MAKING INDIAN UNIVERSITIES RELEVANT AND FUTURE READY

RANBIR SINGH

India has the world's largest higher education system with over 50,000 Higher Educational Institutions (HEIs) primarily triggered due to a massive expansion in the higher education sector leading to a four-fold increase since 2001. Higher education is instrumental for public aspirations, developmental priorities and societal values which time and again need to be assessed, nurtured and refined. Change and innovation would be required and so is the understanding of that change, which will be critical. This great responsibility of how we are going to bring about this change is on our shoulders and it is only possible by reimagining and reinventing, and by drawing a new roadmap for the HEIs in India, if we have to stay relevant and future ready.

PRELUDE

"The next society will be a knowledge society in which knowledge will be the resource and knowledge workers will be the dominant work force".

— Peter Drucker

Nowadays, in India, there are less restrictions on universities' characteristic slant towards internationalism. Students now have more control over where they get taught and that gives millions of youths a chance to spend their formative years abroad. This explosion of global universities is developing institutions, which can teach managerial and technical skills. It relinks academics with the broader knowledge economy, though the most important validation of all is that it is freeing resources for academic activity. This has ultimately led to filling libraries with books and stocking laboratories with equipment, thus giving more chance than ever before to researchers for making order out of chaos. Nevertheless, the policymakers need to endeavour more than merely supporting the developed country models.

Michelangelo was once asked, "How do you produce statues that are so full of life?" He replied, "The rough marble already contains the statues; it is a matter of extracting them." Among all the students of our institutions of higher learning, we already have fine professionals present and the job of the universities is to mould and bring them out not only as highly capable and skilled professionals, but also as good human beings.

STATUS OF HIGHER EDUCATION IN INDIA

India has the world's largest higher education system with over 50,000 higher educational institutions (HEI) primarily triggered due to a massive expansion in the higher education sector, leading to a four-fold increase since 2001. However, various challenges like deficient funding, lower employability of graduates, poor standards of teaching, feeble governance, and complex regulatory processes continue to plague the education sector in India. It is estimated that by the year 2027, India would have the world's largest workforce. In this context, we must not forget the famous words of Winston Churchill, "The empires of the future will be empires of the mind," when we are preparing our youth to join this large workforce.

India's demographic trend is such that it will soon overtake China as the country with the world's largest population, along with the demand for higher education over the next few years. The Indian higher education system, designed originally to serve the privileged few, must be made ready to serve the vast number of people. Change and innovation would be required and so is the understanding of that change, which will be critical.

Higher education has been on a steep trajectory of growth during the last decade. In terms of number of institutions, India now has the world's largest higher education system and the second largest in terms of number of students.

RESHAPING OF HIGHER EDUCATION IN INDIA

Education being a vital investment in building human capital that drives technological and economic growth, can be possible only by improving the educational status of the society by enabling the multi-faceted development of its people. Through education, a nation establishes an intellectual repository of human capital, which is critical to address its present and future needs. Higher education

is instrumental for public aspirations, developmental priorities and societal values which time and again needs to be assessed, nurtured, and refined.

The number of universities in India at present is 1044 that can be briefly categorised into 54 Central universities, 412 State universities, 95 Institutes of National Importance, 127 Deemed to be universities, and 356 Private universities, the numbers of which are still growing. We cannot undermine the fact that, by 2027, India would have the largest populace enrolling for collegiate and other higher institutions and by 2030 it is expected to be one of the top youngest nations in the world with the largest population in the tertiary education age bracket.

PROBLEMS FACED BY HIGHER EDUCATION INSTITUTIONS IN INDIA

The higher education sector in India is one of the largest systems in the world imparting good edification. However, the present system of higher education faces innumerable challenges: be it quality concerns, public-private partnerships, potential entry of foreign institutions of higher learning, augmenting research capacity, research funding, innovations in teaching and learning, increasing internationalisation of education, changing demands of a globalised economy, or collaboration with the industry … the list goes on. Though substantial efforts have been made in the last two decades to satisfactorily meet the growing demands in the higher education sector, newer challenges continuously emerge often through actions of an increasingly informed and demanding population as discussed below.

The Demand-Supply Gap

India's Gross Enrolment Ratio (GER) as per All India Survey of Higher Education (AISHE) is 26.3 per cent (AISHE, 2018-19) this is way far lower than the global average of 36.7 per cent. Apart from this, there is a severe disconnect between the education imparted in colleges and skills required in the workplace. This is primarily due to lack of quality as well as negligence of skill curriculum and internships in HEIs. There is a need to expand capacity at all levels of higher education, incentivise postgraduate education and research, and diversify course offerings at undergraduate level in all HEIs.

Paucity of Faculty

In fact, the biggest challenge facing higher education in India is the acute shortage of faculty. Various reports suggest that 30-40 per cent of faculty positions remain unfilled in higher educational institutions of India, which also include elite institutions such as Indian Institutes of Technology (IITs) and Indian Institutes of Managements (IIMs). It is estimated that about 50 per cent posts of various categories of the teachers in the central universities have not been filled due to various reasons. Another problem is that of faculty training vis-a-vis availability of trained faculty. This creates imbalance in student-teacher ratio. There is a need to increase staff strength in HEIs for bringing balance to the student-teacher ratio.

There is no provision for formal pre-service training for higher education faculty. So, the faculty at higher education levels are generally those who come into the profession after postgraduation or Ph.D. degrees. This, many a time, decreases the confidence level of the faculty, particularly when he or she has newly joined a position. The shortage of well-trained faculty also adds to the strain of quality teaching which leads to gaps in the teaching learning process. Measures need to be initiated to provide pre-service training or orientation to the faculty in pedagogy and teaching practices. Technology can help by leaps and bounds to promote higher education and arrest the creeping rust in the learning process.

Dearth of Financial, Administrative and Academic Autonomy

India's higher education sector is plagued by a lack of financial, academic and administrative autonomy granted to HEIs. This has led to the degradation of quality in institutions as well as education. In the system of affiliating universities, the supervisory authority for most of the colleges is the university or a government authority, and both lack the capacity and the wherewithal to regulate their colleges and make them accountable. In comparison to the affiliating university model and autonomous institutions, the standalone HEIs are at higher advantage as they have the authority to constitute their own academic councils and make independent decisions on academic matters.

As far as financial autonomy is concerned, it is almost negligible in every kind of institution. Moreover, in last few decades, funding for government and government-aided HEIs is skewed in favour of central universities. This is the biggest cause for discrepancy in quality of different types of institutions.

Quality of Teaching and Learning

It is startling that though India has one of the largest education systems in the world, we find no place in the top 100 universities ranked in the world. There is a need to strengthen quality assurance systems which is apt with a sense of responsibility to the stakeholders and ensures accountability. This will result in output of graduates with better employability which is a dire need of higher education throughout India and South Asia; provide sufficient basis for elevating to higher levels of study and research; and also a top place in global rankings. Appropriate effort is required to separate research and teaching which could give fillip to early stage research experience. There is an urgent necessity to have flexible curricula in tune with the changing times with further employer engagement in course content and development of skills. Further, interdisciplinary learning opportunities must be provided.

The shortage of well-trained faculty has also added to the strain of quality teaching, outdated material and pedagogy. Pedagogies and its assessment must not merely be focused on input and rote learning; students must be given ample opening to develop a broader array of transversal skills, including analytical reasoning, critical thinking, problem-solving and collaborative working.

Research Capacity and Innovation

Limited uptake of quality independent research in HEIs across various disciplines is amplified due to the faculty shortage and the low inputs available for research as well as insufficient industry linkages. There is a dearth of quality researchers both in sciences and social sciences, due to inadequate opportunities for multi-disciplinary research; this has also curtailed effective interaction with industry. Continuing systemic segregation of research and teaching is the need of the hour. Institutions must not only remain engaged in teaching but also have to provide a healthy atmosphere for promoting serious research.

Uneven Growth and Access to Opportunity

The enrolment percentages vary significantly between the states, and between rural and urban areas. The disadvantaged sections of society including women suffer from much lower enrolments rates than the national average. There remains accusation of elitism among existing institutions of higher education. Excessive focus on selective

areas such as engineering, management etc. to the exclusion on others, particularly basic sciences and social sciences is weakening the foundations of Indian higher education.

EFFORTS NEEDED TO REIMAGINE INDIAN UNIVERSITIES

Meeting the various challenges faced by higher educational institutions require innovative and out-of-the-box thinking. As individuals in charge of temples of learning, we must continuously strive to make our institutions socially relevant by imparting accessible, affordable and high quality education. We must attempt to develop students who are professionally competent, technically sound, socially relevant and committed to justice; social, political, and economic.

Given the context, urgent efforts must be made to ensure:

a.   internationalisation of higher education with improved quality of teaching and research;

b.   devising methods and strategies for better training and equipping of faculty;

c.   better industry collaboration in curricula design and capacity building; and

d.   improve the ecosystem for innovation in Indian research institutions with greater focus on strengthening capacity through intensive international collaborations.

There is a growing need to further strengthen the higher education system by ensuring focus on the following:

Excellence

The key priority areas include:

–   improvements in the method of teaching and learning with a special focus on learning outcomes;

–   regular faculty development programs to improve teaching;

–   better amalgamation of research and teaching;

–   strong international collaborations in teaching and research;

–   faculty and student exchange programmes; and

–   more emphasis on research stimulation, innovation and connecting institutions through networks, alliances and consortia.

Equity

–   Promote efforts keeping in mind the special needs of underprivileged, differently-abled and disadvantageous sections of the society, keeping in mind the demography.

Expansion

–   Capacity building in existing institutions, instead of merely focusing on creating new institutions;

–   diminishing the barriers across the board enabling diverse discipline, squeezing the slanted growth in the direction of engineering and other technical subjects; and

–   promoting skill development and entrepreneurship-specific learning penetrating the ignored parts of the country, which shall align with the requirements of the country and boost private investment.

Recognising the above and acknowledging that universities play a vital role in determining the direction of development of higher education. The government, the apex institutions of higher education, including the Association of Indian Universities, University Grants Commission, etc and regulatory councils should strive to provide all round support to its member institutions in their many endeavours to achieve excellence. The global competencies need to be a part of every education system and the endeavour should be to see to it that bottlenecks are erased, then only can we expect to provide the Young India an environment of world class education and research.

The time has come to address the challenges of delivering the best quality education which should be a role model for other developing economies with a clear and committed vision of a strong leadership and not merely showcase a pipe dream of the vision for the future generations, as its the future we will stand to be a forfeit unless we don't act now. In this context, we must remember the famous words of Nelson Mandela: "Education is the most powerful weapon which you can use to change the world."

This great responsibility of how we are going to bring about this change is on our shoulders and it is only possible by reimagining and

reinventing, and by drawing a new roadmap for the HEIs in India, if we have to be relevant at the international level.

At the same time, HEIs have to prepare themselves to meet the challenges thrown by artificial intelligence and disruptive technologies, which is a new wave of revolution across the globe, if the universities have to play a significant role and remain relevant to the society, they must be future ready.

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INDUCING QUALITY AND RELEVANCE IN INDIAN HIGHER EDUCATION INSTITUTIONS
SOME THOUGHTS

SC SHARMA

In India, the demand for higher education is rapidly increasing along with the challenges of quality and sustenance. The focus of Indian higher education system for a long time was on establishing higher education institutions (HEIs) to give opportunity to the students to graduate themselves and seek jobs. This has lead to a massive increase in number of institutions and the number of students going for higher education. But the system did not get required attention towards quality and fitness of purpose. Consequently, the system grew with several issues like skill gaps, research gaps, relevance gaps etc., which got converted into issues like access, equity, quality and employability. The system underwent several reforms and passed through many stages of transformation in order to address these issues, but still they remain unresolved to a large extent. It is high time that the Indian higher education system gears up with appropriate measures to put the system on right track. Implementation of valuable recommendations given by the education commissions and committees set up from time to time in the real sense of term would help in the process in a big way. The HEIs should be ready with positive mindset as well as readiness to implement the recommendations of the New Education Policy as soon as it is launched. Institutions like National Assessment and Accreditation Council (NAAC), National Board of Accreditation (NBA) which are responsible for quality assurance and act as motivators to the institutions need to be strengthened.

PRELUDE

In India, the demand for higher education is rapidly increasing, along with challenges to retain quality and sustenance, and to compete with higher education institutions at the global level. Indian higher education has passed through several stages of transformation, in order to address the issues related to access, equity, quality and employability. Initially, the focus was on establishing higher education institutions (HEIs) to give opportunity to the students of both rural and urban

areas to graduate and seek jobs. This has lead to a massive increase in the number of students going for graduate and postgraduate courses. The number of colleges and universities have significantly increased in the fields of Science, Commerce and Management, Engineering and Medicine. But, quality has become a crisis. Some of these colleges lack qualified staff, infrastructure and facilities. The designing of curricula, teaching-learning and assessment are not as per the expectations of academic standards. Development of skills such as soft skills, transversal skills, critical thinking skills and problem solving skills have not been given due importance. Research and innovation is another thrust area and an essential component of higher education which failed to get required focus and attention.

There are areas such as curriculum, ICT-based teaching-learning, outcome-based teaching, research projects, infrastructure, employability and collaboration with foreign universities that are to be addressed to make Indian universities function on par with global universities. With reference to this, accreditation agencies like National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA) have a greater role to play in monitoring the quality of higher educational Institutions. To reimagine the role of Indian universities as productive organisations contributing towards knowledge economy, the role of quality management agencies need to be realigned to take care of quality monitoring as well as assurance.

INDIAN HIGHER EDUCATION: A REVIEW

India has always been a source of inspiration in the field of Literature, Astronomy Art, Yoga, Sculpture, Monuments and great historical events. It had its own unique niche in the field of education and attracted many foreign scholars. During the ancient period, India was popular for its contribution to higher education with existence of universities like *Takshashila, Nalanda, Vikramshila* and many others. Modern education system which is now prevailing in India was started in 1857 under colonial regime with the establishment of three universities – University of Bombay, University of Madras and University of Calcutta. Since then, the system has been growing with ups and downs.

Ever since independence, a lot of structural and systemic reforms have taken place at different levels of education. Initially, the focus was on establishing higher education institutions (HEIs) to give opportunities to students of both rural and urban areas to graduate

themselves and seek jobs. This has lead to a massive increase in the number of students going for graduate and postgraduate courses as well as in the number of universities and colleges, which at present is 1044. These can be categorised into 54 Central universities, 412 State universities, 95 Institutes of National Importance, 127 Deemed to be universities and 356 Private universities, and they are continuously on rise. The trend indicates that by 2027, India would have the largest enrollment in higher education institutions. As of now, it is one amongst the top youngest nations in the world with the largest population in the tertiary education age bracket. Though the quantitative expansion of universities has enabled access to a large chunk of people, it has led to certain problems as well. As per the reports of Ministry of Education (MoE) erstwhile Ministry of Human Resource Development (MHRD), the demand for higher education institutions is increasing day by day and there is a need to further increase the number of universities and colleges to meet these demands. Secondly, there is a paradigm shift from social science to science education and similarly from science to technical education and at present the demand is for Information and Communication Technology (ICT) courses.

The massive increase has further lead to a lot of issues and challenges related to faculty, infrastructure, ICT, quality, employability etc. Though some institutions like Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) are doing well with state-of-the-art infrastructure and technological resources for effective teaching and learning, there are many higher education institutions without necessary facilities and resources and they find it difficult to provide good quality education. The main lacuna with Indian higher education system is callousness in implementation of recommendations of various committees commissions set up time to time. If all the recommendations have been implemented as and when recommended, the system would have been in the world-class ones.

Knowledge delivery and creation is the primary focus of all research programmes. Research should be given priority in order to create different forms of knowledge that helps in human development. The universities have responsibility to substantially increase the employability of number of students that have graduated. In this context, many institutions in collaboration with industries have introduced employability skills such as communication skills, critical thinking, problem solving, and entrepreneurial abilities into the curriculum.

Kumar (2018), in his book, *The Future of Indian Universities: Comparative and International Perspectives,* states: "Unfortunately, over a period of time, our higher education system lost its global competitiveness. This is exemplified by the fact that not many Indian higher education institutions feature in the annual world university rankings like the Times Higher Education World University Rankings or the QS World University Rankings." Though some of the higher education institutions of India get credit in sending some of the world's best talent abroad, they are however unable to attract students from other developing countries to India. With respect to the enrolment, India has more than 36.6 million students, which is the third largest in the world next to China and USA.

As far as publications are considered, "no one knows how many scientific journals there are, but several estimates point to around 30,000, with close to two million articles published each year,"(Altbach and Wit, 2018). Even though in India the number of publications has increased significantly, they lag behind in the quality of articles published by United States, United Kingdom, China and Germany. Majority of staff and students lack academic writing skills. According to the 2016 India Skills Report, India produces around 2.6 million Science Technology Engineering Management (STEM) graduates whereas China produces 4.7 million; the 2019 report says that only 47 per cent of the available talent is employable (Wheebox, 2019). In the light of the references made and the points discussed, India should move ahead keeping in view the recommendations made by various national and international committees and commissions.

RECOMMENDATIONS OF VARIOUS COMMITTEES AND COMMISSIONS

In order to improve the quality of higher education, many recommendations have been given by various committees and commissions set up from time to time. The University Education Commission (1948-49) while delineating the aims has highlighted the following: students should be made to realise the ultimate goals and purpose of life; to acquaint them with the social philosophy that governs all institutions; to train for democracy; to train for self-development; develop certain values like fearlessness of mind, strength of conscience and integrity of purpose; to acquaint with cultural heritage for its regeneration; to enable them to understand that education is a lifelong process; to train them in skills; and to

develop in them the understanding of the present as well as that of the past. Based on these, the curriculum for higher education was to be developed and implemented in higher education institutions. But still many of these aims are not actually taken into cognisance while developing the curriculum. The recommendations given by Kothari s Report (1964), and National Policy on Education (NPE) 1986, are relevant even today and give scope for action plan at various stages of education. Some of these aims are achieved by higher education Institutions that have committed for the cause of education.

The new National Education Policy 2020 (NEP-2020) was submitted to the Ministry of Human Resource Development, Government of India (MHRD, 2019). The following are some of the highlights related to higher education in the draft:

- A **new vision and architecture** for higher education has been envisaged with large, well-resourced, vibrant multidisciplinary institutions. The current 800 universities and 40,000 colleges will be consolidated into about 15,000 excellent institutions.

- A broad-based **Liberal Arts education** at the undergraduate level for integrated, rigorous exposure to science, arts, humanities, mathematics and professional fields will be put in place. This would provide imaginative and flexible curricular structures, creative combinations of study, and integration of vocational education and with multiple entry/exit points.

- **Institutional governance** based on academic, administrative and financial aspects. Each higher education institution will be governed by an Independent Board.

- Regulation will be **'light but tight'** to ensure financial probity and public-spiritedness – standard setting, funding, accreditation, and regulation which will be conducted by independent bodies to eliminate conflicts of interest.

- **Teacher preparation programmes** will be rigorous and will take place in vibrant, multidisciplinary higher education institutions. The 4-year integrated stage-specific, subject-specific Bachelor of Education offered at multidisciplinary institutions would be the predominant way of becoming a teacher. Substandard and dysfunctional teacher-centric education institutes will be shut down.

- All **professional education** will be an integral part of the higher education system. Standalone technical universities, health science universities, legal and agricultural universities, or institutions in these or other fields, will be discontinued.

- This policy aims to provide access to **vocational education** to at least 50 per cent of all learners by 2025.

- A new entity will be set up to **catalyse and expand research** and innovation across the country.

- This Policy aims at appropriately **integrating technology** into all levels of education to improve classroom processes, support teacher professional development, enhance educational access for disadvantaged groups, and streamline educational planning, administration and management.

NEP highlights the importance of maintaining standards of education by insisting on reorganisation of the administration; systematic supervision of the affiliated colleges; imposition of more well defined conditions of affiliation; and substantial changes in curricula and the methods of examination. The report recommends all higher education institutions to become multidisciplinary with teaching programmes across disciplines and fields. Further, it suggests that there should be three types of institutions based on differences in focus: Type 1, which has to focus on world-class research and high quality teaching across all disciplines; Type 2 to focus on high quality teaching across disciplines with significant contribution to research; and Type **3** emphasizes on high quality teaching across disciplines focusing on undergraduate education. The policy is yet to get enacted. In the light of the references made and the points discussed, India should move towards implementing the recommendations of NEP-2020 without delay once it is enacted.

INITIATIVES OF NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

The National Assessment and Accreditation Council has brought significant changes in the Indian higher education system by creating an impact on the various quality parameters for the institutions. NAAC gives direction and motivates the institutions to address many of its issues through its criteria and key indicators related to quality assessment and accreditation process, such as Evaluation

Process and Reforms; Student Performance and Learning Outcomes; Promotion of Research and Facilities; Resource Mobilization for Research, Innovation Ecosystem, Research Publications and Awards; Consultancy; Extension Activities; Collaboration; Library as a Learning Resource; IT Infrastructure; Faculty Empowerment Strategies; Financial Management and Resource Mobilization; Internal Quality Assurance System (IQAS); Institutional Values and Social Responsibilities; Best Practices and Institutional Distinctiveness. These key indicators help NAAC to collect evidences, which in turn help to assess the quality of higher education institutions. Nevertheless, there are a number of higher educational institutions with A++ Grade, and are doing well keeping in view the national as well as the international perspective. Others are getting motivated in the process. In view of changing scenarios and the requirements NAAC has revised its Assessment and Accreditation Framework in 2017. Some major shifts in the revised Assessment and Accreditation Framework are discussed here.

Revised Assessment and Accreditation Framework of NAAC

Revised Assessment and Accreditation Framework represents an explicit paradigm shift making it ICT enabled, objective, transparent, scalable and robust. The points of the shift are:

- from qualitative peer judgment to data based quantitative indicator evaluation with increased objectivity and transparency;

- towards extensive use of ICT confirming scalability and robustness;

- in simplification of the process, drastic reduction in number of questions, size of the report, visit days, and so on;

- in boosting benchmarking as quality improvement tools through comparison of NAAC indicators with other international QA frameworks;

- in introducing pre-qualifier for peer team visit, as 30 per cent of system generated score(reduced to 25 per cent, in January, 2020);

- in introducing *System Generated Scores* (SGS) with combination of online evaluation (about 70 per cent) and peer judgement (about 30 per cent);

- towards introducing the element of *third party validation* of data;

- in providing appropriate differences in the metrics, weightages and benchmarks to universities, autonomous colleges and affiliated/constituent colleges; and

- in revising several metrics to bring in enhanced participation of students and alumni in the assessment process.

In January 2020, further modifications were done with respect to optional metrics, percentage / number of students to be selected for Student Support Services, and the percentage for pre-qualifying in the quantitative metrics during the Data Validation and Verification (DVV) Process. Continuous feedback from the stake holders is helping NAAC in refining the assessment and accreditation process to become institutional friendly, and at the same time to raise the quality of educational institutions.

REIMAGINING INDIAN UNIVERSITIES: SOME SUGGESTIONS

In view of the present scenario of Indian higher education system, some of the suggestions which can contribute towards re-imagining Indian universities are:

1. More rural universities and colleges need to be established to attract the rural students. This will lead to retaining the cultural heritage, nurturing the local skills and traditions, and enhancing employability of rural youth. Some of rural universities which are preserving the rich cultural heritage are doing well and are being recognised at the international level.

2. India should seriously pursue the setting up of world class universities with good research culture to enable India to project itself at the international level and attract more number of foreign students.

3. All types of universities including some of the top universities and institute of national importance like Indian Institute of Science (IISc), Indian Institutes of Technology (IIT) and Indian Institutes of Management (IIMs) can have a collaboration with high ranked universities of USA, European

countries, Australia, etc., so that international best practices can be adopted in our higher educational institutions and India can have better chances to come under the world class ranking system.

4. A large number of research universities need to be established so that high quality research can be carried out in universities. A small country like Netherlands has nearly 14 Research Universities and contributing towards quality research. India also should tie-up with top research universities like Massachusetts Institute of Technology, University of California at Los Angeles, Johns Hopkins University, Texas A & M University, Princeton University and California Institute of Technology (Caltech) for the development of research culture that helps to create impact on higher education institutions. More number of exchange programmes can also be introduced with such universities for Doctoral and Post-Doctoral programmes.

5. Regional Cultural Education Centers need to be established to train the students regarding Indian culture, art, architecture and music to learn about the rich cultural heritage of India. These centers can also have collaborations with higher education Institutions to conduct certificate courses. The credits of these courses can be added to the credits of the degree programmes of the students.

6. Some of the Indian Institutions of Technology (IITs) can be upgraded to top technological centers so that the brain drain can be reduced and good brains from other countries can be attracted. This will help the youth to acquire high professional and technical skills.

7. Quality Assurance mechanisms may be implemented stringently.

8. Outcome-based teaching and outcome-based learning needs to be ensured at all higher educational institutions, along with training in soft skills, digital skills and other technical skills to ensure better employability.

9. A networking of institutions of national importance, world class universities, industries, corporate sectors, and other established private sectors be created so that more and more functional research projects can be taken up. Minor and major

research projects be funded internally by the institution itself and externally by funding agencies in inter-disciplinary and multidisciplinary areas.

10. Number of high quality general, technical, medical and other professional colleges be increased as per the demand of the region. In this direction, new subjects with different combinations can be introduced at the UG and PG levels.

11. Students should be encouraged to acquire various skills through online platforms like Edx, Massive Open Online Courses (MOOC), Coursera, Study Webs of Active Learning for Young Aspiring Minds (SWAYAM), etc., which can help students to have better employability. Artificial Intelligence and Machine Learning are to be inducted into the system wherever necessary for better digital learning.

CONCLUSION

India is progressing in the field of higher education with many shortcomings. Demand for developing various types of skills, including the digital skills, among the students, is increasing. At this critical juncture, it is a crucial challenge to address the gaps between the skills that are imparted and the skills required at the workplace, so that the rate of employability can be increased. Similarly, higher education institutions should develop a good research ecosystem focusing on collaborative research projects to become more visible at the global level. But creating such an ecosystem is not easy, it requires intensive coordination among the government, universities and the regulatory bodies. It is high time that the Indian higher education system gears up with appropriate measures to put the system on right track. Implementation of valuable recommendations given by the education commissions and committees set up time to time in real sense of the term would help in the process in a big way. The HEIs should be ready with a positive mindset as well as readiness to implement the recommendations of the New Education Policy. Institutions like National Assessment and Accreditation Council (NAAC), National Board of Accreditation (NBA) which are responsible for quality assurance need to be strengthened.

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ENVISIONING THE FUTURE OF OPEN AND DISTANCE LEARNING SYSTEM IN INDIA

NAGESHWAR RAO

Open and Distance Learning (ODL) system has been instrumental in enhancing the access to quality higher education in India. Over a period of the last thirty five years, ODL institutions have successfully changed the image of ODL to multimodal technology supported education, and have become a credible alternative to conventional higher education. In the coming years, challenges before ODL institutions especially on technology integrated education and quality concerns, will be immense. For sustenance and greater impact, the ODL system will have to be transformed to a learner-centric approach, coupled with technology-enabled online education system. Transition towards online learning can overcome some of the biggest challenges faced by conventional higher education as well as ODL. With greater emphasis on cost effective online education, which is beyond the limitation of territorial jurisdiction, the ODL institutions have to remodel their framework aligning with technology supported learning environment. For realising the online ODL institutions in the near future, there is a need to have separate regulations or the existing regulations need amendments. Together, with synergy and an integrated approach, ODL institutions need to be converted into Centres of Excellence in Technology Supported Accessible Learning and this is the vision for reimagining ODL institutions in India.

PRELUDE

In the last 38 years, since the establishment of the first State Open University (SOU) in India, an alternate medium of Open and Distance Learning (ODL) has changed the canvas of higher education in the country. The success of ODL system in the higher education scenario of our country is due to its technology acumen, accessibility and flexibility. As per the All India Survey on Higher Education (AISHE) Report (2018-19), "Distance education has become a useful mode for obtaining degrees for a large number of students who are staying in far off and remote areas and for whom accessing universities on regular

basis is still a dream. Distance enrolment constitutes 10.62 per cent of the total enrolment in higher education, of which 44.12 per cent are female students. Six states are providing education to around 59.04 per cent of the students in the entire country. These states are: Delhi 16.2 per cent; Maharashtra 16.1 per cent; Tamil Nadu 10.2 per cent; Kerala 6.2 per cent; Uttar Pradesh 5.2 per cent; and West Bengal 5.1 per cent. Postgraduate, Undergraduate, PG Diploma, Diploma, and Certificate levels share of distance enrolment in the university is 28.8 per cent, 77.8 per cent, 2.9 per cent, 3.7 per cent and 1.23 per cent respectively". As per the estimate of the University Grants Commission (UGC), a total of 118 Higher Education Institutions (HEIs) including 15 open universities are catering to higher education needs of more than 40 lakh students (UGC, 2019).

TRANSFORMATION OF OPEN AND DISTANCE LEARNING TO ONLINE LEARNING

The Ministry of Human Resource Development, Government of India, is setting a target of GER of 40 per cent by the year 2024. With greater role to be played by the Open and Distance Learning (ODL) system, it is inevitable that the ODL system will have to be transformed to a learner-centric approach, coupled with technology-enabled online education system. The key factors in this transformation could be visualised as:

- Progression from conventional student support to ICT-based student support;

- Remodeling printed Self Learning Materials (SLMs) to Digital/ SLMs;

- Face-to-Face Counseling to Four-Quadrant-based Support (e-tutorial, e-content, web resources and self-assessment);

- Three-tier Conventional ODL system to two-tier ICT-based Learner Support System;

- Training and capacity building for ODL system to online programmes/courses;

- Pen-paper system to Online Assignments and Examination Reforms;

- Shifting from Copyright Materials to Open Education Resources (OERs);

- Skill development through Physical Laboratories to Virtual Skill and Science Laboratories;

- Succession from ODL Regulations to Online/MOOC Regulations; and

- Periodical revision of programmes to continuous revision.

A diagrammatic representation of the transformation of ODL system is given in Fig. 1, wherein face-to-face counseling is augmented through audio-visual (AV) lessons, television and radio counseling (Gyandarshan and Gyan Vani), and online counseling. Printed Self Learning Material (SLMs) are transformed into digital SLMs with web resources and OERs. Physical libraries are replaced with virtual libraries and conventional tutor marked assignments and examinations have been replaced by online assignments and evaluations.

FIG. 1: TRANSFORMATION OF ODL TO ONLINE LEARNER
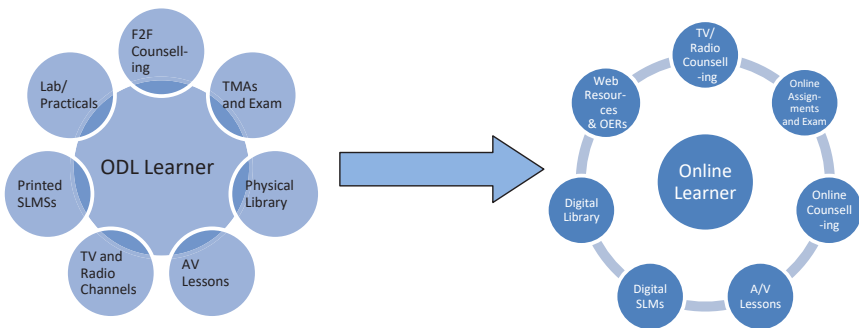
Conventional Student Support to ICT-based Student Support

For increasing access to education, the open universities as well as dual mode institutions need to think beyond conventional Learner Support Centres (LSCs). The management and operation of conventional LSCs requires dedicated manpower and regular monitoring since it has a sanctioned capacity to allocate learners as per ODL Regulations of UGC. With greater emphasis on an increased learner base, it is imperative that ODL institutions will progress towards conventional student support to ICT-based student support. The key ingredients for this proposed transformation are presented here.

From Face-to-Face to TV/Radio (AV) Counseling

It will be an alternative to the conventional LSCs based face-to-face counseling. In the TV/ Radio based web counseling, the live lectures

of the university faculty will be transmitted through TV and radio channels with option of live streaming through YouTube or Facebook. Subsequently, soft copies of these lectures may be provided online for use by the students who could not participate in the web-based counseling. In other words, face-to-face counseling may be replaced by ICT-based counseling. The extensive use of 24x7 educational TV channels i.e. Gyan Darshan, FM radio channels and Gyan Vani will definitely add value to the web-based counseling. Besides, SWAYAMPRABHA channels of Ministry of Education (MoE) erstwhile Ministry of Human Resource Development (MHRD)can suitably be tailored into offering electronic counseling to the learners of ODL mode.

Conventional LSCs as Smart Classrooms or Digital LSCs

Conventional LSCs have limited infrastructure to cater to a sanctioned number of learners as per ODL Regulations. A systematic effort needs to be initiated in due consultations with the host institutions to upgrade the LSC infrastructure to convert into smart classrooms or digital LSCs. The upgraded LSCs may require broadband connectivity, smart TV, digital board, satellite dish besides the infrastructure available at the conventional LSCs. Since Smart LSCs can cater to the increased number of learners as compared to conventional LSCs, they will be helpful in increasing the learner base of the ODL mode institutions. The only limitation of smart classrooms is internet connectivity and hence conventional LSCs may continue at all those far flung and difficult areas where digital connectivity is a major concern. The Education Quality Upgradation and Inclusion Programme (EQUIP) report estimates that by 2023-24, additional 3289 conventional and 1647 smart classrooms or digital LSCs will be catering to the increased load of learners @1000 learners per conventional LSC and @ 2000 learners per smart room-based LSCs.

Technological Intervention in Admission i.e. Online Admissions

Technological interface has two basic advantages: transparency and cost effectiveness. The ODL institutions will move towards complete automation of the admission system by integrating the online payment gateway system. A robust online admission system with cloud server support will be capable of managing the increased load of the potential applicants for the admission in the ODL system. Admission confirmations, digital student identity cards and all the post admission related information will be provided to the students through this system. The entire online admission system will also be

offered through a learner friendly app for facilitating admission at the doorstep. The ODL institutions should visualise and develop a dedicated common online admission framework integrated with all the open universities' admission system.

Transition from Conventional Libraries to Digital Libraries

In the conventional ODL system, the access to learning resource through libraries is principally at two places i.e. central library at the institution itself and one at the regional centres. However, ODL institutions also need to make a concerted effort to provide access to libraries at the learner support centres. Limited access to latest editions of books and journals and shrinking budgetary provisions are two main reasons for the detachment of ODL learners with the libraries. With progressive integration of technology, learning resources are now available through digital libraries or digital laboratories in the form of text, images, social media files, audio and video files including e-books, online journals, etc. The biggest advantage of digital libraries is that the digital content of learning resources can be housed centrally, say, at the ODL institutions itself, and the remote access could be given to all the LSCs for them to be interoperable, sustainable and cost effective! From the ODL point of view, these digital libraries don't require physical space and they are accessible 24x7, and their availability with multiple accesses and quick information retrieval make them ideal components for ICT-based student support.

Remodeling Printed Self Learning Materials (SLMs) to Digital SLMs

For a sustainable environment, an effort would need to be undertaken by the open universities and dual mode institutions (HEIs) to transform their printed SLMs into the digital SLMs in a progressive manner. Learners should be encouraged and motivated to opt for digital SLMs. The digital repository of the SLMs should be made available in all the desired formats i.e. desktop, mobile, kindle, or as an app. The ODL learners should be able to access SLMs through its dedicated e-content app. To popularise the digital SLMs, open universities and other ODL institutions can consider offering some incentives to the students ranging from 10 to 15 per cent relaxation in the student fee for opting Digital SLMs. It is worth mentioning here that over one lakh students in the July 2019 session of IGNOU have opted for digital SLMs. If open universities and other ODL institutions shift towards digital SLMs, it is expected that, by the year 2030, more than 70 per cent of total students under the ODL system will be

shifting towards digital SLMs. With the integration of technology in the ODL environment, digital SLMs would be integrated with audio/video lectures, Open Education Resources (OERs) and learner study pattern and progression framework. The most important aspect of this initiative would be less reliance over printed materials and reducing the usage of paper and thus contribute towards a sustainable future and environmental protection.

Face-to-Face Conventional Counseling to Four Quadrants' Based Support

The face-to-face counseling is an integral part of the conventional ODL student support framework. With a greater emphasis on increasing the learner base and that too without compromising on the quality of instructions imparted to the learners, the ODL institutions in the near future will transform into student-centric technology-enabled online learning environments with four basic quadrants (Figure 2):

1. *Online - Tutorial*: Video and audio content, animation, simulations, virtual labs;

2. *Online - Content:* Portable Document Format or e-books or illustrations; video demonstrations documents; and interactive simulations wherever required;

FIG. 2: THE FOUR-QUADRANT MODEL
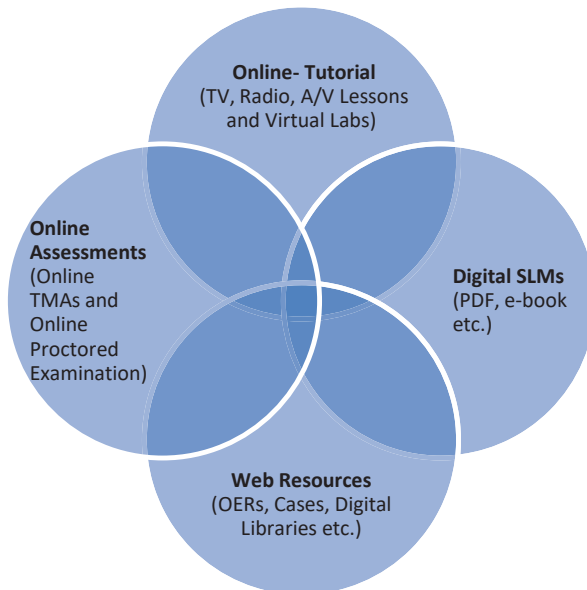
3. *Web Resources*: Related links, open content on internet, case studies, historical development of the subject, articles; and

4. *Online Assessment*: Multiple Choice Questions (MCQs), problems, quizzes, assignments and solutions, discussion forum topics, setting up the Frequently Asked Questions (FAQs) and adding clarifications on general misconceptions.

This initiative will certainly augment the capacity of open universities and ODL institutions to cope with the increased load of learners, together with quality oriented and cost effective learner support environment.

EXAMINATION REFORMS THROUGH TECHNOLOGY

Online Assignments

The tutor marked assignments are one of the essential components of continuous assessments of the evaluation methodology adopted by the ODL system. With the increasing base of learners over a period of years, management and evaluation of assignments have become a Herculean task and integrating the assignment marks/grades along with theory/practical examination in a time bound manner is real challenge for the educational administrators of the ODL institutions. ODL institutions needs to think towards the technological interventions for online assessment of the assignments. The online assignments can be hosted on the Learning Management System (LMS) of the university with facility for computer marked assignments (MCQ based questions) and online submission of assignments (essay-based questions) on the LMS with plagiarism check facility and its evaluation on the LMS itself. This transparent system facilitates tutors for marking the assignments as per its convenience and students get tutor comments and marks/grades on the assignments on the LMS itself. The integration of assignment marks together with marks of year/semester end examination becomes a hassle-free exercise.

Other Digital Technologies

Besides admissions, the examination system also needs complete overhauling because of increased student load witnessed by the ODL institutions. Again, with the intervention of technology, there will be increased efficiency and transparency in examination process. A dedicated online examination registration system with electronic

payment gateway system facilitates a hassle-free examination registration process for the students. The system also has a provision for photo and signature-enabled examination tickets. It facilitates the university towards a logical allotment of students to examination centres and its monitoring. To further enhance confidentiality and secrecy in the examination system, digital delivery of question papers (encrypted question papers) with password protection is being explored. Through this, safe and secure delivery of the digital question papers can be ensured at the examination centres. To further enhance the monitoring of the proctored examination of the students, Closed-Circuit Television (CCTV) based examination monitoring can be explored. Another aspect of the examination system, which also needs technological interventions, is the evaluation of answer scripts of the students. Online marking of answer scripts is one such example. Many conventional universities have already implemented the system of online evaluation and open universities need to seriously think about adopting it. In this, the answer scripts are scanned through high speed scanners and then transmitted digitally to the designated examiner/evaluator. The concerned examiner evaluates the answer scripts digitally and marks are transmitted and recorded in the tabulation system for preparation of results. ODL institutions can also brainstorm towards developing an online evaluation methodology, starting with online programmes offered by them. It could be on the pattern of online evaluation methodology practiced in the Study Webs of Active Learning for Young Aspiring Minds (SWAYAM)/ National Programme on Technology Enhanced Learning (NPTEL) courses for online examination.

TRAINING AND CAPACITY BUILDING FOR ONLINE PROGRAMMES/COURSES

The open universities and dual mode institutions can develop their respective strategies for offering online programmes, subject to fulfilling the conditions as laid down in the University Grants Commission (Online Courses or Programmes) Regulations, 2018, and its amendments. The most challenging aspect of offering online programmes is lack of trained human resource – both at the teaching level as well as the technical and administration level. Concerted effort is needed through collaboration amongst the open universities and other ODL institutions for training and capacity building programmes. The ODL should identify the training needs and accordingly, specialised institutes such as Staff Training and Research Institute of Distance Education (STRIDE) of Indira Gandhi National Open University

(IGNOU) or similar training institutes can prepare tailor made training programmes for capacity building of teachers and academic administrators for online programmes/courses and its related support services. It would be more apt to say that development, training and capacity building framework for online programmes is the need of the hour. Another good option could be SWAYAM based courses exclusively designed on capacity building for online programmes with a certification process. The capacity building programmes could include the following suggested areas:

Transition from printed SLMs to digital SLMs including e-books:

- Integration of OERs with SLMs;
- Development of audio/video lectures;
- Live counselling through TV and Radio;
- Practical counseling through virtual labs;
- Computer based assignments/assessments (MCQs, quizzes etc); and
- Online proctored examinations.

Three-Tier Conventional ODL system to Two-Tier ICT-based Learner Support System

The Role of Regional Centres (RCs) in the three-tier ODL system framework is tremendous as they act as the first contact point for both potential students and students remain associated with the RCs throughout their ODL journey. It is highly imperative that regional centres should be revitalised as Centres for Diverse Learning Environment or as Mini University Campuses within the university. Rather, the role of regional centres can be visualised as Model Online Learning Centres (MOLCs) wherein all the facets of synchronous and asynchronous learning environments could be created. In the near future, these MOLCs will be replacing the conventional LSCs and thus converting the three-tier ODL system to a two-tier Online Learning System.

Transition from Copyright Materials to Open Education Resources (OERs)

The present era higher education environment is surrounded by cost effective technology and collaboration for educational resources. Open

Education Resources (OERs), which are available in public domain both in digital and non-digital modes and have tremendous potential for teaching, learning and research. The true potential of OERs is yet to be realised for educational benefits by the ODL institutions. The open universities and ODL institutions can collaborate towards developing the learning resources for OERs and utilising the existing OERs for integration with respective SLMs. This approach will have twin benefits, the first being availability of updated and revised learning materials and secondly collaborated SLMs without copyrighted materials, thus facilitating the sharing amongst the ODL institutions. The OERs can benefit the ODL institutions in many ways. They are:

- Extending access to learning and thus reaching the unreached;

- Flexibility to modify the contents of the course/ programme in cost effective manners;

- Upgradation and augmentation of existing course materials;

- Rapid propagation of information and learning contents;

- Cost effective learning resources for the students; and

- Regular revision of course materials.

All the above positive advantages of OER-based learning materials will reduce the cost of offering ODL education and thus making the ODL mode of education accessible and equitable.

Skill Development through Virtual Skill and Science Labs

One of the limitations of the present ODL environment is limited access to professional and practical/hands-on training based programmes and courses. Such programmes have compulsory components of lab-based curriculum involving practical sessions and mandatory physical presence. Also, these computer/science labs are presently located in the conventional higher education institutions and ODLs have to completely rely on the limited availability window of these labs. An initiative of the MoE erstwhile MHRD under National Mission on Education through ICT is virtual labs for UG/ PG students for remote access to the laboratories in various disciplines of Science and Technology. They help students in learning basic and advanced concepts through remote experimentation. One of the objectives of these are to provide a complete Learning Management

System around the virtual labs where the learners can avail various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self-evaluation. The participating institutes under these initiatives are Indian Institutes of Technology (IITs), International Institutes of Information Technology (IIIT) Hyderabad, National Institute of Technology (NIT) Karnataka, College of Engineering (COE) Pune, Dayalbag Educational Institute and Amrita Vishwa Vidyapeetham. These kinds of virtual labs under the ODL framework can enhance access to quality education in professional and lab-based programmes. Under the National Mission on Education through ICT are virtual labs, and there is a provision for setting up the nodal centre for virtual labs and ODL institutions can explore the options in such cases.

REQUIREMENT OF SPECIFIC REGULATIONS FOR ONLINE ODL

The UGC Open and Distance Learning Regulations–2017 and the UGC Online (courses or programmes) Regulations–2018 with their amendments are already in the public domain for operationalisation. For realising the online ODL institutions in near future, with the objective of increased access through online supported learning and professional and practical/experiments' based curriculum/programmes, there is a need to have separate regulations or the existing regulations need amendments to address the following:

- AV supported TV and Radio counseling replacing face-to-face counseling;

- Programmes/courses with lab/experiment/hands-on training through virtual labs;

- Skill development courses through virtual labs;

- Transition from printed SLMs to digital SLMs integrated with OERs;

- Computer marked assignments;

- Submission and evaluation of online assignments with plagiarism checks;

- Learning Management System for ODL student support; and

- Online programmes/courses other than those offered in ODL mode.

CONCLUSION

In this era of Information and Communication Technology, it is in the fitness of purpose for ODL institutions to integrate technology into all its domains and make sincere efforts towards providing technology-enabled learning environments. ODL system will have to be transformed to a learner-centric approach, coupled with technology-enabled online education system. Transition towards online learning can overcome some of the biggest challenges faced by higher education vis-a-vis the ODL system. Apart from this, technology-enabled ODL will help in combating other challenges of traditional ODL system i.e. huge expenditure in printing and distribution of SLMs; conducting examinations; and delay in delivery of SLMs to the students. Since the receipt of SLMs is first point of commencement of learning process in the ODL system, delays or incomplete receipt of SLMs can hamper the objective of effective and efficient learner support system. Digital SLMs can overcome these challenges of printed SLMs and physical examinations as well. The second biggest advantage of online technologies is developing a culture of collaborative framework of ODL institutions for design, development and sharing of resources for digital technologies, thus making it cost effective too. The only challenge that one can foresee is its adaptability in the heterogeneous group of learners and accessibility related issues due to connectivity problems. However, these issues could be addressed with the help of different strategies. For example, some of the SOUs have taken a unique initiative of offering 10-15 per cent fee concession for its students opting digital SLMs through a dedicated e-content app in the year 2019. This initiative was a huge success as more than seventy thousand students opted for digital resources. Connectivity related issues can be addressed by providing digital materials in portable devices like cost effective digital pads, mobile devices, etc.

It is worth mentioning that ODL has been instrumental in enhancing the access to quality higher education in India and, over a period of the last forty years, it has become a credible alternative to conventional higher education. ODL institutions have successfully changed the image of ODL to multimodal technology supported education. In the coming years, challenges before ODL institutions especially on technology integrated education and quality concerns, will be immense.

Together, with synergy and an integrated approach, ODL institutions need to be converted into centres of excellence in

technology supported accessible learning and this is the vision for reimagining ODL institutions in India.

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BUILDING AGILE AND EVOLVING HIGHER EDUCATION INSTITUTIONS

LALIT K AWASTHI

Higher education plays a great role in solving complex social and ecological problems. Globalisations of education, aggrandised competition, emergence of new technologies and increasing emphasis on quality assurance, have forced educational institutions to change. Universities are also expected to become catalysts of change in society. In view of ever-changing needs and challenges of society, educational institutions need to evolve continuously and they should not become complacent. These institutions have to get rid of delusions of regressive metal models. The higher education institutions should strive towards their vision by building both human capital and social infrastructure. Trust is the most important element here and hierarchical structures are barriers to change. There is therefore a dire need for institutes to become open, agile, dynamic and networked.

PRELUDE

According to the World Bank Report, India after US and China stands at third place in the world in terms of higher education system (Reddy, and Vaidyanathan, 2019). On the other side, India has the largest youth population aged between 15-24 years. However, India ranks low in terms of spending per student and per teacher. Per capita nominal GDP in 2018-19 was INR 142,719, which is about one-fifth of world's average (IMF World Economic Outlook, 2019). There is significant role of education in poverty alleviation. There are about 51000 colleges and 1050 universities in India. The Government of India has opened new Indian Institutes of Technology (IITs), National Institutes of Technology (NITs) and Indian Institutes of Management (IIMs) and at present there are 23 IITs, 31 NITs and 20 IIMs in the country. The Government of India has recently passed the National Medical Commission Act, 2019, to improve the quality and access of medical education so as to provide better healthcare services across all parts of the country including rural and remote areas.

Higher education plays a great role in solving complex social and ecological problems. Dr APJ Abdul Kalam, former President of India emphasised that higher education institutes must stress upon curiosity, design thinking, entrepreneurship, use of technology and inspiring leadership. The education process is neither individualistic nor static; it is holistic in nature as it stresses upon holistic transformation. Another important aspect of education is that it is constantly evolving in nature. We need to have such an education system that provides equal opportunities for all. The goal of education system is not only academic superiority but also for making our youth relevant and capable of generating knowledge.

We are now in the fourth phase of the industrial revolution. The first industrial revolution that came in 1760 invented technologies like the steam engine and other manufacturing technologies that led to establishment of factories. The second revolution that came after one century introduced steel, electricity, oil and IC engines. The third revolution that came after another hundred years introduced technologies like computers, microprocessors and the internet. The fourth phase of technology that has introduced artificial intelligence and 3D printing has come at a much faster pace as compared to previous three phases. It would have a great social impact. Many people may find themselves irrelevant and new jobs would demand new knowledge and new skill sets (Schulze, 2019).

There is increasing pressure on higher education institutes: globalisation of education, aggrandised competition, emergence of new technologies and increasing emphasis on quality assurance have forced educational institutions to change. It requires new forms of governance and acquiring new skill sets (Taylor, 2006). The decrease in ministerial funding that used to come in the form of annuity would cause greater competition among institutes. Institutions will have to bring entrepreneurial changes to increase their ability to raise funds. There needs to be in place both comparison and collaboration with best universities of the world (Rebora and Turri, 2010).

Indian higher education system faces two distinct challenges: on the one side, it strives for excellence and on the other it has to ensure inclusion so that education system has far reaching impact on the development of society. On one hand, there are centrally funded universities and institutes. Though, they are doing well in terms of academic excellence, their numbers are insufficient to spread education

among masses. On the other hand, there are state-funded universities that have penetrated deep within the local communities but their delivery at present is not up to the mark. They are starved in terms of shortage of funds, faculty and infrastructure. More than 70 per cent students in higher education have been enrolled in state colleges and universities (Reddy, and Vaidyanathan, 2019).

Besides teaching, research and institute-building have also been stressed upon as important assignments of the faculty. Teachers need to bring parity between these three activities. Unfortunately, none of the Indian universities have been placed among top ranked universities of the world. Only recently, Indian Institute of Technology (IIT) Bombay, Indian Institute of Technology (IIT) Delhi and Indian Institute of Science (IISc), Bangalore have been ranked in world's top 200 universities. National Institutional Ranking Framework (NIRF) has been introduced for the universities to compete with one another on the quality band. New benchmarks and standards have been earmarked since there is increasing emphasis on improving quality of education.

THEORETICAL BACKGROUND

Change management refers to the process of continuous renewal of organisation in terms of direction, abilities and structure in response to dynamic internal and external environments (Moran and Brightman, 2001). Change – both at operational and strategic levels – is a permanent characteristic of organisational life (Burnes, 2004). It has also been witnessed that more than 70 percent change initiatives fail due to lack of understanding about the framework of change process (Balogun and Hope, 2004). Change can either be incremental and continuous or discontinuous. Discontinuous change involves speedy moves in strategy, culture or structure or in all three (Senior, 2002).

Henkel (2000) has emphasised on understanding the past history and academic identities of institutes. There are multiple cultures within organisations and these cultural configurations need to be understood with a view to conceptualise institutions (Trowler, 1998). McCaffery (2004) has argued against the vertical leadership and stated that values are voluntarily chosen and these can't be imposed upon people. Scott (2004) has remarked that culture depends upon the good practice of senior leadership of an institution. Robertson et. al., (2009) highlighted that it requires a

lot of hard work, sophistication and collegiality over a long period to build an educational institute. Marshall and Massy (2010) has emphasised about establishing a sense of urgency for institutions to change. However, it will not be possible until faculty and staff see the change as relevant, desirable, clear and feasible (Scott, 2004). Watson (2010) argues, "In my opinion, 'managing the future' on the part of any university senior management team involves: understanding the present and the past condition of your institution, getting the resources right, so that there is a zone of freedom of action in which to operate, understanding the terms of trade of the business, especially its peculiar competitively cooperative nature, helping to identify a positive direction of travel for the institution, engaging progressively with that direction of travel (through what Peter Singer describes as an 'ethical journey') and optimistically trusting the instincts of the academic community (of students as well as staff) operating at its best."

Bureaucratic structure is one of the biggest impediments to change (Mintzberg, 1983). The structure with vertical leadership works well only when the external environment is stable and technological change is limited. However, it does not work when there are unpredictable changes in the external and technological environments. In such a situation, an open and adaptive organisation with free flow of information both horizontally and vertically works well (Lawrence and Lorsch, 1986). Institutions resist change due to behavioural inertia (Rumelt, 1995). There are four main interdependencies within an educational institution. These include: workflow interdependency relating to many aspects of a process; process interdependency relating to working together by specialists to maintain their expertise; scale interdependency so as to avoid duplication of resources; and social interdependency relating to the fulfilment of social needs (Mintzberg, 1985). Clark (1995) applied the idea of evolution of organisational structure in terms of interaction of two distinct processes: differentiation and integration. Educational institutions on one side have to differentiate between different units and at the same time integrate these units through common values, budgeting and horizontal information (Dill, 1997). Shattock (2003) advocated, "Departments need to be nurtured and supported. Their leadership, their succession policies and the way they encourage their younger staff should be of continuing interest to a university's central authorities; their success should be celebrated, their disappointments sympathised with. Any resource allocation process should seek, within the constraints available, to ensure that

departments are equipped as best they can to meet their research and teaching responsibilities."

BECOMING AGILE AND EVOLVING INSTITUTIONS

Universities as Catalytic Agents

Universities are expected to be catalysts of change in society. A university being the society's change agent needs to have change agents for its own evolution. The word 'university' has been derived from the Latin word, *universitas magistrorum et scholarium,* which means community of teachers and intellectuals of different disciplines (Reddy and Vaidyanathan, 2019). In view of ever-changing needs and challenges of society, the educational institutions need to evolve continuously to stay relevant. In this mechanism, educational institutes need to introspect whether these are change-ready or not. The educational institutes need to develop multidisciplinary capabilities, so as to cultivate and upgrade new competencies to prosper, stay contemporary, and relevant. They need to stay away from complacency without any illusion concerning no visible crisis with respect to students' enrolment and funding etc. Low benchmarks, only internal feedback systems without external feedbacks including all stakeholders, considering evidences of change as finger-pointing and over-emphasising marginal issues, are the signs of complacency.

Organisation Structure of Educational Institutions

The organisation structure of educational institutions also plays a great role in deciding whether these institutions are change-ready or not. Hierarchical structure is the biggest barrier to change. Hierarchy protects two enemies of change: one is bureaucracy and the second is entitlement among faculty and employees. Bureaucracy protects how the things are being done as usual while entitlement among faculty and employees keep people focussed only on their part of the job. Both these approaches are detrimental to long-term interests of an institution. Therefore, institutions essentially need to become learning organisations in which everyone is engaged to achieve the distant visions of the institutions. People should continuously experiment, improve and increase their potentials. Faculty should engage themselves into cross-functional and inter-disciplinary teams. Since most of the knowledge of modern-day world has become inter-disciplinary in nature, silo thinking has lost its relevance. Another important step is no place for 'C' performers particularly at leadership positions. Inept people at leadership positions of higher

educational institutions foil all the plans to improve performance of the institution.

The present paper highlights the strategies for renewal of higher education institutes in reference to model proposed by William (2012) in Figure 1. The educational institutions in their endeavours to continuously evolve should consistently stress upon two broad areas: human capital and social infrastructure. In the human capital aspects, the institutions should further focus on two aspects: one is

FIG. 1: ORGANISATIONAL CHANGE MODEL
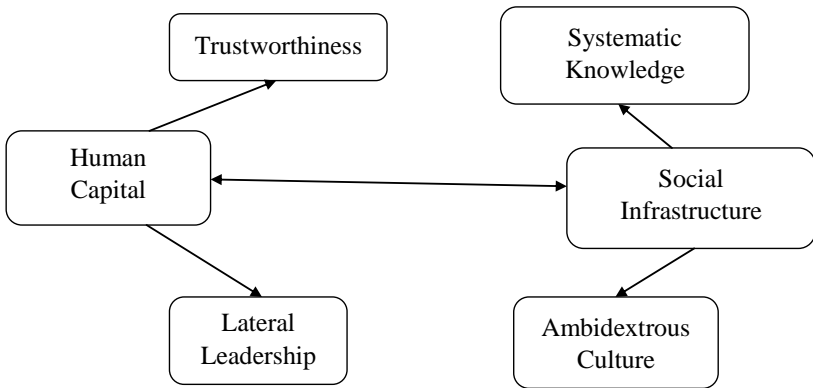
trustworthiness and the second is lateral leadership. In the social infrastructure, these should again focus on two aspects: one is systemic knowledge and second is an ambidextrous culture.

Trustworthiness in Leadership

The leadership in higher education institutions play a vital role in the evolution of institutions. Trust is the glue that binds all sorts of relationships. The biggest responsibility of leadership is to define reality. There are two important and essential elements of trustworthy leadership: competence and benevolence. Competence helps in envisioning the future and making vision a reality, whereas benevolence develops cooperation. Both trust and cooperation are important for the sustainability and continuous growth of institutions. Cooperation and shared sense of purpose i.e. mission is critical for staying relevant in times to come. Today's knowledge is multi-disciplinary in nature that requires integration of multiple departments. Trust is an important factor for such integrations. Therefore, lateral leadership is gaining tremendous importance over

vertical leadership. The leadership must know and take all actions in the pursuit of values for enduring trustworthiness. The leadership should demonstrate authenticity in terms of 'talk the walk and then walk the talk'. There should be an increasing emphasis on trusting more and controlling less.

There needs to be positive transference of feelings across all levels of an educational institute. The educational leaders, i.e., faculty of the institute, should possess a high degree of emotional intelligence to generate trust within the institution. Inter-disciplinary programmes can only be successful if faculty of cross functional areas exhibits emotional glue and stay emotionally resonant with one another.

Lateral Leadership

Inspiration-related currencies such as vision, ethical considerations and moral correctness should get top priority. Bureaucratic layers need to be removed. The senior leadership should extend continuous support to the faculty to enhance their self concept. Educational institutions should exhibit a greater understanding about socio-economic issues of surrounding society and adopt an inclusive approach in which issues relating to the well-being of society should be addressed. Senior leadership should empower faculty members to take initiatives relating to gaining, generating and transmitting knowledge. Faculty needs to be clear about vision of an institution in terms of what we are doing and what others expect us to do. The right people should be considered for faculty positions; only people with right acumen and potential must be hired at faculty positions. Here again, there should be no place for 'C' performers. The faculty recruitment process must be revamped so as to find the right people for the right job. This is so because faculty members are the change agents of educational institutions. Being educational leaders, they are enablers rather than doers; they can take many initiatives by involving students and need to collaborate laterally. The senior leadership should support them consistently.

Systemic Knowledge

It is imperative for educational institutions to get rid of delusions of regressive mental models. Otherwise, it will be too late to take corrective measures against creeping problems that aggravate steadily in a subtle manner. The senior leadership and faculty of the institute should be consciously aware of their mental models and its impact

on their behaviour. Many times, the people in such organisations suffer from spatial and temporal blindness; they look at only on a part without viewing an institute as a whole. They fail to differentiate between what they have been today and what they had been in the past. In such a case, they fail to foresee where they would likely to be in the times to come. A miserable state for an educational institute would be the situation of 'dance of blind reflexes'. It happens when leadership lacks vision; the faculty is torn, fragmented and deprived of resources; and students feel twisted by uncaring system. No one is able to see his or her own role. If despite best efforts of the people, there are fewer results than anticipated, it means that there is a problem with the system not with the people. The communication systems need to be robust to provide comprehensive data on all key processes and integration of data across and beyond boundaries of different sections and departments.

Ambidextrous Culture

Culture and leadership are entangled with one another. The people of educational institutions must own up to their actions. In other words, there should be sense of ownership in an institution. They should understand that they have big responsibilities of transforming nation's youth. They should be aware about the consequences of their actions. There should be no ambiguity about their roles. The culture has three layers: the outermost layer, which is most visible demonstrates infrastructure; the intermediate layer is comprised of values and beliefs; and the deepest layer that by and large remains opaque, is related with human nature, human relations and interface between institute and external environment. Culture acts as social glue; it should never be perceived a tool of social control. Moreover, culture is established by attitude, intentions, and behaviours of senior leadership. There are three important elements of institute's culture: discipline, process and ownership. Discipline refers to rigour, consistency and commitment. It is very important in the teaching-learning process. The second element is process. Teachers should remain engaged in teaching, research and institute building in a balanced manner. The ideal ratio is 50:30:20 for teaching, research and institute building activities respectively (Reddy, and Vaidyanathan, 2019). It is highly essential that teachers should be engaged only in academic activities. Instead of running after increasing the number of publications, an emphasis should be made on generating knowledge in a systematic and unified manner so that it can be useful in real life. Each institute should perceive itself as a unique entity. It is

possible only if they rightly identify their core competence and allocate resources towards activities that are complemented by the core competence of an institute. The third element is ownership. People must owe responsibilities of their actions. People need to have a clear understanding of what is considered eminent and what is ignored. Each and every institute has the potential to stand out distinctly, provided they relate the education process to the issues of nearby society. Social diversity provides distinct avenues. A collaborative culture provides opportunities for creativity and innovation, whereas a hierarchical structure does not. It requires adhocracy, team structure, which is loose, flexible and networked. Creativity is a combinational game, which is more of a social process and not an individual one. Independent thinking, diversity of thought, expressing his or her own views, asking questions and seeking questions, free flow of information, less bureaucracy, inherent learning platforms, just and equity, transparency, celebrating failures, and emphasis on improvements rather than fault finding are the attributes of conducive culture for an institution to become agile, adaptive and evolving.

CONCLUSION

In view of globalisation of education, emergence of new technologies and demand for new skill sets, the Indian higher education institutes need to bring radical reforms in the delivery of education. In order to stay relevant in the changing times, the higher education institutes should build contemporary human capital as well as social infrastructure. Culture, structure, leadership, process and strategic approach are critical elements that must be stressed upon to succeed and stay relevant in the long run. Trust is the most important element; no organisation can survive without an element of trust. Lateral leadership is more important than vertical leadership. The faculty of the institute with consistent support from senior leadership should work with horizontal collaboration both within and outside the institutes in the socially relevant areas. Culture and leadership are intertwined, and the role of senior leadership is vital for establishing conducive culture. In terms of social infrastructure, people in educational institutions should possess ability to view their institute as a whole. They will have to abandon silo thinking and work towards the vision of an institute in a cohesive manner. Overall, the culture of the organisation should be balanced in terms of both accountability and innovativeness. The educational institutions need to become more open and networked than ever before.

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ENVISIONING THE FUTURE OF INDIAN HIGHER EDUCATION

MA VARGHESE

Higher Education in India has entered an era of transition. The era is an augmented one where creativity, agility and adaptability are important. In the last seven decades after independence, the Indian higher education has expanded rapidly but has not been able to improve its quality comparable to international levels. Quality apart, the higher education system is facing many issues and challenges like access, equity, finance, governance, and so on. These issues are of vital importance for the country as it is engaged in the pursuit of higher education as a powerful tool to build a knowledge-based society for the new millennium. To realise this, the higher education institutions have to perform multiple tasks like creating new knowledge, acquiring new capabilities and producing intelligent human resource capital/wealth coupled with a strong value base. Orientation of curriculum towards advancement of science and technology, values and ethics is of paramount importance. To achieve the mission of making Indian higher education globally competitive, there is an urgent need to review the financial resources, access and equity, quality, standards, curriculum, relevance, infrastructure, Information Technology (IT) applications, etc. If the felt needs are addressed effectively, the higher education landscape will change more than ever in the coming decades of the 21st century.

PRELUDE

Today, the Indian higher education has entered an era of transition. Changing student demographics, rapidly evolving stakeholder demands, and new technologies are requiring universities to reconsider abiding assumptions about location, types of programmes, time, and quality. In the coming years, new models of higher education that prefer tradition and stability will be supplemented, if not displaced, by new models that embrace organisational innovation, technology induction, accountability and adaptation.

Organisational change can embody deliberate choices that could potentially shape the purpose and direction of change. There can

be structural changes about the organisational system and how it is organised to achieve their mission and goals. Many industries and social organisations, including higher education institutions, face challenges from both legacy and emerging markets. All of them play important roles in terms of fulfilling the social mission for higher education.

A dual transformation strategy may prove effective for addressing both legacy and emerging markets. According to this approach, operations act in parallel: one, to develop strategies that optimise the core organisation to become more responsive to the new profile of demands it faces; and two, to design and implement disruptive innovations that provide a basis for future growth and agility.

Ancient India always took pride in the humanistic and personality development oriented education with close proximity to the *guru* in learning and living. We always believed that education is what empowers an individual to realise one's true potential. The system consisted of creativity, discipline and intelligence. The learning environment was congenial for absorbing all the core values and goals of education although there were no certificates and degrees conferred on them at that time. However, the values remained intact with them throughout their lives. Gradually, over the years, the scenario changed with the advent of the Agricultural Revolution and later with the Industrial Revolution. Interestingly, there was a change in the philosophical outlook from idealism to pragmatism. There was an urgent need to sustain our culture and at the same time move forward in an exponential way to gain in both the domains and achieve top rankings in the global scenario.

In earlier days, the education system had a generalist focus where strength and speed were the most important talents and subsequently the focus changed towards a mix of generalist as well as specialist areas, and the talent required was mainly 'know-how' or practical knowledge. Later, during the industrial age, the focus was on specialists and the talent required was efficiency and optimisation. Our Indian education system today is transiting towards the information age and a knowledge economy. Our society is more focused on the line of re-skilling and is under the illusion that the education system is working and that students are ready for jobs. But many employers find it hard to fill in the positions mainly due to want of required skills and preparation on the part of the students. The present era globally

is the Augmented Era, where creativity, agility and adaptability are important. Our emphasis here should be on cognitive augmentation and innovation.

At present, the higher education system as a whole is faced with many issues and challenges like access, equity, quality, finance and management. Relevance and orientation of a curriculum, based on advancement of science and technology, values, ethics are of paramount importance. These issues are of vital importance for the country as it is engaged in the pursuit of higher education as a powerful tool to build a knowledge-based society for the new millennium. Higher education institutions have to perform multiple tasks like creating new knowledge, acquiring new capabilities and producing intelligent human resource capital/wealth coupled with a strong value base.

STRATEGIES TO ACHIEVE THE QUALITY AND EXCELLENCE GOALS IN OUR HIGHER EDUCATION SYSTEM

The quality and excellence goals in higher education can be achieved through a multipronged approach at the macro and micro levels of the Indian higher education system.

Strategies at Macro Level

Strategic Approach to Human Resource Development

The first step in envisaging the future education system is to lay the prime focus to the larger purpose of allocating the best leadership and resources towards fulfilling these goals. India needs a long-term human resource development strategy that can bring out the best in every individual and also help the country to meet its developmental goals. This should be in line with the development in Science and Technology that is taking place nationally and internationally.

- Universities and colleges of the future should be student-centered and interconnected. They should be deeply networked with the society around it, make its knowledge resources readily available and engage actively to bring about a change in the world.

- Universities of the future should be customised to bring about *on demand* education. These days, it is observed that a number

of seats in many educational institutions are vacant. This is true even for engineering colleges. Cost may be one factor and also because many students even dropout from the courses after taking admission. The institutions and the faculty do not know the reasons for some of these issues, which means that there is no mentoring/counseling system in these institutions.

- All universities and colleges should have relevant curriculum and qualified, trained faculty.

- Universities of the future shall offer access to learning real time with flexible learning experiences.

Policy Reforms

Policy reforms and its implementation should happen simultaneously. Policies should be realistic and match the larger purpose of education. The young generation, if motivated enough, is a precious resource that we can tap for the future. It is imperative that we enrich and transform this resource into the currency of the 21st century – namely the socio-culturally and ethically developed knowledge worker. Sufficient academic and administrative autonomy has to be given to the institution that will take charge and be responsible for creating a quality educational system and institutions of excellence. The approach to education delivery must be such that it is sufficiently differentiated to be able to serve the needs of all kinds of students. Higher education institutions of the future should be able to meet the global challenges.

Expansion of Access

The higher education of the future should be able to expand the overall access to all those who are eligible. It also should be able to ensure equity through equitable access to the deprived socio-economic strata of the society as well. The number of universities and colleges has to be increased to improve the gross enrollment ratio. The youth needs to be able to access higher education and be motivated enough to pursue it, not only for the degree but also for knowledge that they can use practically. Youth has to be motivated for entering into the portals of higher education. Rural and underdeveloped regions have to be given appropriate remedial intervention. Provisions should be made to create access to good institutions and facilities to all students. It is important to provide more fellowship for women students. Hostel facilities and creation of more infrastructure by the universities to bring more women students in the realm of higher education is the

future. Provisions also should be made for the differently-abled student population to facilitate their participation.

India has the largest higher education system in the world by the number of institutions, but it ranks third in terms of enrolments with about 36.6 million students (AISHE 2017-18). During the last five years the GER has increased significantly. With a GER of 25.8 per cent, we still lag behind the world average and even below some of the developing nations. There are more than 78 per cent colleges in the private sector – aided and unaided taken together – but it caters to only 67.3 per cent of the total enrolments.

Besides low GER, the existing demand-supply gaps in higher education on the demand front, the rising population of the age-cohort, increased number of secondary education pass-outs, and increased social significance to higher education induce the pressure to raise the access to higher education. More and more private sector involvement is required in the future to rectify these difficulties.

In the Indian higher education system, about 86 per cent of the students are enrolled at the undergraduate level and only 12 per cent are enrolled at the postgraduate level. Surprisingly, diploma and certificate education have a meager one per cent enrollment as it is considered as an available provision for those who are not able to get the mainstream options. Unfortunately, for a nation aspiring to become a knowledge economy, a trivial one per cent enrolment in research is far from adequate. The future of higher education should focus on research and also on vocational courses. Distance education should be focused on more to enhance access to those who are unreached so far. Here are some statistics:

- The total number of teachers in the higher education system in India are 12,84,755 out of which about 58 per cent are male teachers and 42 per cent are female teachers. At all-India level, there are merely 72 female teachers per 100 male teachers.

- The Pupil Teacher Ratio (PTR) in universities and colleges is 30, whereas PTR for universities and constituent units is 20.

- 34,400 students were awarded PhD degree during 2017 with 20,179 males and 14,221 females.

- 23.89 lakh degrees have been awarded to BA students which is highest; B.Sc. is the second highest with 11.52 lakh degrees, followed by BCom with 9.39 lakh degrees.

- At postgraduate level, the number of MA pass students is the maximum followed by M.Sc. and MBA.

- The highest number of students (23.89 lakh) have graduated in Arts' courses

- At PhD level, maximum numbers of students out-turn is in the Science stream followed by Engineering and Technology. On the other hand, at the PG level, maximum students out-turn is observed in Social Science and Management streams comes at number two.

Equity

The issues related to inequality have four dimensions in India:

a) Gender disparity

b) Geographical inequality among states

c) Inequality based on ethnic groups

d) Inequality based on economic classes

Great disparity is found in the unemployment rate across gender and ethnic groups. The vision statements of Ministry of Human Resource Development highlight the role of consumers and policy makers for affirmative action. The most prominent policy for promoting access to higher education has been reservation. This has to be supplemented with remedial education, provision for scholarships, special hostels, meals, and other schemes.

Efficiency

In the future, higher education should be seen as one of the sources to increase private and social rates of return, thereby justifying the efficiency resulting from pursuing higher education. Inclusion of employment rate may also be considered as a parameter for efficiency.

Quality

There is a dire need for improving the quality of higher education. The higher education system must provide for accountability to society and create accountability within. An expansion of higher education that provides students with choices and creates competition among institutions is going to be vital in enhancing accountability.

Financing

The responsibility of financing higher education is shared by both the public and private sectors. In public sector, it is the joint responsibility of central and state governments for state government institutions. About 80 per cent of the financing is by the state government. Even in the state government, about 82 per cent funding is for routine expenditure: administration and maintenance etc., and therefore hardly any fund is spent for capacity building. The central government spending is lop-sided towards central universities and centers of excellence, which serve hardly 3 per cent of total higher education students in the country. This needs some review. The total public expenditure on higher education is only a fraction of the GDP. The private expenditure is increased about 12-13 times during the last decade. This has resulted in an increase of tuition fees at the graduate and postgraduate levels.

Strategies at Micro Level

Recognising the Requirements

Higher education institutions should be able to perform multiple roles to make an impact on the knowledge economy. The Indian education system has to address itself to global challenges and should match with world class institutions.

Quality

The focus should be on enhancing the quality of educational institutions overall in general. In order to facilitate the growth of excellence in institution with potential, the expansion should be open for:

- development of multi skills and transforming learning pattern;
- appreciation of ICT in Quality Framework;
- improvement of external assessment system;
- development of internal quality assurance system; and
- performance based quality assessment approach

Curriculum Development

There is need for starting interdisciplinary and integrated courses at undergraduate and post graduate levels with flexibility in criteria of

a course and a system of credit that enables horizontal and vertical mobility. The curriculum should be revamped to reflect the need for national development with international benchmark.

- Offer flexible curriculum as per the needs and interests of the students. Following a rigid curriculum does not help the students to improve the learning outcome nor the management of the institution. It is observed that student enrollment is overwhelmingly large in the market driven disciplines.

- Universities should primarily focus on academic work – visioning and planning for the development of students and the institution's brand image.

- Curriculum should be socially, economically and academically relevant and the faculty should be trained adequately on a continuous basis.

- There should be a think tank consisting of senior academicians, industry experts, researchers who can deal with the key issues and emerging ideas. They should be able to develop innovative yet practical ways by which the management can transform the way they deliver their services. Bureaucratic way of functioning of Academic Council and Boards of Studies should change.

- To close the skill gap, higher education institutions need to work more closely with the industry and other social, economic and research organisations to promote job-skill alignment, combining labour market data with industry input to define the skills likely to be needed for tomorrow's jobs.

- Exponential changes in technology, industry demands, fresh workforce skills, incompetent faculty, and inadequate government funding are fresh challenges to universities and higher education institutions.

- Students must become entrepreneurial, lifelong learners, designing their own educational path based on their career interests, objectives and schedules.

- A 'University of the Future' should be able to provide a variety of degrees and shorter qualifications like postgraduate diplomas and certificates. One needs to top up the skills from time to time according to the career needs and personal development.

Teaching-Learning and Evaluation

- One should be able to study in multiple modes between on-campus, blended or wholly online to suit the students' needs. Staff development should be institution specific as per the needs of the individuals and the institution, which should include the lifestyle, work and other activities.

- Refresher courses and orientation programs should be need based and should be offered by the institution itself or through an academic staff college of repute.

- Staff development should be institution specific as per the needs of the individuals and the institution.

- Integrate with online instructions like Massive Open Online Courses (MOOCs) should be effectively utilised.

- Talent and screening processes should be refigured.

- Emerging educational technology solutions provide new ways for assessing the rigour of a candidate's educational track record.

- Introduction of college score card rating system that evaluates affordability, access and student outcomes should be initiated.

- Classroom environment should be learner-friendly with flexible arrangements for discussions and interactions.

- Setting up of departments for differently-abled students in universities, which will evolve through its center for studies and research on inclusive processes, and special schemes for persons with different abilities.

Research and Development

Current issues facing the research in higher education institutions include quality, relevance, ownership, funding, international networking, etc. An ever growing number of nations have now given priority to developing their knowledge base through higher education, research and innovation and commit the necessary resources to this goal. In India too we need to focus on:

- developing conducive policies and procedures for research in universities;

- providing the necessary infrastructure;

- training, retaining and attracting highly-skilled human capital;

- increase investment in research and higher education;
- encouraging industry-institution collaboration; and
- commercialisation of research.

Research should be closely linked to teaching and learning. We need to develop a framework for combining the strength of the university laboratories and other scientific laboratories for undergraduate and postgraduate science education. Industry—institution—society interface need to be strengthened for research and development.

Infrastructure Development

- Higher education institutions should have better physical infrastructure facilities, well equipped classrooms with modern facilities, ICT facilities, audio-visual equipment and quality seating arrangements.

- In view of the rising cost of books, journals and laboratory equipment, there is an urgent need to make adequate provision for capacity building of the institution, classrooms and laboratories in the universities and colleges.

- To succeed in an era of exponential change, educational institutions also need to take advantage of digital technology – both for academics and administration.

- Universities and colleges should be places for collaboration and entrepreneurship consultation.

RECOMMONDATIONS FOR ENVISIONING THE SYSTEM OF HIGHER EDUCATION

For preparing Indian higher education for the future, it has to align itself to global challenges through channelising teaching, research and extension activities while maintaining a balance between demand and supply. Higher education needs to be viewed as a long term social and economic investment for the promotion of economic growth, cultural development, social cohesion, equity and justice. The globalised era necessitates the stress on competitiveness. This can be achieved only by bringing about quality and excellence in higher education by adopting certain recommendations like:

- Implementing an innovative and transformational approach to make the Indian educational system globally more relevant and competitive.

- Focusing on branding and reputation.
- Creating state-of-the-art infrastructure in universities and colleges to make them captivating, comfortable and conducive for students.
- Promoting collaboration between the Indian higher education institutes and top international institutes for better quality and collaborative research.
- Providing a mix of courses which can help students gain deeper knowledge of subjects as well as help them in employability and entrepreneurship.
- Refraining universities and colleges from political affiliations.
- Adopting multi-disciplinary approach to higher education so that students gain knowledge of other disciplines along with one's own subjects.

CONCLUSION

Education is a process by which a person's body, mind and character are formed and strengthened. It is bringing of head, heart and mind together and thus enabling a person to develop an all-round personality, identifying the best in him/her. Higher education in India has expanded rapidly in the last seven decades, but the quality is not in comparison with other countries. It does not enable our population to contribute towards the nation's development.

India is a country with huge human resource potential. It is important to utilise this potential effectively. Opportunities are available, but to make use of them and enable others to have access to these opportunities is a matter of great concern. In order to sustain the rate of growth, there is need to increase the number of institutes and also the quality of higher education. To achieve the mission, there is an urgent need to review the financial resources, access and equity, quality, standards, curriculum, relevance, infrastructure, Information Technology (IT) applications etc. Best practices and innovation opportunities need to be provided. If the felt needs are addressed effectively, the higher education landscape will change more than ever in the coming decades of the 21st century.

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SPORTS AS A GATEWAY TO SMART UNIVERSITIES

SHEILA STEPHEN

Sports and games not only make students keep up their physical stamina, but also helps to develop the habit of obedience, discipline, the determination to win, willpower — all of which are essentials of life. Academic learning and sports education complement each other; they resemble the two sides of the same coin. If sports education is accompanied with the academic curriculum, the overall personality of the student is increased to quite an extent: qualities of the leadership, sharing, team spirit and tolerance are learnt from sports. Sports can teach values such as fairness, teambuilding, equality, discipline, inclusion, perseverance, and respect. It has the power to provide a universal framework for learning values, thus contributing to the development of soft skills needed for responsible citizenship.

PRELUDE

Sports and games play a major role towards the wholesome development of youth. It is a proven fact that participating in sports and games improves the confidence level, concentration, leadership quality; strengthens the health of the individual; improves socialisation; and on the whole improves the quality of life. The well-being of the citizens indirectly influences the growth and economy of the country. Citizens with sound mind and body can contribute to a greater extent to the growth of the country, and therefore involving students in sports and games helps to make their personalities wholesome. There is an urgent need to inculcate sporting culture in all educational institutions and it's time to revamp and strengthen the sports and games in all our universities.

SPORTS AS A METAPHOR OF LIFE

National Sports Policy–2011 emphasises the value of sports and physical education in developing human capital, increasing productivity, and fostering social harmony. In normal working days, students spend a large portion of their time at schools and colleges

for acquiring education and knowledge. Along with quality education, it is vital to impart sports and physical training as a regular part of learning during these formative years to develop the sporting culture in students for their overall development. Activities that encourage physical movement and exercise in students create an enjoyable experience and socialisation among students in schools and colleges (GoI, 2011).

Moreover, when sports are made an integral part of the curriculum, students report healthier eating habits, better levels of cardiovascular fitness, increased parental support, and decreased levels of anxiety and depression. A national study also displayed a positive correlation between student-athletes and decline in drug, alcohol, and substance abuse (Nayana, 2019). Sports and games not only make students keep up their physical stamina, but also helps to develop willpower, obedience, discipline, and the determination to win—all of which are essentials of life.

SPORTS – AN INTEGRAL PART OF COMPLETE EDUCATION

The saying goes, "all work and no play makes Jack a dull boy", which is why it is important that academic learning and sports education complement each other. They resemble the two sides of the same coin. If sports education is accompanied with the academic curriculum, the overall personality of the student is increased to quite an extent. Qualities of the leadership, sharing, team spirit and tolerance are learnt from sports.

Nowadays, the system of education makes the students stress more on their mental development and completely rejects physical activities. The overall outcome of this is that the developing groups of graduates and professionals have weak bodies and a poor physique. Hence, the curriculum needs to include sports, games and physical health education for the all-round development of the students (inspiria.edu.in).

DEVELOPING A SPORTS CULTURE IN INDIA

Like many other ancient civilisations, India had a tradition of sports and physical fitness from its Vedic times and has promoted the virtues of physical perfection based on a clear understanding of the body and its functions. One such manifestation of the tradition is the practice

of yoga, which is "an ancient discipline designed to balance the health to the physical, mental, emotional and spiritual dimensions of the individual" (Ross and Thomas, 2010). Of all the physical activities, yoga is one that is truly of Indian origin and is now practiced all over the world.

Moreover, the epics of Mahabharata and Ramayana extolled the competitive spirit of their heroes in physical activities. The five Pandava brothers of Mahabharata specialised and excelled in specific physical activities and weaponry. Dronacharya was the mentor and coach of these five heroes. These figures are held as role-models even today. For instance, the highest award granted by the government of India for a sportsperson is the Arjuna award and the highest award for coaches is called the Dronacharya award (Chelladurai, et. al., 2011).

Sports Industry

Globally, the sports' industry has a unifying power; it boasts of a dynamic appeal that most other industries worldwide are envious of. It holds the power to define nations as a whole. The sports' industry offers a perfect opportunity to generate employment and revenue and the potential for its growth in our country is fuelled by our recent transition from a single-sport nation to a multi-sport country. Sports' business and as a consequence, the sports education which is proliferating at an unprecedented rate, is only expected to grow in the years to come.

In recent years, sports as a discipline has expanded beyond its previously defined boundaries. It is no longer limited to only sportspersons and playing sports; a number of professions have come up, that combine business and sports. This phenomenon has caused an increase in the demand for dedicated skilled professionals in many areas associated with the business of sports (Nayana, 2019).

Sports and Human Value

Sports can teach values such as fairness, teambuilding, equality, discipline, inclusion, perseverance, and respect. It has the power to provide a universal framework for learning values, thus contributing to the development of soft skills needed for responsible citizenship. Value Education through Sport (VETS) programmes support active learning, complement cognitive skills, give students increased amount of responsibility, and enhance their level of concentration. VETS contributes to the development of self-confidence, active and healthy

lifestyle choices, and an understanding of rights, supporting the delicate transition to the independence of adulthood.

UNESCO is actively engaged in the promotion of sports and physical activity as an entry point for the delivery of values education, both in schools and, more generally, in society (UNESCO, 2017). Research in the field of behavioural science has time and again pointed out that sports not only creates a healthier population, it also plays a vital role in building social and emotional skills. It enables people to bond and build a collaborative environment. Social skills and Emotional Intelligence help people in collaborating and leading, making it as one of the most powerful leadership tools.

Sports in Developing Human Capital

Human capital is the investment on human resources in order to increase their efficiency with the aim of productivity in the future (Becker and Gerhart, 1996). In most cases, organisational success depends on the individuals who have higher levels of competencies. In such circumstances, these individuals become valuable assets to their organisation. Modern governments are aware of the role of human capital in economic growth. Sport can also add to students' cognitive skills, such as by improving their grades or their performance on standardised tests, and to their non-cognitive skills, such as by improving their self-discipline or their ability to work in teams. Sports help people applying thinking and analytical ability under stress. A sport is all about an active body and calm mind essential for success in any field. It enables people to bond and respect diversity—a critical component in building the new India. A country that plays together grows together (BW, 2018).

However, we are yet to realise and utilise the power of sports for developing our next generation leaders. Sports can be a great leveler as it has the ability to unite diverse people and can play a vital role in National Integration. Talent alone is not enough; we need to have attitude and passion among our youth. Sports can help us transform the minds of our future leaders, enabling the emergence of India as a world economic power. This necessitates the need for induction of sports and games in higher education.

Brief Scenario of AIU Inter-University Sports

Since the inception of Association of Indian Universities (AIU) in the year 1925, several activities have been carried out for the improvement

of the higher education students in the fields of education, culture, sports, and other allied areas. The Inter University Sports Board of India (IUSBI) is one of the important components of AIU that enables the higher education sports persons reach greater heights and also serves as a platform to participate in the International Inter University level sports and games like World University Games and in other international competitions. IUSBI has been granted the status as National Sports Promotion Organisation (NSPO) to promote sports and games in our country, which is another feather in the cap for IUSBI. Further, 16 Centres of Excellence in various universities have been established to develop the sporting skills of the students in a professional way, so as to compete internationally. Since NSPO is a member in the International University Sports Federation (IUSF), students of the Indian universities compete in the World University competitions.

The Government of India recognises and honours the university that achieves maximum number of sports championships in the All India Inter University Tournaments with Maulana Abul Kalam Azad Trophy and with cash awards to promote the infrastructure of the university. The Annual Reports of the AIU reveal that the IUSBI is successful in bringing remarkable improvements in the university sports at national and international level competitions.

Assets and Liabilities of University Sports

The assets and liabilities describe the wealth of a university better. The assets are the strengths that promote the growth and the liabilities are the weakness that hinder the growth of a university. Naturally, sporting skills are imbibed within every individual and making use of those skills is in the hands of the individual, the family and the society makers.

India has a high youth population and as per the reports of the Ministry of Education (MoE) earstwel HRD Ministry, nearly 3.74 crore students pursue higher education and they are the assets of our institutions and the nation. Identifying these talented persons and making use of valuable assets is in the hands of the authorities of the institutions, the physical directors, physical trainers and the faculty members, and all other public persons with an interest in developing sports. Every institution should ensure that all basic amenities are provided by the institution for the sports aspirants to develop their sporting skills.

As per the UGC norms, it is a mandate that every institution should possess a playground and this is one of the important requirements in developing university sports. Effective utilisation of the existing playground facility and the play materials are in the hands of the Physical Director of the institution.

When the facilities available are kept unused, the assets will become liabilities to the institution. Likewise, selecting a less skilled Physical Director who fails to execute the roles and responsibilities of his/her job, lack of infrastructure facility, corrupt officers, improper planning, and discouraging faculty members are the liabilities of university sports.

Developing University Sports

Though noticeable changes have occurred in university sports in the recent days, we have to run miles to make our students reach greater heights in the international sports arena. Hence, there is a need to delve into talent search of students in the area of sports'.

- Recognising the right sportsperson based on her/his talent has to begin in the root level of the university and the affiliated institutions.

- Initiation of a Sports' Board in every institution has to be made mandatory and the details of the students with sports skills have to be identified and updated from time to time. The institutional Sports Board should be formulated in such a way that at least one faculty member should be present from each department.

- The selection of competitions and players have to be done with the approval and under the monitoring of the entire Sports Board members so that meritorious students can be selected.

- Inter collegiate competitions and intramural competitions may help the institution to pick the right person with sporting skills.

Government Initiatives in Advancing Excellence in Sports

The Government of India has come up with several schemes to enhance the growth of sports and games in our country through several departments, along with the Ministry of Youth Affairs and Sports. It has come up with attractive awards and cash prize packages to

increase the participation of youth in games and sports and to achieve international recognition through winning international sporting competitions.

Sports Authority of India (SAI) runs exclusively for the development of sports and games in India and its major role is to support National/ Regional and State Sports; talent search and development; support sports for women; conduct annual sports competitions; promote rural and tribal games; initiate state level Khelo India centres; promote physical fitness among school children; and promotes sports among persons with disabilities. Hence, a multidimensional approach has been made to develop sports and games in our country.

For running the sports' related schemes successfully, the government of India had allocated a sum of 31 crores in the 2018-19 annual budget.

Inclusive Education and Sports

Adaptive Sports, also known as Disability Sports or Para-Sports are the sports played by persons with physical and intellectual disabilities. As many disabled sports are based on existing able-bodied sports, modified to meet the needs of persons with a disability, they are sometimes referred to as adapted sports. Organised sport for athletes with a disability is generally divided into four broad disability groups: the deaf, the bind, people with physical disabilities, and people with intellectual disabilities. Each group has a distinct history, organisation, competition program, and approach to sport.

From the late 1980s, organisations began to include athletes with disabilities in sporting events such as the Olympic Games and Commonwealth Games. However, many sports are practiced by persons with a disability outside the formal sports movements, like: wheelchair basketball, wheelchair dancing, weightlifting, swimming, and many other sporting activities.

The Ministry of Youth Affairs & Sports in 2009-10 during the XI Plan Period introduced the 'Scheme of Sports & Games for the Disabled'. Adapted sports and games is the growing field in the arena of general sports and games. With a view to develop and encourage sports among differently-abled persons, the government of India had set up a training center for para athletes in Gujarat to train them for participating in international games. Our para athlete team participated

in the Paralympic Games, 2016, and won 4 medals and ranked 43rd position and China secured first position with 239 medals in total. Though our para athletes are fit enough to compete with that of World Para Athletes, it has been reported that we are lacking in equivalent sporting material. Hence, the lacunae for low performance have to be identified and addressed in the right direction, so as to bring more medals to India. Educational institutions and philanthropists should join hands and come forward to take the differently-abled persons to greater heights by showcasing their sports skills.

CONCLUSION

India's strength lies in the youth population of the country and the health of the younger generation is a major determinant in the economic growth of the country. Physical activity is one of the important requisites to develop good health. But it has been reported by World Health Organization (WHO) that about one in four persons globally is physically inactive and about 80 per cent of the world's adolescent population is not sufficiently active. Effective participation in sports and games will not only help to achieve good health, stabilise the human capital, but also to reveal our sports skills to the universe. As a result, we will also be able to bring fame and pride to ourselves and to the nation as a whole. The data on medals and achievements of Indian athletics exhibits our stand in the international level and this justifies the fact that we have miles to go in order to make our country reach greater heights in sports and games. Hence, effective implementation of the existing schemes and formulating new working models, training sessions towards achievement is the need. Each university/institution should identify the persons with sports' talent and groom them with utmost interest to develop their sporting skills so that we can gain more medals and bring more laurels in the forthcoming international competitions, thereby indirectly helping in making quality human capital. The achievements of other sportspersons will attract more and more youth to take part in sports and games and in turn will protect the health of the human resources of the nation. Sports, with a little resource, can make a country's Human Resource more resourceful. In fact, a large population of humans is of no value if it does not have quality, which is the key to growth.

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REIMAGINING HIGHER EDUCATION IN INDIA
SOME INSIGHTS

HEMA RAGHAVAN

The fact that higher education is on a downward slope is indicative of the failure of redoing or reinventing earlier attempts to raise the declining standards. Colleges and universities as well as all higher post secondary institutions must change from 'we offer, you take it' to 'you seek, (what you want/what you are capable of using) we give it'. The rigid division between college study and online study should be erased. Teachers have to be trained in the use of student data right from the time of admission till his/her completion of graduate degree. Colleges and universities should use the data to find the students' intellectual capability and their interest areas, and give admission in accordance with their potential and inclination. Since students' capability and interests, have to be factored in while structuring the courses, the next step is to reimagine where the student will be three/ five years hence. What kind of employment the student can seek with the degree/s he has received from college/university? How to make the degree job worthy? Reimagining is not about getting Harvard and other top class universities to open universities here, but to make our own Harvard, Cambridge, Oxford by investing heavily in education, giving the right funding, fillip and encouragement for quality research in our institutions.

PRELUDE

Re-imagining higher education is uniquely different from many discussions that have taken place to find ways and solutions to constrict the steady and steep decline of the tertiary education in India. The prefix 're' of Latin origin has two meanings: (i) 'again' or 'again and again' to indicate repetition; and (ii) 'back' or 'backward' to indicate withdrawal or backward motion. The term 'reimagining' has set in motion a new approach to higher education in India, as it steers clear of terms like 're-inventing', which means re-making something already invented, such as 'reinventing the wheel' or 'trying to do something that has already been done successfully.

The fact that higher education is on a downward slope is indicative of the failure of redoing or reinventing the earlier attempts to raise the declining standards. The need of the times is to reimagine — to form new concepts and create strategies afresh to meet the challenges of higher education.

CAUSES OF DECLINE IN OUR UNIVERSITIES

One need not reiterate the causes of decline in our universities and colleges since they have been listed a zillion times by academicians and experts on education. The most visible and universally accepted cause for the decline is the exponential increase in the number of admission seekers to tertiary education. Colleges are the only refuge for all school leaving youngsters today. At 18 or 18+, when students finish schooling, the question arises, 'what next?', for there is nothing for them to do except seeking admission in a college. School education at the end of twelve years of study cannot and does not equip them with skills needed for employment. Since we are focusing here on higher education, this is not the forum to talk about reforms needed in school education. What is to be borne in mind is the same dilemma of what to do repeats itself after completion of three years of graduate study.

SOME INSIGHTS FOR REIMAGINING

We have to reimagine, i.e., formulate new concepts to meet the requirements of this vast teeming population of 18+ and help them to discover the path they should traverse, which will (a) fulfill their desire and aspirations; and (b) ensure them financial stability for the rest of their lives. In other words, policymakers have to imagine where and what these youngsters will be like three to five years hence or a decade from today. *Capability Approach*, as articulated by the Nobel Laureate Amartya Sen is a possible starting point for mooting changes in our higher education system.

Capability Approach is defined by its choice of focus upon what individuals are actually capable of achieving. Using Prof. Sen's analogy on the distinction between bicycling and possessing a bike, education that is to be offered is to be in terms of the student's ability to learn that is distinct from giving or shoving education on her/him. What is the use of possessing a bicycle if one is lame or physically challenged to ride a bicycle? Instead of thrusting education uniformly on all students, it is necessary to examine if he has the capability to use such education. Colleges and universities as well as all higher post

secondary institutions must change from 'we offer, you take it' to 'you seek, (what you want/what you are capable of using) we give it'. Today, students have no alternative except seek admission in any college in any course irrespective of their capability to study that course and later turn job worthy. The mad rush to be in any college directs them to take admission in courses for which they do not in the least possess the functioning capability.

The questions that follow as a corollary are: (a) whether young people can assess their own capability and decide what to choose and what to reject; and (b) how to provide courses that cater to every individual's capability and requirement. The answer to the first query is without doubt in the affirmative. By 18, currently the age when the youth has the right to vote, which presumes that he possesses the discernment to elect the right representative, he must also possess the ability to make an honest assessment of what he is capable of, what he is good at, where lies his natural talent and how college education will enable him to get employment. For the academicians and policymakers to deny the youth her/his capability is more of an excuse to hide behind their lethargy so as not to devise new curriculum that will meet the aspirations and interests of a large number of students.

The answer to the second query contains the kernel of this article, 'Reimagining Indian Higher Education'. With a humungous number wanting to get into colleges, it certainly poses the problem of how to cater to them on the basis of their individual inclination. As it is in practice today, graduation i.e. the first degree, requires studying four disciplines and getting examined in them. While English and Hindi or any regional language are mandatory courses, the choice of the other two is limited to prescribed options given by the institutions. In this process, degree courses do not factor in the interest and potential of the student. While a few universities and degree awarding autonomous colleges have switched to credit system, many others follow the old system of giving marks.

There has to be a uniform change from marks to credits whereby on completion of 96 credits stretched over three years, the student gets his degree. The credits can be from any course of the student's choice and not necessarily from packaged courses currently offered. It can be as varied as music and mathematics, psychology and philosophy, environment and education … what was offered in one year need not be carried over to the second and the third year, except for the course in which the student wants his/her specialisation, such as BA

in Economics or Political Science, Literature etc. The student has to have a minimum of 36 credits in the subject of specialisation; 12 per year for three years. 24 credits are to be assigned for each one of the language courses and the rest of the 32 credits from courses of her/his choice. This needs tweaking of timetables to enable students to attend courses of their choice. Students can go for online study of these optional courses if they are not available in the college in person. The rigid division between college study and online study should be erased. At the end of every year, the student can assess whether or not his choice of courses serves his capability and increases his employability worth. The optional courses need not be studied all through the three years. Credits have to be accumulated and the student must be given the freedom to choose courses for which he/she has the talent and inclination.

What is sadly missing in our system is the absence of student data, leave aside making use of that data responsibly. We are in the digital age. We have digital service providers to help students submit their assignments online, provide them with platforms for discussion amongst themselves as a group, and also interact with the faculty that makes face-to-face interaction possible from anywhere. Such measures facilitate improvement in student outcomes. Martin Kurzveil and Mitchell Stevenson1 have written about responsible use of student data. They have stated four core premises about student data that will be useful to frame institutional policies:

1. 'Education is fundamentally a human endeavour', supported and enhanced by the use of technology;

2. Education is 'a civic act: the practice of shaping people, communities, and societies and of transmitting cultural inheritance across generations';

3. The preservation of the civic character of education has to be a continuous effort; and

4. Digital data of students' requirement, potential, achievement has to be the responsibility of educators. The continuous monitoring and measurement of students' potential, their efforts and attainment is needed for qualitative improvement of learning.

Teachers have to be trained in the use of student data right from the time of admission till his/her completion of graduate degree. The first use of digital data is for admissions. Colleges and universities

should use the data to find each student's intellectual capability and their interest areas and give admission in accordance with their potential and inclination. The data analysis is a tool to predict who will succeed in which course. It also helps to identify areas where the student performance is poor and provide remedial and supplemental instruction for improvement

Martin Kurzveil and Mitchell Stevenson write: "Other innovations fall under the umbrella of an *adaptive courseware*. These systems are digital platforms that collect information on student activity—time spent on task, task performance, and level of engagement, for example—to create 'personalized learning paths' for students."

This entails a different orientation for teachers; college/university teachers have to be trained to use student data from pre-admission to completion of graduate study. Today, in accordance with the UGC prescriptions, tutorials form a major chunk of every teacher's timetable. The tutorials unfortunately do not serve the purpose for which they are mandated. If teachers use the digital system, assignments can be submitted online. Discussions can be had online so that students can improve the assignments and online evaluation ensures transparency. Thus, online digital assistance can supplement the traditional delivery of classroom lectures. Faculty should make use of educational technology and upgrade their communicative skills in teaching and writing lessons. It may sound dismal and lugubrious to make a factual point that a majority of teachers after getting a faculty position do not keep up their academic interests. They hardly write good quality academic papers for reputed journals and upgrade their knowledge. Maybe the present system of education makes little demands on them to do so and they rest content with whatever knowledge they had received during their student days. No academic worth the name can remain a frog in the well. One cannot dole out soup from an empty pot. Barring a few who have taken to the teaching profession because of their academic interest and academic bent of mind, our colleges and universities cannot boast of quality faculty who keep up with today's knowledge explosion taking place at an incredibly rapid pace. Hence, it is important to re-imagine what it will be for the teachers to be students today and refresh their knowledge and work out new strategies that involves use of technology as teaching aid. It will not be inappropriate to recall what the Delhi government did in sending government school teachers abroad for an exposure to new pedagogical methods and principles. On similar lines, training programmes within India must be organised for faculty members initially after their recruitment similar

to what is being done for the Indian Administrative Service recruits. All selections to faculty positions should be over by December and the next six months from January to July, before the start of the new academic session, must be the duration of the training programme. This training should include both discipline specific advance research in new areas and an interdisciplinary programme that will give them an insight into what we call, 'the Web of Knowledge'. Liberal Arts' study must be a part of this training programme. We know for a fact that all those who have had post-graduate/doctoral/post-doctoral studies abroad have a much enlarged openness towards learning and imparting new knowledge in keeping with the times. Such exposure is necessary to enable teachers to realise that what they had learnt and practiced all these years have been enhanced and enlarged by advanced research taking place all over the world.

Since students' capability and interests have to be factored in while structuring courses, the next step is to reimagine where the student will be 3-5 years hence. What kind of employment can the student seek with the degree/s he/she have received from college/university? How to make the degree job worthy? The colleges today boast of placement cells mainly to improve the NAAC score. But there exists no dialogue between the college and the placement cell to find out how the courses taught in the college/university have relevance to the employer who will hire them. No college keeps the data of a student with respect to her/his talent, potential, achievements and his job worthiness during their three years' stay.

Colleges and universities and all professional institutions have to follow a two-pronged strategy. (i) The present content heavy curriculum has to be given up and courses have to be tailored to suit industry/business/and the service sectors. This can be done only after a dialogue with prospective employers who must be invited to come to the institution for recruitment. A good example is that of a premier college in the Delhi University which invites school Principals/Heads/Academic Advisors annually in the month of March to interview students who study for the four year B.Ed degree. The course training is given as per the requirements of the schools and the CBSE courses. The recruitment is done on the basis of interview and the students' grades in the earlier three years with the proviso that they complete their degree with requisite grades in the final examinations. (ii) The academic schedule in colleges and institutions should be limited to the first half of the day and the second half must be given to hands-

on training in any sector that the student wishes to get into. This factors in both the student's aptitude and capability and makes her/him job worthy. Classroom lectures must focus on giving the concepts and theories so that the students learn to apply them in the relevant sectors. The faculty has to be trained to deliver lectures more in capsule form with the time reduced to just one half of the day rather than the current long drawn classroom lectures stretched over the entire day (from 9.00 in the morning till 5.30 in the evening). This has resulted in boredom and listlessness in most students. This double shift between college and the training centre will enthuse students as they get hands on training and learn to practically apply theoretical knowledge learnt in the classroom. If the mode of teaching is changed from spoon feeding to capsule lectures, it will encourage self-study—something that is totally absent among a large majority of students.

While the above suggestions are meant for a large number of students who do not have an academic bent of mind, universities and colleges must focus on research that has a direct and beneficial impact on society. It is a misconceived theory that research cannot be done in colleges and it can be done only at the universities. On the contrary, research methodology and basic research fundamentals such as review of literature, and data collection and analysis have to be introduced to the group of students with academic interest and who wish to pursue an academic career, while in college itself. Research laboratories on a smaller scale will give the college students an exposure to topics that go well beyond their syllabus. It is this that perks up their interest to go for advanced research of higher degrees. These students should also be attached to premier research centres for the second half of the day just as the other students go to manufacturing centres, industries and all other units where there is a prospect of getting a job after their graduation.

Higher educational institutions must focus on research that will have a direct and beneficial impact on society. All researches have to be inter disciplinary and the present day water tight compartments that stand-alone disciplines limit themselves into should become passé. The institutions have to create industry ready workforce that will apply fundamental research done at the universities. The American system of freedom given to the professor to migrate from one university to another, taking with him/her the laboratory as well as students working with their mentor is what our universities should follow. Today, research in different disciplines is done in specialised centres set up

individually for Physics, Chemistry, Technology, Molecular Biology, History, Economics, Philosophy, Engineering, Information technology, Environmental Sciences, etc, while universities are given step-motherly treatment in terms of getting funds for advanced research. It is time to make advanced research integral to universities.

The new policy to invite Foreign Direct Investment (FDI) in to education has its advantage as well as a downside. This is a welcome move, provided the investment is in line with collaborative ventures, whereby a school or a department from a prestigious foreign university runs its courses in our public institutions. It will be sad if FDI is to promote foreign university business and is out of reach for millions of our students who cannot afford their high fees. What we need is more investment in our public institutions that can benefit a large majority of students. There are quite a few private universities in India where the wealthy and high income families send their wards to study. Most private universities are beyond the reach of millions of students who are far below the top rung on the social ladder. FDI should come into the public institutions so that a large majority of students can have a share of the FDI pie. It is stated that nearly 94 per cent of the education cess that was collected last year has remained unspent. So, FDI is welcome if it is used to promote high quality research in our public universities, but it cannot bring scholars, researchers and faculty members. Today, many thousands of faculty positions are vacant. Since the government does not have enough resources, attempts at cost cutting are being made by withholding recruitment or hiring guest faculty who have neither a commitment to the institution or to the students except for the honorarium. If the FDI is used for improvement of institutions, and the national budgetary allotment is used for hiring top class faculty with attractive remuneration, universities will be able to get outstanding persons to join and contribute to quality teaching and research to raise the universities to be one among the top.

CONCLUSION

Antonio Garcia Cubas in 1893 said: "Public education is the foundation of the prosperity of the nation." Let us reimagine our universities to attain glory like our ancient universities, such as *Takshashila* (*Taxila*) and *Nalanda* where students from across the world used to come to attain specialisation in over 64 different fields of study that include the Vedas, Philosophy, Medicine (Ayurveda) and Surgery, Sciences (agriculture and astronomy), Politics, Warfare, Commerce, Futurology, Music, Dance, besides Martial Arts. *Nalanda*,

a residential university, had the largest library of the ancient world and had thousands of volumes of manuscripts on various subjects like grammar, logic, literature, astrology, astronomy, and medicine. These universities were known for their excellence in teaching and research and attracted scholars and students both from within and outside India. Our public universities need to be strengthened on these lines by improving the infrastructure, quality of faculty and teaching that extends beyond classrooms. Reimagining higher education is to make efforts to establish our universities as the global hub of education on the lines of *Nalanda* and *Taxila*.

Re-imagining is not about getting Harvard and other top class universities to open universities here, but to make our own Harvard, Cambridge, Oxford by investing heavily in education, giving the right funding, fillip and encouragement for quality research in our institutions. Student data and the responsible use of it, faculty training, investing in quality research, meshing of institutional study with online study, capsule lectures, and hands-on training should be integral parts of the course are a few possible strategies to be put in motion.

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SCULPTING THE UNIVERSITIES OF FUTURE
THE INDIAN WAYS

K VIYYANNA RAO

India had the first and foremost universities in the world, including the Nalanda and Takshashila universities founded during 7th century BCE. Following the British model, the first university was established in India on 24th January, 1857 at Calcutta. In the scheme of things, the choice is perhaps between the traditional Indian Style of Nalanda and Takshashila or to continue to follow the British model in the years to come. Over time, the Indian HEIs have distanced themselves even from these and started embracing the American pattern. This is unfortunate for a country like ours which inherited a treasure trove of knowledge from the past. The best way that could be pursued is to discard all that is western and design our own material, methods and processes. It is time now that we convert 80 per cent of the existing universities as skill-based universities, and the remaining 20 per cent can be multi-faculty general universities to teach all kinds of Arts, Humanities, Social Sciences and those related to the human enlightenment.

PRELUDE

In 1948, Dr Sarvepalli Radhakrishnan, who was then Vice Chancellor at the Benaras Hindu University and the past President of Association of Indian Universities, was requested by the Government of India to chair the University Education Commission. The major plank of the Commission was to report on the Indian university education and suggest improvements and extensions that are desirable to suit the present and future requirements of the country. The report of the Radhakrishnan Commission remains undoubtedly a 'blueprint' for the Higher education of the country. Pandit Jawaharlal Nehru, the first Prime Minister of independent India was very unequivocal about the role that universities could play in building 'New India'. It was Nehru who wished that universities would stand for humanism, for tolerance, for reason, for progress, for the adventure of ideas and for the 'Search of Truth'. Pandit Jawaharlal Nehru and Maulana Abul Kalam Azad had firm convictions on the system of Indian education and how it should be organised and delivered. In order to

realise the above goals, the new National Education Policy drafted by Padma Vibhushan Prof K Kasturirangan, proposed many a measure including new institutional architecture (i.e., the establishment of National Education Commission, Higher Education Grants Council, National Higher Education Regulatory Authority and many others), New Curriculum Frameworks and the integration of professions and technology to achieve a higher purpose.

If education is intertwined with the practice from the beginning, the student turns perfect both in theory and practice. In our present-day setting, there is little emphasis on the practice part. It is known that the universities of India are modeled on the lines of their counterparts in Britain. In this process, University of Oxford remained the lone standing example during those formative years. The university by virtue of its sheer dedication and the high standards it followed, leads in the World Ranks, where it occupied the first place for the fourth time in a row. Even in the QS World Rankings, 2020, it stood at the Fourth Place. Among the top 10 of QS, four of them belong to United Kingdom. In the THE rankings, 2020, there are three institutions belonging to the United Kingdom. A cursory look at the few distinctive characteristics would make us understand what it means to be 'a University'. In the case of the University of Oxford, whom we regard the role model has the following distinctions and unique features:

- Established during 11th century CE, (the exact date of incorporation is not precisely known);
- Comprises of 44 colleges located at several places of the country;
- Has the largest library network in the entire country;
- Admits around 22,000; and of them 40 per cent are from other countries;
- Has a very strong presence in music with students forming various clubs to pursue their extra-curricular interests;
- Also known for strong presence in sports, games and cultural activities; and
- Has a large Alumni Network of 2,50,000 student members, with 26 Nobel Prize Winners, 120 Gold Medal Winners at Olympics and seven Poet Laureates.

The above are a few distinctive features and if we survey the top ranking World Universities, we find many such features, unique to each of them.

Following the British model, the first university was established in India on 24ᵗʰ January, 1857 at Calcutta. This was followed by the starting of University of Bombay and University of Madras around the same time. However, India had the first and foremost universities, beginning with the Nalanda University founded during 7ᵗʰ century BCE and Takshashila around the same time. To our great dismay, neither Nalanda nor Takshashila enthused our founders in the pursuit of establishment of 'Modern Universities'; perhaps we may have to find justification in our colonial rule by the British (Ghosh, 2013). Having sailed through for over a century and a half, there is realisation that it is worthwhile to dig into the past and revive the glorious institutions of the past like Nalanda who had gone into oblivion.

The moot question in the context of the theme of *Reimagining Indian Universities* is the one that pertains to the choice of the suitable model. In the scheme of things we are discussing, the choice is perhaps between the "Traditional Indian style of Nalanda and Taxila" or to continue to follow the British model in the years to come (Puri, 2015). Over the years, the Indian HEIs have distanced themselves even from this and started embracing the American pattern with the advent of computers. The choice now got expanded to three instead of two. The belief/claim that Indian Higher Education Institutions (HEIs) would acquire the global characteristic and thus emerge as "world class institutions" is yet another contentious issue, clouding the fact that universities in China, Singapore, Japan, Germany, Sweden and many others are also making it to the best of global universities, following their own models. Under these circumstances, this would be the first issue to be resolved in the way forward for reimagining Indian universities.

While writing for *Harijan* on 2ⁿᵈ November, 1947, Mahatma Gandhi expressed the opinion, "there prevailed a mania for the establishment of new universities in the provinces". Going further, he remarked that there should be a proper background for the establishment of a university, in terms of adequate number of schools and colleges that would support the university by providing feeding numbers. He was of the view that people who want these new institutions, should provide the necessary resources and guard them. Long ago, he denounced the influence of colonial system of education and felt that the Indian youth would get alienated from the mainstream, and there should be scope for 'career-based thinking'. The fall out could also be a general disdain for manual work, scope for creation of a new elite class and the attendant problems of urbanization (Barua, 2018). What Gandhiji

had visualised at the time of independence, has come to be true in all respects. It is for this reason that he had set out three major goals for education: (1) Moral development of a person; (2) Lifelong learning; (3) Integration of knowledge with the work. Espousing the principle of *Nai Talim* (basic education for all), Gandhiji said that knowledge and work are not separate. The present focus on "field-based experiences" is nothing but keeping in tune with what Gandhiji hoped to put in place. The question in this context is: Are we attempting to reimagine the Indian universities in the perspective of Gandhiji?

FLAGSHIPS OF THE PAST

Radhakrishnan Commission

The observations and recommendations of the Radhakrishnan Commission (GoI,1962) deserve serious attention in the present context for a variety of reasons. First, it had set out the basic aims of education. Second, it spelt out very clearly the specific functions as a university. Third, it specified the standards of education that need to be upheld all the time. Fourth, it recognised the significance of teaching profession and thus recommended the compensation of high order. Fifth, it suggested a comprehensive list of courses of study to make education wholesome. Sixth, the commission had laid down the standards of teaching in terms of the updation of the teachers and conduct of refresher courses. One interesting observation of the commission is that it felt there should a cap on the number of students to be admitted into a university and college, in order to avoid overcrowding. The commission had put this number at 3,000 for a university and 1,500 for a college whereas the National Education Policy 2020, puts this figure at 10,000. Seventh, the commission has very rightly emphasised on the need to introduce professional education in the country and identified fields such as Agriculture, Commerce, Engineering and Technology, Law, Medicine and Religious Education. Eighth, it also detailed about the medium of instruction and examination. It has the considered opinion that English should be replaced as early as possible by an Indian language. Ninth, on the reform front, the commission, keeping in view of the spirit of the constitution, suggested to the government to set up the University Grants Commission to take care of the resources crunch. A closer examination of the three parts of the report of the Radhakrishnan Commission revealed the fact that it remained undoubtedly a 'blueprint' for the higher education of the country. Unfortunately, all said and done, the landmark works of the great personalities (like

Radhakrishnan, Kothari, Yashpal) remained only as philosophical contributions and did not see that light of the day, except a few excerpts here and there.

Pandit Jawaharlal Nehru and Universities

Pandit Jawaharlal Nehru (GoI, 1964) emphasised on the fact that education is and will remain the most important means to social change. In his belief, education dispels ignorance and helps one to be free from hunger. It is education that helps people develop rationalism, empiricism and positivism. As rationalists, people keep faith in science rather than superstition, and blind belief. It is only through proper education that a better order can be promoted in the society. When Nehru interpreted the vital purpose of universities as 'humanism', he had in his mind much the needed human relations required to strike a balance in social development. The concept appears to be much more relevant in the present-day context of intolerance, subversion, divisive attitudes, fundamentalism and the growth of terrorism. Perhaps, Nehru was guided by the writings of Vishwakavi Rabindranath, who always held high ideals of tolerance and humanism. While supporting the Russian approach to education (being the strong contender of socialistic pattern of society), he felt that the very purpose of education is to nurture people to serve the community and make them apply their entire knowledge for the same, i.e., for gaining public welfare. He also emphasised the fact that one should prefer technology without scarifying the basic human values, which are considered highly essential for a civilised person. Thus, the views of Nehru on higher education are very high on ideals, yet it laid focus on pragmatism.

Viewpoints of Maulana Abul Kalam Azad on Education

Maulana Sayyid Abul Kalam Ghulam Muhiyuddin Ahmed bin Khairuddin Al-Hussaini Azad, a great Scholar in Islamic Theology, freedom fighter and the first Education Minister of Independent India for more than a decade from 1947-1958, had firm convictions on the system of Indian education and how it should be organised and delivered(Habib, 2010). It is appropriate to detail the viewpoints (Khan, 2018) of Azad here:

- It is the birthright of every citizen of the country to receive minimum basic education, to enable him/her to discharge the duties as citizen.

- Education is the force to shape and change the hearts and minds of people in every facet of life.

- It is education alone that can achieve national integration and democratic success and finally world peace.

- Educationists should build their spirit of inquiry, creativity and moral leadership among the students and thus become their role model.

- Teachers should be more dedicated to making solid achievements than in running after swift, but synthetic happiness.

NATIONAL EDUCATION POLICY–2020

In context of reimagining the Indian universities, the following observations, ideas and recommendations deserve special attention of the Kasturirangan Committee that:

- envisions an Central Education System for India which contributes directly to transforming our nation sustainably into an equitable and vibrant knowledge society, by providing high quality education to all;

- the vision for the Indian Education System is to make it touch the life of every citizen, implying the full development of human personality;

- while pursuing the same, care is to be taken to see that the Indian traditions and value systems are not sacrificed. In this regard, emphasis is laid on 'Liberal Arts' as pursued during the era of *Nalanda* and *Takshashila*;

- integrated, yet flexible approach to education, emphsising on the early childhood care and the later developmental stages;

- focus on 'high quality research' in universities;

- knowledge created by 'Quality Education' to drive the economy and make the nation proud as the facilitator of 'knowledge revolution';

- teachers are the 'change agents' in shaping the future of the children. Thus, the committee hoped that the teachers must be placed at the heart of the education process, by ensuring a motivating culture and environment. Measures shall also be taken to ensure their continuous professional development;

- new and forward looking approaches in universities and colleges, having a bearing on the spirit of service, creativity and a strong ethical compass; and

- all Higher Educational Institutions (HEIs) to emerge as multi-disciplinary institutions offering a wide variety of programmes and courses to make learning realistic and vibrant.

In order to realise the above goals, the draft proposed many a measure including new institutional architecture (i.e., the establishment of National Education Commission, Higher Education Grants Council, National Higher Education Regulatory Authority and many others), New Curriculum Frameworks and the integration of professions and technology to achieve higher purpose. In the context of *Reimagining Indian Universities*, do we need to think beyond the proposals of the NEP 2020, is the question. Attempts are made in the following pages to address this question.

THE WAY FORWARD

By now, there is enough material generated by virtue of the reports of various commissions, committees and working groups. Unfortunately, the viewpoints and suggestions of great personalities have gone into oblivion. Again, we are attempting to reimagine the role of universities in particular and higher education in general. Even after 73 years of independence, we have not been able to design an education system of our own, which is a pity. It is not about reform; it is about the total system to be put in place. In this background, an attempt is made in the following pages to recommend certain measures that may go well with the "designing of an Education System of the Indian kind."

Inducing Concept of *Swadeshi* in the Education System

India was the country which had expressed a solemn resolve to renounce everything that is foreign in nature when Gandhiji took up the "Non-Cooperation to British Government" in 1920, pressing the latter to grant self-rule; he also called for boycotting all foreign goods, titles and other honorary offices. To the surprise of even Gandhiji, people (especially women) participated in the event in a such a large measure, something that never happened in the colonial history of any other country(Gandhi Sewagram Ashram). However, despite this, we have not been able to discard the colonial system of education till now. All our universities, courses, methods of teaching, etc. are modeled on

western lines and each time, there is only an unsuccessful attempt to rethink and modify the existing system. In fact, this is not expected from a country like ours, which inherited a treasure trove of knowledge from the past. Unfortunately, even a minimum effort is not put to design our own education system. The countries of South Asia that got newly industrialised too have their own patterns, like Singapore, South Korea, Hong Kong, etc. Taking the case of Japan, through copied models of the west to begin with, could emerge successful in designing their own system of education and compete with the western countries in every possible field. Though the countries in Europe have many things in common with USA and UK, they stand apart in many other respects, especially in the field of education. Though small in size and number, each of them is distinct in producing people that lead in many discoveries. Take for instance, a small country like Sweden, remaining an example and being quoted year after year for Nobel Prizes at the Swedish Academy awards. Finland is known throughout the world for the Best Educational Initiatives and the highest spending (about 7 per cent of GDP) on education. Even smaller countries like Andorra, Luxembourg, Norway and Liechtenstein are the examples for achieving almost 100 per cent literacy. Our own neighbouring country, South Korea, reported 100 per cent literacy as per the World Population Review.

When such is the position, we need to travel many miles to reach their standards. The best way that could be pursued is to discard all that is western and design our own material, methods and processes. The preferred course of action in this regard could be:

- To dig into the past to create suitable literature based on the classical languages and modern languages. In European countries, even now, the preferred language for medium of instruction, examination, evaluation and even for writing scientific papers is their own languages such as French, German, Latin, Spanish, Russian, Ukrainian and Italian. In fact, till 1920s, there were no translations available, yet, they are leading the world. We should take a cue from them.

- To enquire into the Science and Technology that were created by our ancestors like Aryabhatta, Varahamitara, Nagarjuna, Bhahmagupta, Patanjali and many others. It is time that a serious probe is done into the scientific expedition of these great personalities to draw and infuse inspiration into the young minds of our country. So much is said about the iron pillar in

Mehrauli, but the secret of this science and technology is yet to be unfolded. It is gratifying to note that in the budget for 2020-21, the Central Government has earmarked an amount of Rs. 3,150 crore for the establishment of the 'Indian Institute of Heritage and Conservation' under the Ministry of Culture as a deemed University. On the same lines, the Government of India can take measures to establish a 'Centre for the Study of Ancient Indian Science and Technology'.

The *Gurukula* Style of Teaching-Learning

One thing for which India became famous is the *Rushi-Sanskriti*; the *Guru-Shishya parampara*. The transmission of knowledge had taken place one-to-one uninterruptedly. The *Guru* is considered the embodiment of knowledge and the duty of the disciples is to draw from the treasure as much as they can. There was no scope for distrust or lack of confidence between them. The relationship and learning were considered to be for a lifetime. Students also stayed along with the *Guru* and observed him throughout enhancing their learning and knowledge. For the *Guru*, all the *Shishyas* are equal; irrespective of the backgrounds.

The sons of the king and the folk from other sections are treated alike; given the same facilities and preference. The *Guru* had abundant love and affection for the *Shishyas*; just like their own children. The power of this style could be witnessed by knowing the fact that the Vedas – an unwritten script – were handed over from generation to generation only by the oral reciting and learning them by heart. This could be happening only when there is utmost dedication and the intensity of learning (Mukherji and Mukherji, 1953).

Even after the Vedic period, Indian education came to be regarded as one having high quality and attracting thousands of students from the far East and Europe. The standing examples for the same are Nalanda and Takshashila. Nalanda was one of the first universities to have been founded during 5th century BCE, with a strength of about 10,000 students and 2000 teachers. The students were taught Vedas, Philosophy, Yoga, Medicine, Grammar and many other Arts, besides Buddhism. Xuanzang (the Chinese traveler), who visited the Nalanda during 7th century CE, stated that the university was offering a variety of disciplines, almost the "entire circle of knowledge" then available. He had also remarked that the then Vice Chancellor of the university – Shilabhadra – was the "highest living authority" in Yoga,

and he too became the student of Nalanda to study '*yogashastra*'. The methodology of teaching appears to be similar to that of the *Gurukula* model, but one striking feature of both Nalanda and Takshashila was that these two institutions focused much on the 'advanced learners'. The methods deployed were 'debates and discussions' and the teachers were assisted by their advanced level students. During the time, it is also notable that the rulers used to organise summits and competitions to promote debates and discussions that paved the way for learning and emergence of 'new knowledge'. It is very interesting that the teachers enjoyed complete autonomy in all aspects from selection of students to that of designing their syllabi. And, when the teacher was satisfied with the performance of the students, the course was concluded. The moot question then is: can we adopt these models on a select basis in a few institutions? For that, we need teachers like Shilabhadra to steer the cradle.

Solving the Issue of Numbers

Unfortunately, for many things, there are no caps or standards in India. In respect of how many universities can India hold or how many colleges that are to be opened, what is the optimum size of a college or university, there is a big discrepancy. Going back to the times of fresh independence days, the Radhakrishnan Commission exhorted on the proliferation of universities without purpose. Whereas the National Knowledge Commission (NKC) opined that India needs about 1500 universities (GoI, 2006), the legislative power of establishing universities having being vested with both central and state governments, there does not appear to be any common policy as to how many universities India can contain, whereas the states are being very liberal in founding more number of state universities and also in granting permission for the establishment of private universities. In a way, what Radhakrishnan Commission feared is actually happening. It is therefore in the fitness of purpose that there is a serious discussion on this subject to formulate a policy on this account. In addition, in the pursuit of fulfilling the objective of enhancing access to higher education, HEIs were encouraged to open new programmes, new courses with little regard to the facilities. The situation is that there are not enough takers for these programmes. Also, there are universities in some states that are not able to meet the criteria of 12(B) of the UGC Act, 1956, to be able to be included in the list of such institutions!

It is appreciable that in the NEP 2020, there is proposed categorisation of HEIs into three types: Research Universities with

equal focus on research and teaching; numbering between 150-300; Teaching Universities numbering between 1000-2000, with focus on high quality teaching (with a targeted enrolments between 5000 and 25,000; and colleges to focus on the Undergraduate Courses, enjoying autonomous status (numbering 5000-10,000) with enrolments varying between 2000 and 5000. In effect, the NEP is putting the number of universities at around 2300 and the colleges at 10,000. In case of universities, the number proposed by the NEP is much higher than what was proposed by the Knowledge Commission. It appears that the NEP 2020 is in favour of downsizing the number in respect of colleges. As a matter of fact, there are about 40,000 colleges now under the affiliation of various universities in the states. This shall come down to about one-fourth. Therefore, there is an urgent need to solve this 'jigsaw puzzle' and come out with a clear cut policy on the numbers.

Establishment of Skill-based Universities

Over the years, by virtue of following the British model, only general universities have come into existence in India. With all due respect, it is to be admitted that they could not contribute much to the development of the nation. It is time now that we convert 80 per cent of the existing universities as skill-based universities, and the remaining 20 per cent to be multi-faculty general universities to teach all kinds of Arts, Humanities, Social Sciences and those related to the human enlightenment. As it appears, the immediate requirement for the country is the people with requisite skills that can carry on the jobs with great precision. It is for this reason, a Master of Arts' degree holder is not able to earn sufficiently, whereas a mason or plumber is able to make around ₹ 800 a day! Even unskilled labour earns close to ₹ 500 per day. Such is the pathetic situation resulting out of our present education system. Therefore, something radical needs to be thought of and implemented.

If education is intertwined with practice from the beginning, the a student turns perfect both in theory and practice. In our present day setting, there is little emphasis on the practice part. Unfortunately, there are no laboratories in many schools and colleges. Nor are the students taken out to the field to gain the firsthand account of the things. This should change. As a solution, the existing universities must be converted to skill universities, focusing on certain kinds of skills. The NEP–2020 has proposed Research Universities and Teaching Universities (GoI, 2019); instead, the idea should be to convert all Teaching Universities as Skill-based Universities, which

would only teach skills, keeping Research Universities intact. As a matter of fact, at that time of freedom movement, Gandhiji proposed only Vocational Colleges to ensure our youth turns out qualified. A standing example of the time is the establishment of National College at Machilipatnam of Madras State in 1910. It contained the training of a few vocational trades. Unfortunately, the entire concept got drifted away after independence and we embraced the Western models more than required.

Skill-based education is now proposed as an 'adjunct activity'. The All India Council for Technical Education (AICTE) has designed the National Skill Qualification Framework (NSQF) and recommended the same to be implemented among the Engineering Colleges and Management Schools, in addition to their existing curricula. The University Grants Commission (UGC) has also designed Bachelor of Vocation (BVoc) and has started extending liberal financial assistance across the country. In addition, a few state governments like Andhra Pradesh are entertaining the idea of 'Skill-based Universities', one in each parliamentary constituency. Again, at the national level, the government of India had already set up the National Skill Development Corporation (NSDC) in July, 2008 to design and implement the skill-based courses and training across the country. However, the concept has not got penetrated into the system of education in India. Therefore, the entire activity should be brought to the 'Centre Stage' and not to be pursued as an 'adjunct activity'.

Gap Year Model to be made Mandatory

'Gap Year' is a policy that came to light for serious discussion to improve upon the practical exposure of students. Earlier, universities like the University of Delhi and Princeton had made out certain rules related to allowing or re-admitting students who take a break in their studies, which could have been taken for various reasons. Taking this idea into consideration, the All India Council for Technical Education and the UGC attempted to advise the universities to extend this as a facility to their students. As a matter of fact, the idea is to send students out to the field chosen by them and allow her/him to gain some experience and come back again to the college and pursue studies with that knowledge to obtain the degree. The idea sounds very logical and appealing. Though originally thought to allow the student to be on his/her own with any activity of their interest, slowly it is being tagged to the studies of their own field. In case of teachers, all good institutions provide the facility of a sabbatical to their staff and allow

them to upgrade their knowledge and experience in the best possible manner as they deem fit. The same concept is now intended to be applied to the students and hoped that the degree one receives after a gap year would be much more meaningful and rightful. Some of the purported advantages of this idea are said to be like this:

- It gives the time to the student to pursue other passions;

- it provides opportunity to gain field experience and also earn some money;

- it could turn out to be a lifetime experience;

- the experience so gained may help the students to know his/her strengths and weaknesses better; and

- one can evaluate the utility of her/his course/study and will have the opportunity to redesign the career.

So far in many countries this remained an occasional experiment. In our Indian context, we may give a sincere trial and make it a tool to change the course correction.

Dispensing with the Creamy Layer Practice in Higher Education

There is a basic contrast in the Indian education system. As a measure of competing with the world, a practice is chosen to create certain 'islands of excellence'. By policy, governments have started favouring the establishment of these institutions and are named as 'Institutes of National Importance'. The institutions thus created include IITs, IIMs, NITs, IISERs and may others. In the same manner, Central Universities are deemed to be exclusive. Now, the UGC has taken measures to recognise a few HEIs as Institutions of Eminence (IoE) and issued relevant regulations in 2017. The idea is said to be providing a regulatory structure that enables these institutions to emerge as world-class teaching and research institutions. To promote this activity, a Secretariat is also created with the UGC. So far, about 20 HEIs are declared to be IoEs with an exclusive grant of about ₹ 1,000 crore to each of the Public Universities.

While the idea may not be found fault with, starving a vast majority of the institutions with meager funding needs to be denounced. There is already a striking imbalance in the allocation of funds between Central Universities and State Universities. While almost about 80 per

cent of the funding is received by a small chunk of about 50 Central Universities, the remaining 20 per cent is handed down to the large number of about 400 State Universities. This glaring disparity in the central allocation of funds through UGC had been brought out to the fore by many researchers. This lopsided treatment only makes the people of India feel that the so called State Universities as worthless institutions. This will in due course amount to such a situation of "calling it mad and then killing it". Under these circumstances, the options are going to be: (i) either to prohibit the State Governments to establish universities without adequate funds; or (ii) to elevate them to the status of Central Universities, if not Institutions of National Importance. One thing that needs to be noted clearly is that the colossus of Indian Higher Education is resting on the edifice of State Universities alone. Therefore, it is time that there is equity in the treatment meted out to the players in the higher education sector in India.

CONCLUSION

The economies of the world, including the education sector, are now under severe strain due to the onslaught of the pandemic. Nations are desperately craving for help in whatever manner feasible. The economies have almost come to a grinding halt. In the field of education, right from schools to colleges and universities have gone disarray. The famous dialogue of William Shakespeare in the play Hamlet, "To be or not to be: that is the question" is staring at the policymakers. And they are caught between 'online and offline' syndrome. For almost a period of four months now, no university or Higher Educational Institution (HEI) has been able to come up with a solution. There is immediacy in the matter; it cannot wait any longer. The MHRD and the UGC shall ensure that the universities (being autonomous) lay down norms and issue guidelines henceforth. The policymakers are not able to gauge the 'psychological pressure' on the minds of the students. Reimagining the Indian Universities also implies that they develop capability to act swiftly and accurately in the times of distress. Hope that we see the light glowing brighter at our HEIs in the days to come.

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GOVERNANCE REFORMS

RE-ENVISIONING HIGHER EDUCATION ECOSYSTEM IN INDIA
FOSTERING ACADEMIC LEADERSHIP

KK AGGARWAL AND AVINASH C SHARMA

In the Indian context, our existing setup of higher education has served well in raising our post-independent generation mainly by way of establishing and nurturing an effective knowledge delivering system. The emphasis so far had been on accessibility rather than quality, knowledge creation, inventions and innovations. Time has come that we update our priorities and start working on mechanisms that generate high quality educators, scientists, engineers and researchers capable of knowledge creation; entrepreneurship and capability of handling live problems; be sensitive to local needs; and develop the education ecosystem in-phase with ever-changing global requirements. Towards this goal, we as a nation have to develop a mechanism to create a pool of academic leaders with great vision and extraordinary skills to lead our education ecosystem from the front.

PRELUDE

World over, the higher education ecosystem is facing many unprecedented challenges. The race to restructure and reform the higher education systems is accelerating particularly among developing countries. Most countries have resorted to granting more institutional autonomy to higher education institutions (HEIs) with the hope that the increasing management flexibility will expedite the process of higher education development more appropriately. Countries have reached different stages and developed their own definitions of autonomy and reform measures due to disparities in their political and social structures as well as the backdrops of their higher education setups. Despite the differences, they share one common element, that is, the fact that the higher education sector is a strategic pre-requisite for long-term and sustainable development.

Quality education is essential for creating a sustainable human resource base upon which a country's development is based. Present

day India is experiencing a growing need for highly skilled managers and professionals in a variety of fields, including that of higher education. There is no doubt that investing in higher education helps nations build high-income economies with the innovation, knowledge, and technology needed to thrive in an interconnected, competitive world.

The rapidly changing landscape of higher education requires new thinking and updated practices (Aggarwal and Sharma, 2019). A question central to the issue is: What are the strategic and operational priorities for higher education in our country?

Some of the envisioned priorities for India's preparedness for HE 4.0 (referred in the context of fourth industrial revolution-IR4.0) can be listed as these:

- to accelerate manufacturing-based industries by way of 'Make in India';
- to accelerate the culture of creativity and innovation;
- to accelerate the transition from 'knowledge delivery to knowledge creation'; and
- to strengthen linkages of R&D setups to industry and society at large.

LEADERSHIP AND THE HIGHER EDUCATION ECOSYSTEM

Standard leadership assumes employees to be robots and do as they are told. This is based on man's natural instinct that only leaders are capable of making quality decisions. This is known as the 'command-and-control' leadership. Low efficiency is caused by the disconnect between management and the frontline. Management is busy dealing with problems that affect them while ignoring problems that affect the frontline, while frontline problems are only dealt with when they explode into a major problem.

Standard leadership is based on man's instinctive desire for control, which is leadership by default. A leader's changing mood controls policy of the moment and no one knows what the priorities are – mood-changing priorities reduce efficiency. Standard leadership requires a high level of supervision. Leadership style controls the level of elementary problems, which controls workplace efficiency.

The level of elementary problems is controlled, in part, by learning opportunities and leader's personal priority. Three most important traits of a leader are:

- to be courageous: there are many things one can learn in solitude, but courage is not one of them;

- to be honest and act with integrity: 'yes' means YES and 'no' means NO; and

- to be fair in action.

Character forms a critical part of leadership. Many leaders fail as a results of character issues. There are too many examples where leaders have failed the people they serve. People have lost their faith in leadership due to many public examples of personal failures of leaders.

Not everyone who is in the position of a 'Head' is eventually a 'Leader'. The meaning of a leader is dependent upon the leadership displayed and not by the position held. The person at the helm may not necessarily possess the kind of attributes which are characteristics of leadership, especially the attributes of the vision and of seeing a larger picture.

Many initiatives fail because of the confusion between what is expected of leadership and what of management (and how to align the two roles of leadership and responsibilities of management). Moreover, the primary safeguard against the corruption and financial disasters are not higher controls but making sure that one identifies, inducts/recruits, develops and appoints people of integrity into leadership positions. This is particularly true for the education sector, which in itself is expected to generate future-ready leaders who are capable of taking the nation forward.

Leadership is about 'thinking' and envisioning while management is about 'doing' for transformational change. There is a need for a tight and secure connection to translate leader's directions into management systems – to vision and action. Strategic planning creates this connection. We may say, broadly speaking, that visionary leadership is 70 per cent thinking/strategic planning and 30 per cent management.

Very often, the term *leadership* is linked with the term *visionary*. Invariably, visionary traits are considered to be among the essentials of a leader. Talk of being a visionary goes hand-in-hand with talk

of leadership. This is however not true in practice. Not all leaders have visionary traits and only a handful of them can be classified as visionaries.

It is said: "The people with vision are highly motivated. For them it's not work to follow a vision — it's joy". High efficiency workplaces are based on *visionary leadership*, where workplace policies authorise decision-making responsibility in the frontline. Limited supervision is needed with worker responsibility and visionary leadership increases efficiency by moving decision-making responsibility to the frontline. Efficiency is achieved with limited supervision. To make frontline responsibility effective, leadership must give workers the opportunity to develop quality decision-making skills and learn to trust them. *Visionary leadership can be considered to be a type of transformational leadership (or the other way around). It's rather rare though as it occurs as a natural personality trait of an individual; nevertheless, it could be cultivated to a certain extent.*

Some of the primary elements for effective leadership are:

> *Workplace Education*: It creates a workforce of quality decision-makers. Employees at all levels have the *opportunity* to discover and develop their unique skills, thereby inspiring them to become quality decision-makers. The keyword here is 'opportunity'. Not everyone will embrace this opportunity, but the few that do will inspire others with positive attitudes. This can only be achieved with visionary leadership.

> *Organisation Structure*: This controls decision-making responsibility. Visionary leadership allows decision-making responsibility all the way down to the ground level. Standard leadership limits decision-making to the management.

> *Organisation priorities*: It controls leadership style. When priority is responsibility at the frontline, leadership will seek talent, and people can depend on completing tasks with limited supervision. The policy will be, '*do it*'. The frontline develops quality decision-making skills that are also found in layers of management.

> On the other hand, when the priority is 'control', leadership will be organised in a way that all decisions must have approval. The policy will be. '*not to do anything until being told*'. Layers of management slow the final decision, while lowering efficiency.

Policies: Leadership style is controlled by workplace policies. Leaders will adapt their style to be in tune with the organisation priorities and its goals.

Today, fast growing organisations are built on leadership innovation, that is, they are not built by product visionaries but by social visionaries those who invent entirely new ways of organising human effort. The catch word is 'Leadership Innovation'.

General characteristics/attributes of a *visionary leader* include:

Providing direction: One puts forward a desired future and moves followers towards it.

Using foresight: Typically considered a part of 'wisdom', it is sometimes said that a truly great visionary leader knows what's going to happen before others do.

Is believed: One must be right or at least perceived to be right.

Motivating: If the message cannot energise those hearing it, then the would-be visionary leader would be better off teaching economics.

In theory, a strong and effective higher education ecosystem is expected to generate the best of leaders to lead organisations or nations or multinationals/global projects for the betterment of humanity at large. For this to happen, the higher education in itself needs visionary leaders and innovative leaderships.

ACADEMIC LEADERSHIP

Within the overall prescription of *leader*s and *leadership*s, we analyse its form, role and impact in the academic world and especially in the higher education sector (www.oecd.org).

The Rationale

There exists in all institutions of higher learning, certain unique core values that define the institution in the minds and hearts of most or all of its members and the associated stakeholders. Some of these values and characteristics, which are peculiar to any institution of higher education are:

- knowledge and expertise is the basis for respect and status;
- a general tendency towards a moral superiority;

- a heightened sensitivity to individual rights;

- the necessity for the autonomy of the individual to pursue and transmit knowledge;

- a belief in the university as an idea generating platform; and

- self-discipline and reflective solitude.

The above characteristics associated with an institution of higher learning necessitate the role of academic leadership to extend far beyond the conventional leadership qualities. It is often commented on for its absence, sought out but carefully 'watched' when it is present and never to be acclaimed as a personal ambition. It completely permeates the institution. While an accepted definition or notion of leadership may be elusive, most members of the academic community recognise leadership when they see it.

It is said that no one dreams of a career as an academic administrator. It is a tough job that has only become more challenging as budgets shrink, public scrutiny rises, and responsibilities continue to grow.

Fundamental changes like increased awareness of the democratic approach of decision-making, globalisation, regionalism, caste-based-polarisation and above all the extreme pace of technology driven developments are transforming our societies. This transformation, while important and necessary, is very often painfully difficult for people and the institutions. These changes produce an array of problems, which require time, attention and often a significant change in the behaviour of members of the university community as well as very different types of leadership qualities. Problems arising from issues of size, diversity, quality, technology, resources and multifaceted roles are interrelated and not easily addressed. Academic leadership roles are changing constantly and that also too fast.

Most persons assuming leadership responsibilities, while highly knowledgeable and skilled in their own discipline, are talented amateurs in leadership and management. Most have learned 'on the job', chairing departmental and senate committees, and holding other administrative responsibilities at the level of Dean and/or Vice-President. While learning on the job (apprenticeship model) plays an important role in contributing to the general preparedness of an individual to assume an administrative post that carries expectations for leadership, it is not enough. The current, complex and often

contradictory expectations and demands of peers, the institution and the society today require that academic administrators possess: a more in-depth and a broader knowledge base than that is provided by learning on the job.

Attributes of Academic Leadership

While leaders may look different and think differently, it is likely that they share the following attributes:

> *Vision*: the ability to communicate to others what a destination may look and be like and instill the motivation in others to move towards that destination;

> *Voice*: the ability to listen to what is said and not said by members of the group and to express those wants, needs, hopes and fears to others;

> *Credibility*: the ability to do what one commits to do; and

> *Commitment to action*: a sustained focus over time in often very difficult circumstances.

The likelihood that a particular person will have these leadership attributes depends in a large measure on who they are and the environment in which they have been raised and worked. The degree to which each of these attributes has been developed depends on the person's life experience, including cultural norms and values, education and training, personality, experience and access to power.

Leadership can and does occur in the domains of teaching, research and academic administration.

> *Teachers* define who will be taught, what will be taught, how it will be taught and the standards of evaluation of what has been learnt. *Leaders in teaching* are imbued with an extraordinary ability to know what knowledge is more critical to teach; excite students and peers about learning; know what teaching practices are most effective; and invest their considerable energies in the promotion of student learning.

> *Researchers* define questions and seek answers. *Leaders in research* have the ability to identify and answer particularly important questions, seek connectivity and are driven to communicate their work to others.

Administrative leadership is the force that drives the institution as a whole. Administrative positions at senior levels are vested with the responsibility, whether derived by statute, charter or articles of incorporation, for ensuring that the institution and its members fulfil their educational, social and ethical mandates. *Administrative leaders* may or may not be leaders in either teaching or research but it is expected that they are respected for their judgement, institutional knowledge and predictive powers. Such individuals are usually drawn into the institutional structure through appointment to senior administrative posts.

Any person so appointed at the top position of an institution of higher learning is expected to encapsulate all the above characteristics in one place. Defining the characteristics is rather easier than identifying and nurturing personalities that possess such qualities.

In the prevalent system so far, it is generally not possible to ensure that the head of the institution has the requisite competence, as the academic and administrative head. Most appointed ones too are willing to give up their autonomy and stand up to merit-based decisions.

The Process of Appointing Academic Leaders

Crucial aspects of the development of more powerful executives in higher education are the processes by which they are picked-up/appointed and qualities of individuals are considered. As pressure mounts to make institutions more accountable, to develop better linkages with the wider society, and to raise external funds, their leaders need to be much more than merely outstanding academics.

In many countries, the tradition has been to elect university leaders to ensure that they represent the constituency – especially the academic ones – of the university. Although election of university leaders still continues in a number of countries, the trend seems to be moving towards appointment, often by a board with a majority of external members.

The change towards appointment rather than election is a crucial part of the redefinition of the relationship between the

chief executive and others within the institution. An appointed rather than elected chief executive may find it easier to implement major changes that cut across vested interests. Nevertheless, the process of appointment is vital to ensure that the institutional leader has credibility within the institution.

Indicators of the changed roles and expectations of institutional leaders are found in the language of recruitment advertisements, for example:

> *We are looking for an outstanding individual who combines the ability to inspire and lead with a clear vision of the future direction of higher education, both nationally and internationally. The successful person will have the drive, personality and determination to develop the University to match that vision* (United Kingdom University).

> *We need a leader who, together with me [the Chair of Council], the board and a large number of qualified staff members, can lead the activities into a new millennium. You should have good knowledge about industry, business and authorities within the [institution's] sectors of activity and a good anchorage in the science fields covered … A wide network of contacts and experience from leading large knowledge-producing organizations are also important, as well as the ability to inspire* (Swedish University).

Nevertheless, a strong academic background continues to figure prominently in leadership appointments. A survey in four of the countries namely, Netherlands, Sweden, the United Kingdom and the United States that appoint their university leaders found that:

> *Despite extensive changes in university organization, key structural elements, particularly those which underpin professional autonomy, continue to circumscribe and define the powers of the Vice Chancellor; there is little evidence of broadening recruitment patterns, and those appointed to the post of Vice Chancellor continue to come from similar, pre-dominantly academic backgrounds.*

In India, a typical advertisement for appointment of Vice Chancellor of a Central University reads as:

> *… The Vice Chancellor, being the academic as well as administrative head, is expected to be: • A visionary with proven leadership qualities, administrative capabilities as well as teaching and research credentials. • Having outstanding academic record throughout and*

a minimum of 10 years' experience as Professor in a University or 10 years' of experience in a reputed research and/or academic administrative organization with proof of having demonstrated academic leadership. • Preferably not more than 65 years of age ….

An overview of the practices adopted in some countries is given in Table 1.

TABLE 1: APPOINTMENT OF LEADERS OF HIGHER EDUCATION INSTITUTIONS

Country	Process for election or appointment	Government has to approve?	Typically appointed for how many years?	Renewable position?
	Countries where leaders are usually Elected by:			
Finland	Academic staff and heads of separate institutes	No	5	Yes
France	Board or Council	No	5	No
Japan (national)	Academic staff	Yes	4	Varies
Korea (national)	All full-time faculty members	Yes	4	Varies
Switzerland	Senate or ad hoc committee	Yes, mostly	5	Yes
Turkey	All full-time faculty members	Yes	4	Yes
	Countries where leaders are usually Appointed by:			
Australia	University Council (majority usually external)	No	5-7	Yes
Ireland	Governing Body (approximately 50 per cent external)	No	10	No
Netherlands	Supervisory Board: 5 external members appointed by Minister	No	4	Yes
Sweden	Government, on recommendation of mainly external Governing Board, which first consults students and employers	Yes	6	Yes, for two periods of 3 years

United Kingdom	Governing Body, of which the majority are external members	No	7	Yes
United States (public)	State government-appointed Regents or Coordinating Boards on the recommendation of Search Committee	No	Varies	Varies
	Countries where reforms have been implemented in last decade:			
Austria	Formerly elected by University Assembly comprising professors (25 per cent), assistant professors (25 per cent), other staff (25 per cent), and students (25 per cent) from the candidates proposed by Senate	No	4	Yes
	From 2003, appointed by University Council made up of external members, from a shortlist of three candidates nominated by Senate			
Denmark	Until July 2003, elected by: academic staff (50 per cent); other staff (25 per cent); and students (25 per cent)	No	4	Yes
	From July 2003, appointed by a Board with a majority of external members			
Norway	Formerly elected by academic and other staff, with some role for students	No	3-4	Yes
	From 2003, an Executive Board with strengthened external representation may propose to the Minister that it appoints the Rector			
India	**Selected by a Search-cum-Selection Committee Constituted by the Government**	**Yes**	**3-5**	**Yes**

Source: Survey of university governance among member institutions of the OECD's Institutional Management in Higher Education (IMHE) programme, conducted by IMHE in 2003 (www.oecd.org).

"All across, an underlying thinking remains that despite an increased emphasis on general leadership skills and managerial competence, governing bodies largely continue to hold the view that universities have to be run by academics or those with academic backgrounds, because of the distinctiveness of universities as academic institutions. Thus, managerial expertise is seen as additional to a strong academic track record rather than the driving consideration in an appointment" (Bargh, Bocock, Scott and Smith, 2000).

Career Trajectories of University Administrators

Career paths of university administrators in most clusters are linear (Annexure 1). Many a time, experienced non-academics can run for a post. In other words, high-ranking administrators in most of the countries usually have academic and professional backgrounds. More often than not, those working in HEIs for several years have the potential to be institutional leaders. Most will have to build up their administrative as well as academic experience. In some cases, national politics might influence career progression. The selection process, however, is often undertaken by a rigid selection committee.

In many countries, the career path for university administrators is nonlinear. This means that one who is appointed as a university president may come from outside the university, provided he/she meets the requirements. However, vice presidents, deans, directors, and chairs of departments must come from within the university, and anyone who is qualified in the screening process may be designated.

Broadly speaking, in principle all around the world, work experience, knowledge, and capacity remain the key criteria and characteristics in the process of university post promotion. Nonetheless, there is a certain level of discrimination in terms of use of personal connections as a tool to reach the top posts of university administrators. In the sense of political culture and practices, higher education institution administrators indicate that they must have good communication with senior officials of the university and the ministry to gain their political support.

To sum up, in most cases, university administrators had started their careers with a teaching job before taking up an administrative post. The common criteria in selecting high-level university administrators to lead higher education institutions include not only academic excellence and exceptional management skills, but also

loyalty and morality. The advantage of a linear system is that the administrators are respected as academics. However, the nonlinear system also opens up the opportunity for those who have experience in management and administration. The most appropriate choice depends very much on the institutional culture and background of the higher education institution.

ENSURING ACADEMIC LEADERSHIP – SOME RECOMMENDATIONS

Accountability at the level of leadership is an extremely sensitive but an important issue. By virtue of the position itself, being in the public-eye, almost every decision/action is under continuous scrutiny from different stake holders. It is still desirable to have in place some robust mechanisms to ascertain the impact of the leadership qualities. Various parameters for this may involve:

(i)   Overall growth of the institution (Spendlove, 2007):

(ii)   national and international rankings and third party accreditations;

(iii)   proactive academic and intellectual activities, and outcomes even beyond normal functioning like classroom teaching and evaluations;

(iv)   realistic feedbacks from various stakeholders; and

(v)   the quality of the out-products both in terms of student training as well as other tangible outcomes like research, inventions, knowledge creation, etc.

Some additional recommendations which need serious attention can be:

- The idea for establishment of Indian Education Services within the formal sector. This can generate a quality workforce of educators having a sharp national perceptive, and they can be nurtured to grow as a national pool of academic leaders for future.

- To develop mechanisms to recruit and retain a pool of around one lakh excellent quality STEM teachers over the next 10 years. Those can further be nurtured as 'thinking' innovative leaders.

- To develop quality assurance systems for higher education that is easily implementable, operationally feasible and has a large measure of credibility and acceptability.

The above framework has to be in line with the local needs and national requirements but also live to the international best practices (particularly, in the context of freedom and accountability).

All the above need to be appropriately integrated such that the nation can identify around 5,000-10,000 ethical visionary educators/leaders of credible stature who:

- have a vision and long-term perspective;

- have done quality research work at some stage of their respective careers;

- are familiar and sensitive to ground realities;

- are capable of decision-making;

- are capable of team building; and

- have the capacity to lead from the front.

CONCLUSION

In conclusion, it is imperative that we have in place an appropriate policy for selection of academic leaders that is done on pure academic considerations, professional and ethical credibility along with provisions of stringent '*academic leadership performance indices*' in place so as to ensure accountability of the same. Unless this is done, there is little hope of improving the educational standards and the management efficiency of our institutions of higher learning.

Note: (i) The article is based upon several informal discussions and is an outcome of various formal platforms of debates and deliberations including Roundtable of Vice Chancellors on STEM Education organised by Association of Indian Universities (AIU) and Vivekanand International Foundation (VIF), February 5, 2020, New Delhi.

(ii) Some of the contents are from VIF Task Force Report: 'Towards More Effective Education: Emergence of STEM Education In India', (2019) prepared under the Chairmanship of the lead author Prof K K Aggarwal.

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www.oecd.org. *Changing patterns of governance in higher education*, https://www.oecd.org/education/skills-beyond-school/35747684.pdf

Careers paths in some of the typical Asian countries are reproduced here from *Administration and Governance of Higher Education in Asia* (www.adb.org)

In Malaysia, the career paths of top university administrators, such as Deputy Vice Chancellors (DVCs) and Vice Chancellors (VCs) normally start as heads of departments, deans, directors of faculty, directors of a research center, or directors of a servicing center. Candidates are assessed on their work records, interest, openness, and the drive to take on new challenges, opportunities, and positions in a variety of areas.

In many leading public HEIs, university leaders cannot merely be academicians; they must also be notable scholars and public intellectuals. To become a university administrator, one should have a good academic history and the desire and drive for continuous learning and development. These can be demonstrated by advanced degrees and promotions, scholarships, awards, and recognition as an expert in a field. In addition, they must be strategic thinkers, capable motivators, and brave enough to make changes.

Gender and political inclination are not discriminated against for those seeking a post of a university administrator. There is a transparent procedure in place for public universities to advertise or to nominate for the positions of DVC and VC and to proceed with the interview process. This process is supported by a search team committee at the ministry level and a selection committee before a decision is made by the Minister of Higher Education.

In Indonesia, university administrators and leaders, such as rectors, deans, and chairs of departments, are elected by the university senate, faculty members, and lecturers within a department. The election and selection of university leaders is regulated by the laws and regulations under which the university was established. The laws also require certain qualifications for leaders such as minimum levels of education and managerial experience. Rectors may come from various disciplines, while deans and chairs of a department must be from the same or a related discipline. Individuals who apply for the position of rector should have experience in the management of faculties, departments, degree programs, or other academic units of a university.

As in Malaysia, HEI leaders and administrators are well respected in Indonesia. They are important resource persons to provide solutions for crucial issues – both at the community and national levels. Many university leaders continue their careers in high-level government offices either in the department of education or in departments relating to their professional fields. Many others go back to their academic career as professors. As summed up, ... characteristics of university leaders are as follows:

- They are reputable persons in their academic disciplines;
- they have a strong advocacy for the public interest and for disadvantaged people in the community;

- they have strong leadership; and
- they have a broad perspective and are able to observe and provide solutions to social problems.

In Philippines, there is no discrimination in obtaining the post of university administrator. Any individual – whether from within the HEI or elsewhere – who possesses the qualifications as publicised by the governing board may apply for a university presidency. Candidates are screened extensively by a search committee created by the BoR. The governing board appoints the president for a term of 4 years with possible reappointment for a further term. After completion of the term, but before retirement, the outgoing president has the option to join the faculty with the rank of university professor.

Vice presidents, deans, directors, department chairs, and other equivalent administrators who possess the required qualifications and pass the screening committee have tenure. A specific term for the administrative post is designated by the governing board upon the recommendation of the president. After finishing their term, they are able to return to teaching with their usual academic rank.

In Thailand, leadership, managerial and analytical skills, self-confidence, and high academic achievement with professional title or national or international recognition are the common characteristics of high-level university administrators in leading universities. Global vision and creative and strategic thinking are other significant elements needed for university leaders. The selection committee chooses HEI administrators, while the university council provides the final approval. A linear career path is applied to university administrators in some universities in Thailand. Nevertheless, the career path for the majority of administrators has been nonlinear.

HEI administrators from Indonesia, Philippines, and Thailand identified the following key characteristics of high-level university administrators:

- strong leadership traits and potential;
- intelligent and highly educated;
- possessing an earned doctoral degree in a relevant field;
- well-informed and recognised as an academic leader;
- visionary, with both local and global orientation;
- high level of moral integrity without any record of wrong-doing;
- extensive administrative experience in higher education;
- good community relations;
- family man or woman; and
- physically and mentally healthy.

In Cambodia theoretically, there is no discrimination in the process of university post promotion on the grounds of gender or political inclination,

as the promotion of university administrators is carried out in accordance with fixed regulations. The common characteristics of high-level university administrators in leading public HEIs in Cambodia are seniority, work experience, and non-political position. Public HEI administrators are selected from the lower level administrators and then appointed by the government.

In Vietnam, rectors and vice-rectors are usually selected from the faculty. However, the vice-rector position may be given to one who possesses an administrative position. As in most of the countries, the candidate has to undergo a certain process to become rector of an HEI namely trust of the faculty and staff through voting; the recommendation of the party; and appointment by Ministry of Education and Training (MOET) or a higher management unit. At the MOET level, there are no regulations to limit the nonlinear appointment of a rector. Nevertheless traditionally the potential rector has to pass linear positions such as head of department, dean of faculty, head of a support office, or vice-rector.

REIMAGINING THE INDIAN UNIVERSITIES
CONSTRUCTS AND CONSTRAINTS

VINAYSHIL GAUTAM

Reinventing or re-envisioning the Indian university system requires a multi-pronged approach the first step to which would be creating a shared sense of direction it should take. This will require a group of dedicated and accomplished practitioners and thinkers to be in dialogue amongst them to keep abreast of all the changes that the education system requires. Taking pride in the achievements of the ancestors, is a matter common sense and realistic wisdom. There seems to be a great need of strengthening cadres of people with expertise in traditional learning to carry out the promotion and pursuit of their objectives in modern idiom. While envisioning the Indian universities' system, what is also required is recognition of the diversity of requirements and standards which help to meet the needs. Change will have to be at many levels. It would be from assumptions at the highest level of governance of this country to the lowliest execution paradigms. Realistic envisioning will need fast paced execution. In nutshell, there is a need to have a balanced assessment of what is needed, in what proportion and at what pace.

Reimagining universities, amongst other things, involves the creation of value, which need to be as per the demand of times. It is also an attempt to look at the existing values of the university system for a proper weeding of those values, which may not be relevant any longer. The alignment of the values retained from the past and the creation of the relevant values must be seamless and smooth. The two streams must be mutually compatible and integrated on the essentials of a given focus. This may not be always easy or simple because by definition, each set of values gets its own protagonist and champions. People identify with those values that further their identity and are integrated with it.

Consider a debate which was woven around the university system in India in the late 1960s and the early 1970s of the last century. The focus was on the relevance and the outcome of the education process. One group held that all education must be 'useable' and relevant to

the market, while there was another group that was equally vocal. It held the view that the university system should pursue knowledge for the sake of knowledge. Viewing it through a utilitarian prism was not necessarily helpful or desirable. Like many debates, this debate withered away without a resolution. Reimagining the Indian University System in 2020 has this baggage, amongst others to carry. This is especially true for new universities which are being planned. During the ongoing COVID 19 experience, in June 2020, there has been a talk of making a 100 universities focused on 'online learning'. The processes and content of this effort are yet to be brought into the public domain. It would appear obvious that certain disciplines are more prone to the online method than others. Similarly, within disciplines, certain topics are amenable to the online method, others may not be.

As of now, there are roughly 1041 universities in India as per the data of University Grants Commission (UGC), of which Central Universities are 54, State Universities 412, Private Universities 356, Deemed Universities 124. Several universities are in the pipeline. The lay of the land shows that any attempt at designing a policy of higher education has been largely at the central level. There are patches in the 73-year-old history of the republic where successively different types of central education policies were experimented with. Some were motivated and accompanied with due jostling for and against. Allowing for a few of the universities to be a part of the policy planning constructs of the day, their longevity was determined by the longevity of that given line of thought having political dominance. Their longevity was also determined by the primacy of that cult of political thought having a political clout in the national political frame of the day. This kind of analysis cannot be a replacement for the chronological analysis and evaluation of the same.

Two things emerge. In the last 10 years, several stymied attempts have taken place relating to some key issues of educational operations of this country. The favorite one is whether UGC should exist or not. It says volumes about attempts to reimagining Indian Universities too. UGC exists today, firing on 4 cylinders. Doubts have been raised about the efficacy and status of All India Council for Technical Education (AICTE) and not to forget the Medical Council of India (MCI), and other related institutions focused on a single sector of learning such as Medicine, Agriculture etc. Each attempt at change have successively raised its own storms – sometimes in a teacup. After the first flush of

foray, for and against the existence of these institutions have subsided, the system continues with its 'usual pattern' of handling higher education. Occasionally, some public opinion leader raises issues of the position of Indian learning institutions in the reputed ranking orders, originating from different parts of the world. The sense of affront at an obvious lack of adequate global status in such rankings is short lived and allowed to patter out. The 'who's who' of the country and the socio-political elites continue to fund their wards' education abroad in institutions which strengthens their social status and indeed lubricates their wards' entry into enviable employment streams and gallop upwards in it.

This may be an appropriate occasion to add that not only restructuring of university system has been attempted periodically in the past, but various attempts have been made to restructure, redesign and reaffirm also at the college level. All said, not enough has changed. Ultimately, resolutions among contending options is mostly arrived at that by the relative strengths – political and otherwise – of the contending points of view.

In the meantime, many educational institutions have become sinecure of out-of-job politician/ businessmen looking for domains to invest in. Indeed in some cases Non Resident Indians (NRIs), who having come to grief in the land of their adoption, are noticed to have decided to come back to the land of birth and re-discover their 'national fervour'. Many a times, what comes in this fervour, is the idea of setting up educational institutions.

There seems no way of preventing or mitigating this, let alone reversing it. Inter connectedness of the different verticals of the decision-making theatre in the country, make them fairly unassailable in the decision-making domain. Many such institutions do well for themselves and interestingly some have migrated a few of their branches abroad. This gives them enormous maneuverability.

Reimagining a system under such circumstances becomes a complex process. It would be plausible to argue that reimagining universities can be greatly facilitated through the aggies of a new system or through freshly designed up regulatory systems/institutions. Getting the older one on track may be a complicated business.

In the meanwhile, in the history of the university system of nations who acquired independence around the same time as India did,

continue to be variegated. There are some which have shoved ahead and the well-heeled amongst Indians also love to send their wards to such universities. Some university names from Singapore come easily to mind. There are other countries where the research culture in the university system is relatively weak and the prosperous families there also send their wards to USA, Canada, UK and comparable environments. The research culture or otherwise of the university systems across the world apart, there are unique defining characteristics of university systems elsewhere.

In Malaysia, universities offer comparative religion classes. This approach breeds inter-religious tolerance. In India, this is not that common. Indeed, some are of the view that Article 30 of the Constitution and its sub-clauses give an unusual twist to the matter. This kind of situation requires a fundamental rethink. If religious amity is to be further rooted in the learning psyche, it should get institutionalised at the level of offering a learning opportunity, in the formative years of one's growing up. In several countries across the globe, at tertiary levels, universities and institutions are increasingly offering unique degree courses. Students should also be encouraged to interact with members of different religions and visit various houses of worship as part of the course work. Some countries in Asia have done this successfully.

Many nations in the tropical universe, encourage setting of centers for inter-cultural and multi-cultural education. Their lesson plans at curricular material helps to improve the understanding of countries and cultures other than their own. In India, such examples need to be far more common than they are today.

At the level of comparative studies, there is another example. Say, in Peru, they have the Andean Project on peasant technologies. It is devoted to what can be called affirmation of the Andean culture. Their education system is based on a simple conviction. At the primary level of business knowledge, they believe that whereas external inputs are welcome, they need to be embedded on the substructure of their intellectual heritage seedbed. They never let themselves forget that they have been self-reliant for centuries. There is a collective ownership of ancestry which is seen by all as a hugely binding factor. India does not seem to have recognised this approach sufficiently to truly realise the strengths of its collective, shared scholastic heritage and excellence to build upon it. Mental blocks of sectarian identity, which some carry as a cultural baggage, comes in the way of creating a truly Indian and

comprehensive package of knowledge that would serve the cause of Indian developmental processes and managerial excellence. This is a critical step towards reinventing universities in India.

Somehow, in Indian educational psyche and the educational narrative, the British colonial experience looms large. References to Macaulay are copious but recognition of its true evaluation is both limited and flawed. There is no plausible reason why India should not reverse it, if it is banal and moved beyond it. Many cultures have done so. This is also what is meant by 'creation of a value' (referred to in the opening sentences of this write up). Peru attempted the contextualisation of its agricultural education curriculum; India confined itself to an approach which had no biases for the indigenous learning assumptions. This created a unique framework for a learning ambience.

 It is not as if attempts were not made in India to revive some of the traditional methods of learning, but the focus was predominantly on the 'processes' rather than the 'content'. Amongst the non-Hindu groups, 'indigenous perspective' came to be viewed as an entity dominated by the needs and pre-eminence of religious learning. For the Hindus, state patronage was not considered unnecessary. The story does not stop there. Many richly endowed trusts of the Hindus from Mata Vaishno Devi to Sri Venkateshwar Temple Trust were taken over by the government. Although the donation money was to an extent used to improve that temple infrastructure, there was little utilisation of the fund received as donation to the temple for furthering the cause of religious learning on Hinduism or for that matter even towards the exploration of Hindu philosophy. Such a situation may or may not be commented on, but it cannot be ignored either. On a visit to any country with ancient roots one witnesses respect for the past repositories of ideas, learning and analysis. Taking pride in the achievements of the ancestors, is a matter common sense and realistic wisdom; it need not necessarily be coloured with denominational affiliation.

Consider the case of China – a so called 'Communist country'. Their respect for indigenous medicine is humongous. It has been given no religious overtones in its exploration, usage or packaging. It has its patrons in the education world, in the governance system but not the least in the business communities. It is today one of the most significant exports of China. In India, Ayurveda has been remitted to Hinduism and Unani to Islam!

Take the comparisons further afield to understand the values underpinning the knowledge world in India. In India, primacy of the patronage has gone to Allopathy. The All India Institute of Medical Sciences (AIIMS) came in and that is where money was poured in for research and development. Ayurveda, Unani and others remained at the fringes, if at all, with parallelly-named institutions. The coming in of the alternate governance dispensation at the Centre has seen some of this change. For example, 'Ayush' is being increasingly talked about. However, what this has changed on the lay of the land for educational learning and the university system remains to be seen.

There seems to be great need of strengthening cadres of people with expertise in traditional learning to carry out the promotion and pursuit of their objectives in the modern idiom. This is a cadre which needs to be nurtured for taking some initial steps in this direction. If this could happen, it would mark a significant beginning. The reinvented university should be equipped to manage such learning and development. One of the myriad ways in which this can be done, one would be by building and delivering sensitisation modules in teacher training programmes. The objective would be to strengthen skills to supplement the knowledge of those familiar with heritage learning alongside that of the nuances of contemporary ethos.

Reinventing or re-envisioning the Indian university system requires a multi-pronged approach, the first step to which would be creating a shared sense of direction it should take. This will require a group of dedicated and accomplished practitioners and thinkers to be in dialogue amongst them to keep abreast of all the changes that the education system requires. This system itself requires a multi-level approach. It would need operating in varying manners in different domains of learning, in different parts of the country, recalibrating its thrust, focus and purpose as per local requirements. One University Grants' System can help creating a bottom line of standards. However, it cannot be the answer to a pluralistic learning environment embedded in the eco-system from the frozen tips of Himalayas to the gay-abandon of the gusty waves of the Indian Ocean lapping the shores of Kanyakumari. The regional and local bodies also have a role to play.

While en-visioning the Indian universities, what is also required is recognition of the diversity of requirements and creation of standards which help to meet the spectrum of needs and are built up on a sub-structure of core standards. The idea and system of the Higher

Education Forum was a foray in this direction but needed to be developed both strategically and conceptually.

The re-envisioning of the university system in India requires the ability to enable these institutions to serve as the forum of inter-regional dialogues and action. It needs to be appreciated that the distillation of achievements of indigenous arts and crafts is an integral part of the making of a good citizen. So also, recognising and projecting the ideas, concepts and achievements of Indian collectives and methods, rooted in Indian soil, is an important component of proper education. Illustratively, the thoughts and paradigms of say the Ahom Dynasty, the Chalukyas, and others are examples that cannot be brushed away as something which will emerge and exist on its own. It has to be nurtured, sustained, developed systematically and organically.

The debates such as those between utilitarian pursuits of knowledge and pursuit of knowledge for the sake of knowledge cannot be allowed to come in the way of autonomy of enquiry.

Autonomy of enquiry is central to the envisioning of a university. The struggle which currently one sees in certain quarters, is to seize the intellectual assumptions and paradigm of learning of the university going community, for a given school of thought. This dimension needs to be fully understood and handled appropriately.

Autonomy of enquiry can only be a surrogate to the un-biased competency of the faculty, the richness of resources and ability to pursue knowledge in all its myriad forms. For this, a certain flexibility and interfacing with the larger world would help. India needs to recognise that there will also be different modules of learning, teaching and delivery being made compatible with that of the requirements of learners who come there. This is where virtual learning will also take its due place.

There was a time when there were a handful of central universities working in an environment of ivory tower and seeking solace in the recognition which the faculty got from prestigious learning centers of the industrial west.

It is about time that we move beyond these assumptions and recognise the difference between a central university in Arunachal Pradesh and say a central university in Hyderabad. It is not only the

subject matters that will be varied but the very nature of the resource material which would have to be handled. This requires deep thinking in the leadership pattern of the university and the group of scholars who would lead it. The national regulatory system would have to learn to recognise the diversity needed in learning packages to cater to the regional requirements. It may be worthwhile to remind ourselves that the University Grants Commission did not have panel of experts in modern Indian languages till early 1970s. It took decades to recognise this need. The time constantly needed for taking cognisance of even the basic needs of the higher education, is far too large for the fast-paced changes taking place all round. Realistic envisioning will need fast-paced execution.

Change will have to be at many levels. It would be from assumptions at the highest level of governance of this country to the lowliest execution paradigms. This is not just an academic issue.

We have no universities in India that have the antiquity or pedigree that one sees in some parts of the world including UK, USA and elsewhere. The Indian scholastic tradition which at one time of history could project with pride institutions such as Takshila, Nalanda and elsewhere, unfortunately suffered a major break in tradition.

The marauding hordes of Central Asia not only literally pillaged and looted the knowledge resources that were preserved and stored for decades, but actively burnt vast acquisitions of libraries. Popular memory has it that some of these fires lasted weeks. The charred walls of Nalanda even today stand testimony to the depredations suffered. This has to be underscored, recognised and grasped as a major brake in intellectual thought that the sub-continent has suffered.

Europe may have had their parallel share of military movements in the same period of human history in the form of crusades. The crusades were also known to loot and plunder. But there was nothing in the attack on knowledge and learning, the likes of which the Nalanda University suffered.

In a nutshell, there is need to have a balanced assessment of what is needed and in what proportion. As has been said above, the education revolution in India goes back to several millennia BC before getting an abrupt brake. Through various colonial experiences from about 8th century onwards (i.e., the time of Harshavardan), where

scholastic learning tradition existed in small pockets across different parts of the country, essentially it boiled down to the patronage of arts and the literal tradition in royal courts. Outside the royal courts, gradually, devotional skills became important and learning in what as we understand now as the university system, which went by default.

Concurrently, in the west, the periods of the crusades were followed up by the period of Renaissance and enlightenment. Great paintings came up in various centres across Europe and the focus was on individual talent. In India, too, there were patches of bright flash and several architectural pieces came up. However, as is obvious, architectural master-pieces were a result of royal patronage. By definition, royal patronage requires wealth and sustained administrative support and that is another matter in altogether.

Further, it needs to be recognised that the university system in Europe created the manpower to administer the system – both internally in Europe and externally by expanding boundaries of the empires in the Americas, Africa, Asia and elsewhere. The theme of the University in Europe became *Universitas Magistrorum*: this Latin expression means universities were for creating the appropriate cadres of administration. Thus, it was that whether it is the midlands of Europe or Britain, universities were seen as a place where competent administrators could be bred. It is not as if universities came into their own in Europe to create the cadre of administrators.

Before this phase these vary universities had gone through a period which could truly be called *Universitas Literarum*. Translated from Latin, it means "Universities were a place to pursue literary activities, strengthen literacy and generally be the seed bed of trained intellectual activity".

Put simply, *Universtas Literarum* had graduated into *Universitas Magistrorum*. This is the process of the reinvention of the university system. This reinvented brief of the universities was not going to be eternal. Soon enough, a new reinvention would be needed.

In a couple of centuries, the empires began fading away. The process of colonies becoming independent began with the American War of the Independence in the second half of the 18th century. The universities were now going to be reinvented to meet the newer demands that were being made upon them.

The next stage in the growth of universities was for them to become *Universitas Alumanorum*. To put in English, universities were supposed to be for the Alumni. That phase still holds sway. This is notwithstanding the fact that various elements of composition of what mix of learning is best for an alumni-to-be, is still undergoing continuous re-evaluation. As matters stand today, progressively, technology has become one of the most powerful variables in the continued relevance of the university system. Never in any time of the history was this the case.

However, times change and with changing times, requirements change. This is also true of the pursuit of knowledge and learning, pre-university learning, dealing largely with basics, cuts through much of this. It is natural therefore that the thrust and the learning architecture undergoes a change at varying paces, without forgetting the content and delivery processes. It also has varying contents at different levels of education from primary to postgraduate levels. Change and hence reinvention is a part of this continuum. The universities therefore have a compulsion to move on.

It would be useful to remind ourselves that with the incoming of the post-world war situation and an almost universal presence of technology, exchange of knowledge became easier simpler and more universalised. The process of cross-border information exchange which began with the incoming of radars in the early 19th century went through a series of developments to emerge as the internet of things. The world had not only got integrated but was needing regulation dealing with the control access, flow, and use of data. Such an effort could only take place in a scholastic environments and it became a part of the university system to look into this also.

The opening of new departments in the university was nothing new. What was new was the emergence of a varied architecture of the university system. It was now possible in the university system to set up focus areas of endeavor called schools or more evolved units called centers or ones which have sanctions as per the conditions laid down in the statutes. It shows the recognition of varying demands on the scholastic domain or the kind of financial support these units have been able to generate.

All said, the reinvented university of the post-world war situation was bound to be a dynamic one. Each stage of reinvention would by

itself be marked for pressures of further change. Thus, the university system got cast in a dynamic mould, which was almost in a continuous stage of transition. This process in the last 60 years has grown more intense and many aspects of the university system are in a stage of continuous review. This covers everything from curriculum to funding to what can be called the 'review of the system'.

In India, the state remains the prime mover of initiating and organising the university system. In some of the other countries, the role of the state is found more limited and is confined to the design of the regulatory framework. Here too models are many. In some of the countries, the state confines itself to initiating the policy frame and the institutions themselves design their regulatory framework, which are then sanctified by the state. The present state of evaluation of university system in India would also require a more graduated and evolved approach.

Education as per the Indian constitution is a concurrent subject. The states are expected to enunciate an education policy, carefully tiptoeing around what has been in enunciated in the National Educational Policy–2020.

Whereas most universities would have faculty driven ambience, it would be necessary to recognise that a significant portion of faculty time in universities that received public funding must be devoted to issues of national, regional or local development, and it is true that the present system provides opportunities for this. This said, one must take into account that endless liberty can convert itself into a license. The funding agency has the right to ask what they are gaining out of the system that they help to run.

The reinvented framework of the university would require a recognition that learning does takes place within the portals of the university as it does outside the university portals.

Electronic media-based learning that has progressively become more universal would need to be a supplement to what can be done in the framework of university curriculum requirements. There was a time when Fox-pro or C++ was part of the first year of management education. In this day and age, it is expected that the students admitted to the curriculum will come equipped with this know-how.

This is true of other domains of knowledge, their structure and dynamics of learning as well. Today, the changing nature of jobs, work and organisations are putting much pressure on the learning process. A learner desires and needs an opportunity to exercise choices of selection after a basic framework of competency is reached.

In the re-invented scheme of the university system, continuous evaluation will have to be combined with periodic evaluation. This logic would apply not only to the students but also to the faculty and staff where the pressure on their growth process today is larger and greater than ever before. The salary structure merits a review as would the opportunities of self-growth and learning.

The time may be right for consciously and collectively, defining' reinvention', as a process in the context of the universities.

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INSTITUTIONAL AUTONOMY IN INDIAN HIGHER EDUCATION SYSTEM
NEED FOR A SERIOUS DEBATE

SANDEEP SANCHETI AND LATHA PILLAI

UNESCO defines institutional autonomy as, "a degree of self-governance, necessary for effective decision making by institutes of higher education regarding their academic work standards, management, and related activities". Academic autonomy is a generic concept, implying self-governance of a university and not limited to a narrow sense of designing the academic curriculum. Financial management and controls are also integral to the concept of autonomy at the institutional level. Institutional autonomy and academic freedom are highly interlinked. Higher education in India is highly centralised and institutions have very limited autonomy, regardless of their public or private status. This is especially true with colleges. Creating successful universities requires a supportive governance structure in which universities or colleges have the autonomy to achieve objectives, whether research or teaching, with the appropriate level of accountability. Evidences from different higher education systems across the globe suggest that countries have been modifying their governance structures and systems to meet higher autonomy and higher levels of accountability. In India too, incorporating an Indian Index of Institutional Autonomy (i3A) within the parameters of NAAC and/ or NIRF or separately, can address many concerns and ambiguities related to institutional autonomy.

PRELUDE

What would a senior academic administrator do if an angel came in the middle of the night and asked for one wish that would be granted right away? The most likely answer would be "more autonomy"! UNESCO defines institutional autonomy as, "a degree of self-governance, necessary for effective decision making by institutes of higher education regarding their academic work standards, management, and related activities" (Vlasova, 2019). Academic autonomy is a generic concept, implying self-governance of a university and not limited to a narrow sense of designing the

academic curriculum. If autonomy is examined closely, it also needs to percolate to the academic units and individual members of the faculty, ideally resulting in self-governance of various degrees at all levels. It involves the selection of students; academic restructuring; ways to examine them; and all other related aspects. Financial management and controls are also integral to the concept of autonomy at the institutional level. Extrapolating autonomy to department levels would involve the freedom to design and execute the quality of teaching, assessments, research, and extension. Autonomy to a student gives the flexibility of classes, ample time for developing skills required for the market as also getting involved in selecting major and minor specialisations, driving entrepreneurship and innovation, or other activities of their choice in a graduated manner. In short, it would amount to the freedom to make all strategic and operational choices.

This article delves into various aspects of autonomy and its implementation in higher education segments – both in the international and national contexts. The first part of this paper looks into the concept of autonomy, types, and dimensions; the second part elaborates autonomy related initiatives by MHRD; and the third part shares the concerns and proposes the concept of Indian Index of Institutional Autonomy.

DIMENSIONS OF AUTONOMY

Institutional Autonomy and Academic Freedom

Institutional autonomy and academic freedom are highly interlinked. Institutional autonomy is a necessity but not a sufficient condition for academic freedom, which is essentially the right of academic staff to decide what to teach, to determine their research questions and methods, and to publish the results of that research. At least one critic of university development regards the recent installation of systems of market competition by governments in many countries as extending regulation inimical to academic freedom. With the expansion, diversity, and complexity of higher education in most countries, the need to decentralise authority and to provide greater autonomy to higher education institutions has emerged as an inevitable approach. As pointed out by the Organisation for Economic Co-operation and Development (OECD, 2005), autonomy is usually determined by the level of capability and the right of an institution to decide its course of action about institutional policy, planning, financial and staff management, compensation, students, and academic freedom, without interference from outside authorities.

"Granting autonomy is not a one-way process or simply a set of policies to achieve successful higher education management" (Dahiya, 2001). "It is not only about what freedom higher education institutions are going to obtain from the government but also about what freedoms the government is willing to give. This involves government provisions to adopt legal reforms, restructuring of public funding mechanisms, and personnel regulations" (ADB, 2012).

International Scenario

The relationship of a government to its universities is not static. Many foreign countries have already undertaken reforms in the area of autonomy with far-reaching educational implications. For example, in the United States of America, Romo (2007) observed that the role of Ministry of Education is limited to approving new universities and university centres in the private sector. Forest and Altbach (2007) noted that each institution has the autonomy to determine its own program requirements, typically following guidelines from accrediting agencies. Yet, the ability to set a tuition fee, freedom to seek funding, and obtain freedom from state policies and regulations in areas such as purchasing are additional autonomy that public institutions are seeking.

In implementing the Dearing Committee recommendations, the United Kingdom has introduced several government initiatives (Anderson and Johnson, 1998). Australia and New Zealand have emerged from long periods of 'reform' in which governments have introduced 'user pays' and are exposing institutions to competitive market forces. Sweden has completed a larger reform designed to devolve authority from the government to institutions. The Danish government has been intervening to reduce the length of courses and time taken to graduate. Italy has granted budget autonomy and further legislation is being implemented giving institutions increased scope for taking decisions. Discussions are taking place over 'who owns the curriculum, government or universities or some intermediate agency' (Anderson and Johnson, 1998). Italian universities were overshadowed by the compartmentalised faculties and only became autonomously operating collective actors over the past few decades (Michael and Christoph 2017). Autonomy is intertwined with the educational traditions of the country and policy changes. For example, German higher education heavily draws on Humboldt's tradition of academic self-rule and rooted in the tradition of academic freedom and autonomy (Gieysztor, 1992).

In OECD countries, the changes are producing convergent tendencies, as documented by Anderson and Johnson (1998). Among Anglo-American systems where institutions had been traditionally enjoying higher institutional autonomy are demanded by their respective governments to be more accountable also.

The situation in Asian countries is different because of the sudden expansion in the number of universities, which are seen as largely instrumental for contributing to national plans in a cohesive framework in these countries. In Malaysia, the government has been concerned with many aspects of university management, but the new legislation is intended to deregulate them 'to become less hierarchical and bureaucratic institutions' (Anderson and Johnson, 1998). Subsequently launched was the National Higher Education Strategic Plan: Beyond 2020, which operationalised the Strategic Plan of the State, and promised greater autonomy for the universities in Malaysia (Sirat, 2010).

Even on the discussion about public universities, levels of autonomy vary significantly in different countries. Fielden (2008) relates four models (ranging from control to autonomy) to the status of public universities. The continuum suggested by him shows that while countries like Malaysia have better state control over public Universities, on the other extreme Australia and the United Kingdom have more independent public universities. At the same time, there are several criticisms of undue government influence in Australian universities. Countries like France and New Zealand have semi-autonomous public universities where Singapore has semi-independent public universities.

A government may exert pressure on the autonomy of the institutions in multiple ways. For example, using its legislative or regulatory authority to place preferred members in leadership positions is one way. It may exert influence over matters of salaries and service conditions of staff members. Such instances are seen not because of any legal authority, but because of its powers to withhold funds. Such influence of 'steering from a distance' using authority is very common in many countries, particularly in Asia in matters of faculty appointments, transfers and student admissions.

Autonomy in India: Need for a New Lens

In India, the concept of university autonomy has been debated almost for the past four decades. The Gajendragadkar Committee Report

(UGC, 1971) states "The concept of University autonomy is often misunderstood. It is neither a 'legal concept', nor a 'constitutional concept'. It is an ethical concept and an academic concept. This concept does not question how in a democratic society like ours legislatures are ultimately sovereign, and have a right to discuss and determine the question of policy relating to education, including higher education. The concept of university autonomy, however, means that it would be appropriate on the part of democratic legislatures not to interfere with the administration of university life, both academic and non-academic."

Autonomy is equated with dynamism and freedom that an institution will need to change the course structure and curriculum to fit the demands of the market forces. But the discourse on autonomy in India's higher education cannot be confined to the narrow lanes of academic freedom only. The idea of 'university autonomy' is defined as the freedom of an institution to run its affairs without direction or influence from any level of government. Despite the difference in conception and variations in definitions, to an institution, enhanced autonomy will give it sufficient time to focus on ways to maximise excellence at par with global institutions.

The recent changes in the Indian education system demand a relook at the concept of autonomy, incorporating the diversity of universities. Firstly, the current systems of regulation-based autonomy have ignored the recent demographic and compositional shifts in education. Currently, the number of private institutions is almost twice that of government institutions. Yet, the model of governance has been relatively slow to change. Secondly, wherever the central government has taken incremental steps, their implementation at the state level has been tardy or one of inaction. Thirdly, our understanding of autonomy does not always consider the interconnections across the related concepts like academic, managerial, administrative, and financial dimensions. Finally, most of the existing regulations are based on the affiliating model which does not seek to address the aspirational value of Indian institutions in quality and diversity. In short, institutions of higher education (IHEs) in India need to be looked at through a different lens to conceive the reality of autonomy.

National Education Policy (NEP–2020)talks about teacher autonomy as well as institutional autonomy. The policy has recognised the need for individual autonomy and opined that lack of faculty

autonomy results in poor motivation and reduced scope for innovation. NEP-2020 further envisages that through institutional academic and administrative autonomy, institutions will be enabled to: start and run novel and cutting-edge programmes; develop innovative curricula; govern more locally given local knowledge of circumstances and requirements; and set up optimal people and career management systems. For imaginative curriculum and pedagogy, institutional autonomy is seen as a prerequisite by NEP–2020.

Autonomy and Accountability

Countries across the board have different levels of autonomy and accountability. The World Bank attempted to capture the perception of task managers on this issue and found that there is variation in levels of autonomy, while across the board centralised accountability remains high. For example, countries like Chile, which are seen to be at the forefront of higher education reform, continue to maintain high levels of accountability regardless of whether institutions are public or private.

In India, there is a skewed allocation of limited funds to central universities while state universities face a paucity of funds. Moreover, the existing system of governance and regulation needs to be re-examined. The system of command and control does not promote accountability. The institutions are constantly subjected to governmental pressures and decisions are often made based on non-academic considerations. This intervention starts at the highest level with the appointment of the Vice Chancellor. Also, University Courts and Academic Councils are usually large, which prevents dynamism in decision-making (Joshi, 2011). He argues that to promote accountability, there should be complete transparency in the working of Executive/Academic Bodies and other Governing Councils of the universities and colleges. University Acts in different states should be reviewed and new technologies should be utilized for ensuring administrative efficiency.

The National Assessment and Accreditation Council (NAAC), set up in 1994, accredits higher education institutions in the country. The process has been made mandatory recently and the University Grants Commission (UGC) funding for some of the schemes is linked to accreditation. Some of the dimensions of assessment of universities is that of governance, leadership, and management. Under this criterion, there are key aspects like institutional

vision and leadership, strategy development and deployment, faculty empowerment strategies, financial management and resource mobilisation, and internal quality assurance system. Hitherto, 8,159 colleges and 364 universities have been accredited, which is less than one-third of the total number of institutions. It is, therefore, not a straightforward activity to introduce and implement accountability measures (Varghese and Malik, 2015). Ravi *et al* (2019) noted that limited assessment and accreditation capacity of the NAAC and NBA has been a significant barrier in linking the performance of an institution to autonomy and funding decisions. Moreover, they criticise that NAAC retaining the exclusive power to accredit HEIs, allows corruption and profiteering to creep into the sector. (Srinivas and Salil, 2020) point out that using the accreditation score as a single core criterion for giving autonomy or significant funding or any other policy decisions will magnify the ill effects of proxy-quality. In turn, it reduces the accountability also.

Accountability is variable and it requires a pan-India approach incorporating all forms of institutions, whether accredited or not. It is not the individual plans of public or private institutions that matter in terms of accountability, but the vision of the regulatory bodies and accreditation agencies that shall be reflecting it beyond compulsions for procedural compliance. It turns out that institutions with better autonomy may exhibit more accountability in the long term, by default, owing to its operational efficiency.

With each decision to increase institutional autonomy, governments also have to keep reassuring the public that these institutions are held accountable. The core question is getting the right balance between autonomy and accountability of universities. The challenge is to determine how much accountability is optimum (Fielden 2008, Salmi 2008). Too much accountability can lead to stagnation of innovation and potential rent-seeking, as well as potentially undermining the goal of autonomy itself (Lao and Saint 2008). However, accountability remains important, especially as governments continue to be significant financers of higher education.

Types and Dimensions of Autonomy

Various conventions and declarations have reaffirmed that enhanced institutional autonomy is critical for universities to reinvent themselves and respond to new challenges. National and regional level studies have been undertaken to study the nature and extent of autonomy

in higher education, dimensions of autonomy, and the impact of changes on the functioning of institutions. The university autonomy in Europe (Estermann and Nokkala 2009), a survey of institutional autonomy in 34 European countries identifies autonomy in the areas of academics, recruitment, financial and organisational levels where involvement of public authorities or regulatory bodies are visible.

Academic Autonomy

Key issues of academic autonomy are spread across institutional trajectory, student-cycle, and faculty career path. It is generally assumed that European processes such as the Bologna process and European frameworks have impacted many issues related to academic autonomy. For example, student selection is strongly regulated, whether by setting frameworks for admissions or by limiting student intake in specific disciplines. Many countries opt for imposing direct limitations such as setting up student quotas, instead of indirect steering by incentives.

Autonomy in Recruitment

Second is the area of recruitment and staffing, where a paradox of cost centre and expenditure centre is visible in many countries. While universities are setting up and meeting the cost centres, they rarely have the freedom to set salary levels, which is one of the highest costs centres, even with good intentions. Similarly, the study on the university autonomy in Europe (2017) shows that involvement of the public authorities in staffing issues ranges from determining – directly or indirectly – the salaries to being a direct employer of university staff. However, the trend of university officials being conceived as civil servants is on the decline across the globe. The National Education Policy of India (MHRD, 2018) envisages that all institutions, including public institutions (and aided institutions), will have the autonomy to recruit faculty and other members of their choice.

Financial Autonomy

The most common historical trend is allocating public funds as block grants to institutions. This may or may not be accompanied by outcome or performance criteria or targets. Institutions are allowed to collect fees from at least part of their student population. However, this fee may vary from a very nominal amount to a cost-based amount, depending on the type of the institution. The pattern is similar in European countries as well as in most Asian countries, including

India. Universities face difficulties in raising capital as they are constrained to operate in the financial market in most countries. This restriction is also extended in terms of using the land and buildings most of which have cultural, traditional, and historic relevance. This means formal ownership of the land, building, and assets do not necessarily provide the possibilities for universities to use them without limitations. Another common theme relevant under financial autonomy is that investing and raising money are mostly open to sponsoring bodies or 'satellite' legal entities of the universities and not the universities themselves.

From the financial angle, the granting of autonomy should not be viewed as escaping from the responsibility of providing public funding (Varghese and Malik, 2015). Instead, granting of autonomy should be accompanied by financial assistance to the institutions while maintaining the freedom of the institutions to mobilise additional funds. In effect, this will help in the capacity development efforts at the institutional level.

Organisational Autonomy

Despite the differences in the type, ownership, ranking, and levels, the broad structure of universities largely continues in the same way as it did in the past. There are differences in the internal administrative styles, but the internal academic structures have relatively less variation in countries like India. Governance structures are often prescribed by the national regulatory or legislative frameworks. External stakeholders are increasingly involved in the universities' governance structures, and especially in countries where universities have more than one governing body. In Western Europe and the United States, there is a visible shift towards a managerial leadership style characterised by positions and roles resembling CEOs in corporate bodies. Some countries have small executive management groups, comprising the Rector and a core team, with broad competences and are therefore considered to be a powerful body.

Studies by Berdahl (1971 & 1993) distinguish two kinds of institutional autonomies: Substantive Autonomy and Procedural Autonomy. *Substantive autonomy* covers the sphere of academics and research, specifically autonomy over areas associated with curriculum design, research policy, awarding the degree, etc. *Procedural autonomy* covers the non-academic areas that overlap with many financial matters as given in Table 1.

TABLE 1: DIFFERENT TYPES OF INSTITUTIONAL AUTONOMY

Substantive (Academic and Research)	Procedural (Non-academic Areas)
Curriculum design	Budgeting
Research policy	Financing management
Entrance standards	Non-academic staff appointments
Academic staff appointments	Purchasing
Awarding degree	Entering into contracts

Source: Berdahl (1971, 1993)

Many governments interfere substantially on procedural issues but vary in terms of their interference in substantive issues. Anderson and Johnson (1998) found that Anglo-American countries are more autonomous, especially on substantive issues, compared to other regions. For example, in the USA, there has always been substantial autonomy, but individual states within the federation vary vis-a-vis procedural autonomy. In Asian countries, both areas of institutional autonomy are limited. However, worldwide there is a push towards institutional autonomy across the board. Innovation in substantive areas is resource-intensive and, to generate those resources, procedural autonomy is necessary.

Higher education in India is highly centralised and institutions have very limited autonomy, regardless of their public or private status. This is especially true with colleges. Universities have some substantive autonomy in theory while private institutions have more leeway in terms of procedural autonomy. Under the affiliation system, most parent universities are responsible for regulating admission, setting curricula, and conducting examinations for the affiliated colleges under the general oversight of the UGC. Academic curricula of professional courses are subject to oversight by their professional councils. Both public and private universities can modify curriculum and propose new programmes with UGC approval but have no or limited autonomy over areas like fees. Private universities also have their fees determined by state committees headed by prominent public figures who ensure that these institutions are not profiteering. Neither public nor private universities can determine faculty or staffing salaries. However, private institutions can hire and fire faculty. Neither type of institution has external independent boards with external representation to select leadership. Prakash (2011) elaborates aspects

of institutional autonomy in India under three heads: academic autonomy, administrative autonomy, and financial autonomy.

- *Academic Autonomy* involves: a) designing academic programmes and curricula; b) autonomy to decide one's own procedure for selection of research fellows; c) adoption of choice-based credit courses; d) autonomy of departments; e) setting up of internal quality assurance cells; f) switching over to internal evaluation; g) performance appraisal of teachers with adequate weightage for research work based on quantifiable parameters; h) autonomy to establish linkages for academic and research collaboration in India and abroad; i) transparency and objectivity in the selection of faculty on an all-India basis; and j) quality of research with a focus on international benchmarks such as citation indices, and patents.

- *Administrative Autonomy* involves: a) management system in the university to encourage best practices of governance; b) head of the institution to have the autonomy to determine both the rank and the number of positions of professors, as well as associate and assistant professors; c) outsourcing of non-academic activities for efficiency and effectiveness; d) a central/state higher education tribunal for grievance redressal mechanisms; e) norms of accountability to be evolved which are open, participative and data-based; and f) charter of responsibility and devolution and delegation of authority defined for different levels within the higher education system.

- *Financial Autonomy* involves: a) provision of funds to individual institutions in an united manner to ensure greater degree of freedom; b) mechanisms for deciding the fee structure; c) scholarships to meritorious and deserving students from the lower economic strata; and d) undertaking consultancy assignments and sponsored research projects.

It can be seen that the various aspects of autonomy permeates into all areas of institutional functioning, with no difference in the nature and type of the institution.

Opting Out of the Regulatory Maze for Higher Autonomy

Institutions without autonomy suffer in inexplicable ways. Prakash (2011) discusses how, during the last many decades, higher education institutions in India have suffered a loss of autonomy due to the

prevalence of factors like interference, over-assertive bureaucracy, money power, and the inability of universities to protect their autonomy. Revisiting acts and Memorandum of Associations, alumni representations, and strong institutional leadership would all go a long way towards increasing and protecting the autonomy of higher education institutions. Fielden (2008) opines that lesser dependence on state funding increases institutional autonomy. Agreeing to this, some of the elite Indian institutions have opted for a higher degree of autonomy by choosing not to take up university status and the associated regulatory structures. These institutions consequently cannot offer degrees but instead they offer diplomas which are equally valued in the marketplace.

Currently, Indian School of Business (ISB) is one among the foremost respected business schools within the country. Despite not being a university and not offering a degree, there still is a great demand for admission as their qualifications are widely accepted as being one of the best in Indian education.

RECENT INITIATIVES BY MINISTRY OF EDUCATION AND UNIVERSITY GRANTS COMMISSION

The relevance of the autonomous status of universities is reiterated by many committees and recommendations in India, one of the recent being from Rashtriya Ucchhatar Shiksha Abhiyan (RUSA) (MHRD, 2013), which suggested amendments or legislations to ensure the existence of state universities as autonomous independent entities. It recommends the withdrawal of the state from the management functions of the university. Among other aspects, RUSA suggests the creation of buffer bodies or agencies (such as State Higher Education Councils) to carry out some of the detailed policy, planning, and supervision functions in the sector. Providing sector-wide services and allowing institutions to adopt new funding models that give them greater freedom to explore new sources of income are also recommended. Consequently, new forms of accountability through reporting on performance and outcomes in achieving nationally-set targets for the sector are also suggested. This is apart from institutionally-set targets. One of the most significant suggestions is the gradual withdrawal of the state from decisions on the appointment of Chairpersons of the Executive Council or Vice Chancellor and members of the Executive Council. Grant of special status through Graded Autonomy to institutions and Institutions of Eminence (IoE) are two special moves in this regard.

When the government in early 2018 decided to grant 'autonomy' to some twenty educational institutions, including many in the private sector, it set off a raft of comments from academics and educators in the country on the exact rationale for the move. The government for its part attempted to make the argument that its autonomy was actually 'liberating' the Indian higher education from a slew of regulations and regulators. Critics argued that this move towards autonomy was making education into a trading place with market forces taking away the real 'public' from education. In other words, the bottom line was that in the name of autonomy the government was perhaps making education exclusive and more expensive, which however may not be entirely true.

The issue of granting autonomy to institutions had also to be seen in another context: globally, Indian institutions of higher education are nowhere in the top 100 or even 200 academic standing with perhaps the bare exceptions of a few IITs and the Indian Institute of Science.   As the official refrain put it, "Recognising the need to create an enabling environment whereby Higher Educational Institutions (HEIs) can become institutions of global excellence, autonomy is pivotal to promote and institutionalise excellence in higher education. These regulations are aimed to provide autonomy to the HEIs based on quality benchmarks". The move on the autonomy front has also to be seen against a backdrop of clear suggestions from vice chancellors and top administrators of the statutory bodies' over-bearing attitude in academic affairs even to the point of getting involved in the nomenclature of courses, its contents, and even examination practices.

It is in this rationale that the Ministry of Education (MoE) erstwhile Ministry of Human Resources Development (MHRD) came up with the idea of Institutions of Excellence of two categories – Grade I and Grade II – depending on an institution's standing as assessed by the National Assessment and Accreditation Council (NAAC). Autonomy to select institutions will be coming by way of 'freedom' in several areas—to start new courses, new programs, hiring of foreign faculty, and admitting foreign students on a different and yet undefined fee structure. Some educators and academics have made the point that while de-linking the new freedom from regulators has its positive spin-offs but officially much more ought to be done to entice the private sector in strengthening higher education in India. It is not as if the private sector was not involved in higher education but that they were under a maze of regulations and regulators and ultimately feeding off on the traditional avenues to survive and flourish.

To overcome some of the above challenges, firstly, academic institutions will have to be enlightened enough to cut through the maze of regulations and regulators to see how best a rule can be utilised to one's benefit without wading into the realm of flouting the laws and regulations. Secondly, there is nothing absolute about autonomy; it is always relative and subject to built-in rules however liberal the regime may be. Autonomy relies heavily on the inter-dependence of different functions of agencies and functionaries. Leaders in a democracy may have all the powers defined in the books; yet by no means are they absolute, for the will of the masses is what would finally determine actions and policies. Autonomous colleges is another long-standing scheme by UGC established to ensure autonomy to colleges, which needs an impact review.

Autonomous Colleges

The UGC has a scheme for granting autonomous status to colleges. Some of the objectives were to allow colleges to exercise freedom in framing courses of study and syllabus, devise appropriate teaching methods and conduct evaluation and assessment independently (George, 2011). The colleges recognised under Sections 2(f) and 12(B) of the UGC Act with sufficient academic and non-academic resources are eligible to apply for the conferment of UGC autonomy. There are 746 colleges across 25 states and 109 universities conferred with autonomy status. The largest numbers of autonomous colleges are presently situated in the state of Tamil Nadu, followed by those in Andhra Pradesh and Maharashtra (Table 2).

Studies of George (2011)and Kapur (1998) show that the scheme of autonomous colleges has not made the intended progress. This is attributed to one or many of the following reasons: (i) The state governments prefer to retain the powers over government-run colleges; (ii) The managements of private colleges are concerned that they will lose their powers; (iii) In many cases, faculty members are unwilling to assume the responsibilities of autonomy and fear an increase in their workload; and (iv) There is a concern among stakeholders on the value of the college degree against that issued from the university.

These can be seen as collective and interlinked reasons. Draft National Education Policy of India (MHRD, 2018) observes as follows:

> Colleges are unable to chart their own courses, controlled as they are in many significant ways by the affiliating university. Higher Education Departments of the State and other such bodies often tend to treat

TABLE 2: CURRENT STATUS OF LIST OF
APPROVED STATE-WISE AUTONOMOUS COLLEGES

State	No. of Universities having Autonomous Colleges	No. of Autonomous Colleges (as of 19.12. 2019)
Andhra Pradesh	12	106
Assam	1	2
Bihar	2	2
Chhattisgarh	3	11
Goa	1	1
Gujarat	4	4
Haryana	1	1
Himachal Pradesh	1	5
Jammu & Kashmir	2	3
Jharkhand	2	5
Karnataka	11	74
Kerala	3	19
Madhya Pradesh	9	42
Maharashtra	10	94
Manipur	1	1
Nagaland	1	3
Odisha	7	47
Pondicherry	1	4
Punjab	4	11
Rajasthan	4	6
Tamil Nadu	12	208
Telangana	5	65
Uttar Pradesh	6	11
Uttarakhand	2	4
West Bengal	4	17
Total	109	746

Source: www.ugc.ac.in

universities and colleges as an extension of their hierarchy. All this deeply undermines institutional autonomy.

It can be seen that even in the case of autonomous colleges, the autonomy is merely theoretical and variables like state and university culture are also possible determinants of experienced institutional autonomy.

Complexities and Concerns

While many of the existing schemes and new initiatives are laudable in its intentions, concerns are arising out of the complexity of the education system in India. Sarin and Dholakia (2016) observe that Government Higher Education linkages in India have two somewhat opposite aspects: (i) an overly bureaucratic oversight and accreditation system, strong on rule imposition, but weak in quality; and (ii) government neglect of HE standards and internal governance, but continued onerous annual reporting requirements.

Granting autonomy to select institutions in the A+ or A++ category to bring Indian higher educational institutions in the top 100 or 200 global rankings is a beginning in the right direction. Autonomy in an Indian context, or for that matter globally as well, has at least four pillars with inter-linkages that would have to be carefully defined or balanced as some of them would overlap or encroach each other: academic, managerial, administrative, and financial. It is undoubtedly a complex relationship with sensitive cross-connections: for instance, without adequate finances and financial autonomy, the other three would be nothing or become dysfunctional over some time. It is synonymous with multiplying a few infinites with one zero and expecting an answer, which is again infinite. Further, it is extremely difficult for operators of autonomy to understand levels or the extent to which it can be delegated. In a university setting, for example, how would one define the roles of the Vice Chancellor, Board of Management, Directors, Deans, and students? In defining autonomy, are we blurring off the lines of functioning of various stakeholders or can it trickle down to the lowest level without much ambiguity?

Mostly everyone in academic circles will be of the view that the government's effort in granting IoE status to both public and private institutions is laudable. At the same time, a few realisations have also surfaced. In all this talk of autonomy that has been going on, a pertinent question that comes to the mind is, "Has any institution not been given autonomy to function by various regulators or regulations?" Though the departments and programmes have been given autonomy, the real challenge for the balance of autonomy is not properly understood. On the other extreme, abusing the privileges would result in the reintroduction of curb, control, and addition of more regulations to prevent the misuse of autonomy resurfaces. The fact that there are scores of higher educational institutions functioning without sufficient compliances or approvals from regulatory bodies is just one proof of this paradox.

When it comes to the aspects of managerial and administrative autonomy, there is no doubt a fair degree of overlap, which has more to do with the overall functioning of an institution on a day-to-day basis and in the context of personnel management. In a private set up, an institution of higher learning gets directions from the Board of Management, which includes a cross-section of the stakeholders, and then turns it over to the administrators and academicians for proper implementation in a system that is not problem prone to an extent. Even here, for that matter, a proper system of checks and balances would have to be in place if the so-called autonomy is to benefit all players.

Perhaps the most difficult aspect of autonomy in both government and private sectors of academia is financial autonomy. With financial constraints looming everywhere and the constant harping on a budget 'cutting', the guiding factor has always been the return on investment and value for the money spent. But, caught in the tangled web of discretion and indiscretion, government and private institutions seem to be in the same boat. The government appears to be making financial autonomy redundant through poor budgeting and lack of involvement of the stakeholders, and delayed implementation/operationalisation. Similarly, the private sector, while wanting to show that it is different and there are little to no limits to financial constraints, faces off with the same realities as that of the government. Though self-financed institutions are slightly better controlled, some have shown an inclination for unwanted overheads and little exposure to good financial practices.

Condition of affiliated colleges is another concern. Ravi et al (2019) *observe* that under the affiliating university model, the supervisory authority for most colleges is the university or a government authority—both lack the capacity to effectively regulate their constituent colleges and hold them accountable.

The existing system in India offers little autonomy to either public or private institutions and very little accountability (Reehana 2009). An argument can be made that a fair distinction ought to be made between public and private institutions keeping in mind their unique selling points. If equity, access, and transparency can be seen as hallmarks of public institutions, the private ones enjoy speed, efficiency, and diversity. The introduction of the private sector has not introduced competition into the system and offers just another means for the Government of India to cater to the expanding demand

for tertiary education. The need for system-wide accountability is needed, even for the private sector, in an environment where short-lived institutions surface. The existing regulatory system offers neither the benefits of private sector management nor sufficient regulation to protect consumers.

Towards More Meaningful Autonomy

Creating successful universities requires a supportive governance structure in which universities or colleges have the autonomy to achieve objectives, whether research or teaching, with the appropriate level of accountability. Evidences from different higher education systems across the globe suggest that countries have been modifying their governance structures and systems to meet higher autonomy and higher levels of accountability. There is an evident shift from state-controlled to state-supervised (Fielden 2008).

India's higher education system is shaped by its diverse demography, its long democratic history, unique historical value, and its tensions with modernity. If proactive steps are to be taken in the realm of India's higher education, two things are urgently needed: First, making autonomy synonymous with transparency and with the involvement of all stakeholders; second, in systematically doing away with regulations and regulatory bodies, many of whom seen as breeding grounds of corruption and nepotism; and last but not the least, must actively solicit the participation of quality institutions in the private sector to spread their wings to strengthen the quality of education and in the process augment the economic and knowledge development of India.

National Education Policy of India (MHRD, 2020) suggests a 'light but tight' and facilitative regulator. Regulatory bodies, such as the UGC, should serve as independent bodies separate from government and institutions, responsible for affairs of higher education. Such buffer bodies can have control over all funding and operational issues. However, this is rarely the case in India. CHEMS's (1998) report diagrammed that UGC in India covers five functional areas out of the possible ten. These include control over strategic planning and budget development/funding. It appears that there is a wrong notion over not giving a mandate for UGC over policy analysis, especially when it is responsible for strategic planning for the higher education sector. There needs to be some rethinking about what the UGC's mandate is and what tools it has at its disposal to implement that mandate.

Incorporating an *Indian Index of Institutional Autonomy* (i3A) within the parameters of NAAC and /or NIRF or separately, can address many concerns and ambiguities related to an institutional autonomy. An international case in context to support such a measurement is the European Universities Association (EUA) score-card. The EUA has made a significant contribution towards the measurement of university autonomy by developing a set of measures of autonomy, called the EUA Autonomy Scorecard. The Autonomy Score-card elaborated by Bennetot Enora and Thomas Estermann (2017) has over 30 indicators developed to offer an institutional perspective on institutional freedom. On similar lines, i3A incorporated as an index can give a big push to true meaningful autonomy in India.

PROPOSING AN INDIAN INDEX OF INSTITUTIONAL AUTONOMY (I3A)

As the institutional diversity, pattern, types, and nature are more varied in India than in Europe and American countries, India needs a differentiated frame to look into the issues of autonomy. Measuring autonomy can be a good start by introducing an Indian Index of Institutional Autonomy (i3A). Objective of the i3A can be to provide a detailed status of institutional autonomy in the country. It can serve as a reference point for enablers and prohibitors of autonomy. Instead of fixing a top-down approach on the indicators of autonomy, we suggest to allow the stakeholders of institutions to decide on the indicators as to how much importance they should attach to a set of perceived dimensions of autonomy. Thus, the decisions on what constitute autonomy itself will be decided under institutional autonomy. The concept of i3A can augment the existing accreditation and ranking approaches of NAAC and NIRF. Each restriction on institutional autonomy can be assigned a deduction value based on how restrictive a particular rule or regulation or practice is. This will force the regulators and assessors to be more scientific in forming regulations keeping a balance of competing priorities.

The proposed autonomy index can answer many policy questions like whether an increase in accountability standards impact autonomy; whether a specific regulatory measure hinder or further the institutional autonomy; whether the level of autonomy is related to institutional performance; how the desired autonomy can be facilitated in a robust regulatory context; and a series of similar questions.

It can evoke a new set of debates less coloured by vested interests but more surrounded by and stemming from a data-driven approach

that can provide a new measure of institutional autonomy and academic freedom in India. Measurement alone is not enough. Further studies are required to isolate variables that restrict autonomy in different types of institutions. This is particularly significant when Draft of National Policy envisages gradual scrapping of the affiliation system, while many state universities maintain parochial regionalism in its operations. Such competing values will be surfacing more in the future in the backdrop of the autonomy of institutions.

In an overall context, the ball would be in the court of the academia who would have to know the nitty-gritty of use of autonomy. For all the rhetoric in academic circles, the leaders of institutions would have to understand that autonomy is something which cannot be given but has to be taken. Indeed, the post-Covid-19 time is ripe to act and seize the opportunity to set things right.

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REIMAGINING INDIAN OPEN UNIVERSITY SYSTEM FOR THE DIGITAL AGE
MANAGERIAL PERSPECTIVE

VS PRASAD AND V VENKAIAH

Establishment of open universities heralded a new era in the higher education system in India. The open universities have brought more credibility to the Open and Distance Learning as a legitimate method of education. It has provided cost-effective educational opportunities to a large number of people in the country, particularly those who could not pursue formal education for one reason or the other, which includes geographically remote and socially disadvantaged learners in large numbers. It also provides lifelong learning/continuous learning opportunities to working population for skill upgradation and life enrichment. In the course of time, it has become a small system with huge expectations. Enlightened leadership with pragmatic vision, competent and motivated staff, adequate technology infrastructure and flexible professional management are the four pillars of the open university system. In a systemic view, weakness in any one pillars effects the system as a whole. Different levels of deficit in these pillars is leading to existential threats to the system. For bringing sustenance and fulfilling the expectations, every OU (Open University) should prepare its own 'reform agenda' reflecting its context. Reimagination of OU needs understanding of the past as well as current technologies, with a passion for its foundational values and vision for the future.

PRELUDE

"It must be considered that there is nothing more difficult to carry out nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things".

— Niccolo Machiavelli

We are living in the present with past memories and future hope. The Open University (OU) system is an institutional form of Open and Distance Learning (ODL) in India. It is an account of inside-outside reflections of our past memories and future hopes located in the

opportunities and challenges of present OU system. We are using ODL as an umbrella term for all forms of technology mediated self-learning supported by institutions. The purpose of ODL is to provide more access to quality education at affordable cost to self-learners mediated by technology. In India ODL, is provided broadly by three institutional forms, i.e., Open Universities (dedicated ODL institutions), Dual Mode Universities (conventional universities providing ODL), and Stand Alone Institutions (non-affiliated institutions). The focus of discussion in this paper is the OU system, may be with some general references to ODL system across (Prasad and Venkaiah, 2005). Reimagination is examining the alternative possibilities of structures, processes and behaviour of Indian open universities to enhance their ability to be in the present moment, the moment being characterised as the 'digital age'.

HISTORICAL TRAJECTORY

Establishment of dedicated single mode open universities heralded a new era in higher education system in India. The OU system is around four decades old, the first one being established in 1982 in the integrated state of Andhra Pradesh, followed by a national OU in 1985. There are at present one national OU, 14 state public OUs and two state private OUs. It is a small system in terms of number of universities constituting less than two per cent of total 995 universities/ university level institutions in the country. In terms of total enrolment in ODL, during the last five years from 2014 to 2019 it is around 11 to 12 per cent. It is a small system with huge expectations. It may be appropriate to look into the drives for establishment of dedicated OUs to appreciate their original intentions. Their foundational goals/ drives include:

- to meet the increasing demand for higher education;
- to provide quality higher education to 'more with less for more' and to reduce the cost of provision of higher education;
- to overcome the limitations of time and space in providing higher education by adopting flexible technology mediated self-learning mode;
- to bring more focus and credibility to distance education by innovations in methods and by offering relevant programmes in diverse fields; and
- to provide lifelong learning/continuous learning opportunities, more particularly to in-service people for skill upgradation, and life enrichment programmes to all.

Reflecting on the past experience of functioning of OUs, keeping the foundational goals as assessment markers, we may identify some significant system contributions which include the following points:

- the OUs have brought more credibility to the ODL as a legitimate method of education;
- more educational opportunities were provided to a large number of socially disadvantaged groups of learners;
- a large number of educational resources are made available in print and audio-visual forms;
- the higher education provision is made more cost-effective; and
- lifelong learning/continuous learning opportunities are provided for working population for skill upgradation and life enrichment.

The above are some of the notable contributions of the OU system. We have also inherited some systemic concerns which include:

- The OUs are focused more on the 'openness' dimension and less on the 'university' dimension, resulting in the institutions becoming more of agents for delivery of education, not contributing much to knowledge creation and extension.
- To make the system cost-effective, most of the OUs have a very small size of its own internal systems of knowledge resources in terms of small number of full-time teachers. It resulted in making the system a dependent model, may be with some advantages in early phase, and the same becoming a limitation over a period of time.
- The OU system is mainly a print-based distance education system, supplemented by audio-video mode with limited use of internet. This mono-mode is a major limitation in enriching the learning experience of distance learners.
- The governance system of OUs is mostly the prototype of a conventional system. The system mostly lacks professionalism in operations resulting in inefficiencies in delivery systems. Leadership deficit is also observed in many institutions.
- The system is ineffectually over regulated.

The present paper is a product of past, which includes both positive and negative aspects. The patterns and trends of the past were identified, with awareness of honourable expectations, to understand

the broad features of historical trajectory. In the following sections, an attempt is made to address the issues and desired responses from managerial perspective, keeping in view the interest of multiple stakeholders in the system. The present pandemic of COVID-19 has many lessons to take note of in reinvigorating the system. The pandemic has made the ODL a more useful and responsive system. It has also resulted in many challenges, mostly in terms of increasing competition, the need to address more divides in the society and raises questions of structural adequacy. In the following sections, multiple concerns are presented by raising relevant questions with the belief that reflective practitioners can address the challenges.

RELOOK AT POLICY FRAMEWORK

Policy in a democratic context is the expression of public will. It sets the goals and ways of achieving them. Presently, there is no national ODL policy in place. The ODL system is operating on the basis of the earlier National Educational Policies (1968, 1986-1992), recommendations of various Committees and Commissions from time to time and Ministry of Education (MoE) erstwhile Ministry of Human Resource Development (MHRD) directives and UGC-ODL regulations. Many experts in the field of ODL for long are advocating for a national ODL policy to bring more clarity and direction to the place and role of ODL in higher education. In the context of COVID-19 pandemic, there is an urgent need to critically look at public policies and practices in ODL from their relevance to the 'new realities'. In this regard, the Commonwealth of Learning has developed very helpful documents to guide the commonwealth countries in developing appropriate responses (Commonwealth of Learning, 2020). Despite 60 years of ODL experience in India, shared understanding of ODL philosophy and response to problems are missing among academic community, policy makers and educational administrators (Mishra, 2020). In the present times, everyone is advocating the relevance of online and distance education. Those of us who were a part of ODL from the beginning have passed through the phases of ridicule and resistance to distance education. It is nice to hear the loud chorus on virtues of the system. But we are not sure of commitment and understanding of many converts to the basic belief system of ODL. It is necessary to reiterate the belief system of ODL and emphasise the importance of making it a part of policy framework. The core elements of ODL foundational beliefs/values include:

- It is a public development good for more access to quality and affordable education, not a commercial activity;

- Technology mediated mode of education is a legitimate form of education for certain categories of learners and learning outcomes are more important than modes of education;

- It is a mode of education relevant for all types of programmes;

- Learners should be prepared and motivated for self-learning; and

- Institutions should be structured appropriately for technology mediated form of teaching-learning.

An important aspect which needs look into the policy frame is the relevance of single mode OU system. The OU in India is a historical product of social necessity, mainly influenced by British Open University model. In the 80's and 90's, policy makers expected one OU in every state. The desire is not realised as yet. There is a stagnation in the growth of number of open universities. During the two decades of 21st century, only six states have established OUs in contrast to exponential growth of conventional universities. There is also an overall stagnation in the growth of enrolment of ODL system during the last five years from 2014-2019 with only around 11 to 12 per cent of total enrolment, though the expectation was to enroll about 30 per cent of total enrollment in higher education.

In this discussion on relevance of single mode institutional form of ODL, two recent developments are to be noted. In 2020, the government launched a National Educational Policy which rightly emphasised the importance of ODL mode and has made a number of recommendations for strengthening of ODL system, but has not mentioned anything about OU system in it (GoI, 2020). The new policy envisages all the universities and colleges, properly equipped, becoming multimode institutions offering conventional and ODL progammes. Does it convey any signal to the world of Indian open universities to relook at their role? Second important development in the present context is the COVID-19 pandemic and its impact on the nature of educational system in general. Most of the prestigious public and private educational institutions are moving towards blended and online modes of education. The open universities continue to depend mostly on the print mode. The question to be addressed is, can the mostly stagnant OU system face the competition from more resourceful and dynamic public and private conventional university system in the provision of education through ODL?

In the 60 years of historical experience, it is interesting to note that the open universities have emerged as single mode ODL system as a response to the limitations of dual mode system of ODL. In the changed context of synergy of modes, multimode including conventional and distance is emerging as preferential institutional form. This form is popularly called a blended mode. Is it not time for OUs to examine the desirability of becoming multimode universities, without losing their identity as OUs, may be with a different meaning and focus. In the blended mode, 70:30 combination of conventional and distance mode is an internationally preferred ratio. The same may be applied by open universities with 70 per cent distance programmes and 30 per cent conventional progammes with same 70 and 30 per cent in modes of delivery of teaching and learning.

The issues need a dispassionate critical examination with an open mind. We understand that a few years ago the IGNOU leadership had made some hasty attempts to make IGNOU a dual mode university which was abandoned by the successive leaderships. This reform became the casualty of predecessor-successor syndrome of successor undoing the work of predecessor. These leadership centric responses cannot ensure the sustainability of institutional reforms. The reforms should be based on well informed judgment and system-based consensus. We feel that the idea of OU becoming multimode is worth examining with open mind. A creative response is the need of the hour.

REENGINEERING THE INSTITUTIONAL FRAMEWORK

Re-engineering of institutional framework is necessary to improve the performance of open universities as most of them are suffering from common cold problems of timely provision of study materials, conduct of examinations and declaration of results on time, etc. The management systems are highly hierarchical and rigid. These features may not be peculiar to open universities (Bates, 2015).

But certainly, the consequences of these features are more adverse in OU system, as teaching-learning in this system is more institution centric. In respect of administrative operations, procedures have precedence over results. In our desire to have equivalence with university status of conventional system, we have acquired some of their negative features with more serious consequences. Paradoxically, in this technology mediated form of education, most of the open

universities have very weak techno-structure in place and are burdened with a large number of unprofessional staff at lower levels. Leadership deficit and integrity deficits are observed in many OUs and many of them do not have full time vice chancellors for a long period of time.

In our desire to make the OUs cost effective, the system started with a small number of academic staff depending mostly on outside expertise to develop the learning resources and teaching activities. Initially, it worked well with a lot of enthusiasm of outside experts to contribute to the development of learning resources. Over a period of time, for various reasons, it has become difficult to get the services of capable external resource persons to develop the learning resources. The limited academic staff who are used to managerial functions in resource development are finding inadequate to the task of development of learning materials. In most of the OUs, even the limited sanctioned positions are not filled. For example, in Dr BR Ambedkar Open University, the first OU in the country, the sanctioned academic staff strength is 85 and the staff in position in 2020 is only 36. The same may be true of many other open universities as well. In this context of fast developments in the use of new technologies in ODL, we have to look into the competencies of staff in using these technologies. We have to redesign our human resource development systems to take best from the present staff and to attract the best talent to future positions.

Institutional autonomy is a major concern of OU system in India. The regulatory systems in general are becoming highly centralised, rigid and discriminatory. Instead of following the principles of 'trust, but verify', they are following the principle of 'doubt and verify'. This is true more for the open university system. There is a need to relook at the regulatory system from perspectives of flexibility and institutional autonomy—the two cardinal principles of effective institutions.

There is a need to relook at the academic organisational frame. Presently, it is discipline/faculty centric as is in a conventional system. In view of interdisciplinary and interdependent nature of academic functions in OU, 'programme-centric' academic structures may be more appropriate than discipline-based structures. May be within the broad framework of discipline/faculty area of studies, 'programme-unit' may be created with operational responsibility for total academic operations of that particular programme. Project Mode or Taskforce Mode may be used for learning resources development and for other

specific tasks which provides more flexibility in engaging experts and completing the tasks on time.

In the context of new national focus on '*Atmanirbhar Bharat*' (self-reliant India), open universities should strive to become '*Atmanirbhar Universities*' in academic, administrative and financial matters. More extensive use of e-learning Open Educational Resources (OER) and Massive Open Online Courses (MOOCs) shall make OUs more self-reliant in learning resources. The government of India and University Grants Commission (UGC) are taking a number of commendable initiatives to strengthen e-technology infrastructure and to develop new policy and regulations for online education. The Study Webs of Active-Learning Young Aspiring Minds (SWAYAM) platform and dedicated broadcast channels are very useful to offer online education. More extensive use of new technologies like Artificial Intelligence and Machine Learning, etc., to make the support systems and management systems more self-reliant. The 'social business model' in operations will make the system financially self-reliant. The main focus of re-engineering is to make the open universities as '*Atmanirbhar Universities*'.

ASSESSMENT FOR QUALITY ASSURANCE

Assessment and evaluation of performance are critical to quality assurance. The two forms of assessment, internal and external, reinforce each other contributing to institutional quality improvement and accountability. Open universities are in the process of going through the first cycle of assessment and accreditation, based on the criteria developed by National Assessment and Accreditation Council (NAAC). The open universities should take seriously this activity as an opportunity to promote 'self-insight' and 'quality assurance mindset'. Essentially, external assessment is a promotional activity of institutional development. The measurement of quality in terms of grade is to inform the institutions their levels of performance. This has always been a challenging task in terms of identifying the right areas and ways for measurement. But unfortunately high stakes are built into the grades of NAAC, with all issues associated with high stake activities. Some institutions are using NAAC grades for marketing their products, than for institutional development purposes. We hope the OUs to be an exception to this general trend in the system.

The UGC in recent years is emphasising the need for strengthening of internal quality assurance system in the form of every institution

having a Centre for Internal Quality Assurance (CIQA). It is a welcome measure. The institutions have a primary responsibility for quality and all others have secondary promotional responsibilities. Every OU should have an effectively functional CIQA for continuous quality improvement. There should be institutional flexibility in the structures and functions of CIQA. 'One size fits all' may not be appropriate. The internal quality assurance systems should be examined for their inclusiveness, coherence, accountability, innovation, and effectiveness.

AGENDA FOR REIMAGINING

 It is time to develop strength to think differently and do bold things. As Socrates said, "The secret of change is to focus all of our energy not on fighting the old, but on building the new." Building the new is always a challenging task at any point of history and more so in present times of neoliberal order where 'I' precedes over 'We', making a collective action a difficult task. In spite of difficulties we have to move forward with a Gandhian belief , "We have to be the change we wish to see." In a continuity and change frame, the reimagination agenda should focus on systemic transformation from:

- More of the same programmes to the same groups of learners to more of different programmes to different groups of learners;

- Print mode learning resources to multimode/blended learning resources with appropriate pedagogies;

- Study centre/learner centre centric support to home based support services;

- Procedure oriented bureaucratic systems to results based technology-enabled management systems led by enlightened leadership; and

- Dependency model to '*Atmanirbhar* Model'.

We are aware that the above mentioned framework is not very new and most in the ODL system may be aware of it. We are repeating them in the pedagogic tradition of reinforcing by repetition and reconfirmation of our commitment by repetition. We are also aware that there is much diversity in institutional context of the 15 public OUs in India, requiring different responses to reimagination agenda. The OUs in India may be grouped into three categories of Stage-1: Beginning, Stage-2: Middle and Stage-3: Advanced, based on their

levels of technological and academic preparedness to implement the transformational agenda for digital age operations. OUs need to relook into the great traditions of distance education as a technology-mediated teaching and learning that could embrace the new age internet-based online learning and provide new models of delivery adopting new approaches. A true distance education, in principle, is also a blended learning opportunity that depends on optional face-to-face contact between student and teacher in the study centre. Reimagination of OU needs understanding of the past as well as current technologies, with a passion for its foundational values and vision for the future. The works of the Commonwealth of Learning (COL) and other experts in the field of ODL and online learning may be used as benchmarks to assess the preparedness of open universities for digital age teaching-learning (Kanwar and Daniel, 2020).

CONCLUSION

We are advocating reform not because the system became irrelevant but because of its unfulfilled greatness. Enlightened leadership with pragmatic vision, competent and motivated staff, adequate technology infrastructure, and flexible professional management are the four pillars of the OU system. In a systemic view, weakness in any one pillar effects the system as a whole. We have been observing different levels of deficit in these four pillars in many OUs, with existential threats to the system. Every OU may prepare its own 'reform agenda' reflecting its context. It is a time for change, as John Lewis said: "If not now, then when?" Action is Wisdom.

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BUILDING AUTONOMY FOR EXCELLENCE IN HIGHER EDUCATION INSTITUTIONS

R K MISHRA AND P GEETA

India is burdened by the education system introduced by the East India Company in the mid-1800s. The system was based on the University of London model, whereby the University System was planned with teaching colleges affiliated to the universities. The main objective of the university was to prescribe rules and regulations to the teaching colleges that were expected to do exactly what they were asked for. Through this system, a culture of compliance was slowly created which has been running for many decades now. A World Bank study shows that most countries remain conservative and continue to choose to limit autonomy for the HEIs. The range includes countries like India and Azerbaijan, where HEIs in the public space have very little autonomy. Globally, there has a been shift in the policy space wherein public sector institutions are moving away from being state-controlled to state-supervised systems. Governments are re-imagining and modifying the public institutions to bring in greater efficiency and accountability in their systems and processes in order to help them achieve their objectives. Autonomy and accountability both are the critical building blocks for ensuring good governance in public sector institutions. In the past two decades, tertiary sectors across the world have been increasingly encouraged to adopt practices in tune with market practices so that efficiency and competitiveness can be imbibed by these institutions.

PRELUDE

Globally, there has been shift in the policy space wherein public sector institutions are moving away from being state-controlled to state-supervised systems. Governments are re-imagining and modifying the public institutions to bring in greater efficiency and accountability in their systems and processes in order to help them achieve their objectives. This holds true for the tertiary education sector as well, which is witnessing major changes and where the higher education institutions are contemplated to go through reforms to bring in competitiveness, innovation, and creative thinking, coupled with effective state facilitation and supervision. In this reform process, there

are two key elements – accountability and autonomy – both of which play a key role in ensuring good governance in the tertiary education sector. In order to make the HEIs more effective, there is a need to establish supportive governance structure wherein appropriate levels of accountability are clearly embedded so that these institutions can have required autonomy to achieve their academic objectives.

Indian Higher Education Institutions vis-à-vis Global Institutions

As per the 2019 Shanghai Jiao Tong University Ranking (SJTU) rankings, India has only one institution which is ranked amongst the top 400 institutions in the world and another two that are ranked amongst the top 500 institutions (Table 1). China, which is a good case for comparison, has more number of institutions in higher ranks. As per the OECD report of 2008, India's share of Gross Enrolment Ratio of the 18-23 cohort is at 13 per cent, well below other developing countries where Gross Enrolment Ratio is around 18 per cent. This calls for an immediate action and a need to streamline the tertiary education sector as India gets poised to become a rising superpower with tremendous demographic dividend.

TABLE 1: ACADEMIC RANKING OF WORLD UNIVERSITIES—2019

Country Rank	Institution	World Rank
1	Indian Institute of Science	401-500
2	Indian Institute of Technology, Madras	501-600
3-4	Indian Institute of Technology, Kanpur	601-700
3-4	University of Calcutta	601-700
5-8	Indian Institute of Technology, Bombay	701-800
5-8	Indian Institute of Technology, Delhi	701-800
5-8	Indian Institute of Technology, Kharagpur	701-800
5-8	University of Delhi	701-800
9-10	Indian Institutes of Science Education and Research (IISERs)	801-900
9-10	Jawaharlal Nehru University	801-900
11-16	All India Institute of Medical Sciences	901-1000
11-16	Anna University	901-1000
11-16	Banaras Hindu University	901-1000
11-16	Bharathiar University	901-1000
11-16	Indian Institute of Technology, Roorkee	901-1000
11-16	Vellore Institute of Technology	901-1000

*Institutions within the same rank range are listed alphabetically.

INDIAN TERTIARY EDUCATION SECTOR

The Historical Baggage

India is burdened by the education system introduced by the East India Company in the mid-1800s. Thomas Macaulay was primarily responsible for introducing the current system of education system in India. The system was fundamentally flawed as it was meant to create subservient subjects willing to serve the English lords. The system was based on the University of London model, whereby the University System was planned with teaching colleges affiliated to the universities. The main objective of the university was to prescribe rules and regulations to the teaching colleges that were expected to do exactly what they were asked for. Through this system, a culture of compliance was slowly created and has been running for many decades now.

As per the latest statistics from the UGC, as on February 2020, there are 1040 universities, 38,204 colleges and 11,443 stand-alone institutions in India. While the universities have the power to grant affiliations and issue degrees, the colleges affiliated to universities have no degree granting authority. In addition, there exist premiere institutions like the Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) and others which have some extra privileges and relatively greater autonomy of decision making.

The problem with the design of the tertiary education sector in India is that we didn't adopt the system on the lines of either the present University of Oxford model or the University of Cambridge, where the mandate of the universities is to generate new ideas, create new inventions, and be the backbone of the intellectual vigor of the country.

Structure, Systems and Functions

As per the report submitted by National Knowledge Commission (NKC) in 2006, the governance structure of India's tertiary sector is "over-regulated and under-governed". The existing system has multiple points of over-wielding and overlapping areas of accountability, which seriously limit the institutional autonomy and ultimately stifle independent thinking and lead to non-performance.

Another major lacuna in the system is that the Indian Constitution places education under the Concurrent list, wherein the responsibility

for this sector is shared between the Central and State governments. The central government is responsible for maintaining standards, while the state government is responsible for the operational issues and day to day management of public HEIs.

Funding is also shared between the state government which provides for 75 per cent of the total tertiary sector funding while 25 per cent comes from the central government.

The existing system gives little autonomy to either public or private HEIs and there is very little accountability. The introduction of the private sector has not introduced competition into the system and offers just another means for the Government of India to cater to the expanding demand for tertiary education. The need for system-wide accountability is clearly needed, even for the private sector, in an environment where fly by night HEIs appear overnight. The existing regulatory system offers neither the benefits of private sector management nor sufficient regulation to protect consumers.

Tertiary education in India is considered to be centralised and institutions have limited autonomy, regardless of their public or private status. Broadly, there are more than 5 organisations that directly or indirectly control HEIs:

1. University Grants Commission
2. National Assessment and Accreditation Council/National Board of Accreditation
3. Professional Councils
4. Department of Higher Education of the Central/State Government
5. Parent University

UGC is the apex body that coordinates and maintains standards of university education. The University Grants Commission was established in 1956, modeled on the lines of the University Grants Committee of the UK. The UGC in UK was later disbanded in 1989 and replaced by another institution, which directly reports to the British Parliament. India continues with the legacy of UGC even today. UGC as an institution has core areas of function including:

1. Strategic planning

2. Advice on funding/allocation

3. Quality assurance

4. Decision on student intake/admissions

Though UGC has a critical role to play in various aspects of the functioning of HEIs, this institution had very limited authority to take financial decisions independently as it is under the control of the government and doesn't have freedom to take independent decisions to improve the HEIs.

Maintaining standards and quality assurance is done by the National Assessment and Accreditation Council (NAAC). The All India Council for Technical Education (AICTE) is responsible for maintenance of the standards for technical education and the National Board of Accreditation (NBA) that accredits engineering and technical programs. There are 13 professional bodies that maintain standards in specific professional disciplines and are represented at both the national level and the state level. These organisations perform regulatory functions and take a rule-based view, unlike other international accreditation agencies that have a process view of things, which help institutions to move towards the path of achieving excellence.

Regulations for both public and private universities are almost alike, they have very little or no autonomy in many aspects like deciding the fee structure, faculty, staffing salaries, and so on. Private institutions however have the flexibility to hire and fire staff and faculty as per their needs. The regulatory view adopted by India clearly goes against the spirit of experimentation, innovation and creative thinking. Too many institutions for generating controls are also a burden to the national exchequer. It is important that the academics are made free from the fetters of such controls and given autonomy to do what they are supposed to do: primarily teaching and conducting research. Some experiments have been done in India, wherein some of the elite Indian institutions have opted for a higher degree of autonomy by choosing not to take up university status and the associated regulatory structures (Box-1). These institutions consequently cannot offer degrees, but instead offer diplomas, which of course, are equally valued in the market.

Box 1: New Institutions and Autonomy

Recently, a number of new private institutions offering professional oriented diplomas have been established in India by thwarting government regulation. Two institutions, Adani Institute of Infrastructure Management (AIIM) and The Indian School of Business (ISB), have been established by avoiding government regulation so that they have access to higher levels of autonomy. These institutions have opted out of university status, choosing not get accredited and have selected to offer one-year programmes as opposed to two-year programmes. These choices allow these institutions to avoid greater central and state regulations. In the case of ISB, which is one of the most respected business schools in the country, the board of the school decided not to undergo accreditation to ensure higher levels of autonomy. For the same reason, the institution has opted to offer a one-year certificate rather than a two-year MBA. AIIM too will be offering only a one-year certificate in postgraduate management of infrastructure to avoid the regulation of the two-year programme. These institutions find that despite not being universities and not offering degrees, there continue to be in great demand for their product as their qualifications are widely accepted as being some of the best in the Indian education market.

Source: Amy Yee, *Learning Difficulty*, The Financial Times, May 28, 2009.

Universities have some substantive autonomy, while private institutions have more leeway where procedural autonomy is concerned. In the case of affiliated institutions, the parent universities regulate admission, curricula design, and examinations for the affiliated colleges/institutions. Academic curricula of professional courses are subject to oversight by their professional councils.

ACCOUNTABILITY VS AUTONOMY

Accountability is meaningful only to the extent that tertiary education institutions are actually empowered to operate in an autonomous and responsible way.   —Salmi (2008)

Autonomy and accountability both are the critical building blocks for ensuring good governance in public sector institutions. In the past two decades, tertiary sectors across the world have been increasingly

encouraged to adopt practices in tune with market practices so that efficiency and competitiveness can be imbibed by these institutions. This trend has been witnessed increasingly due to rapid changes in the external environment, which renders governments to be unable to cope with the changed circumstances: technology revolution; limited capacities of the government rising awareness and expectations of the citizens; and increasing pressure for answerability to the citizens—value for money.

A World Bank study shows that most countries remain conservative and continue to choose to limit autonomy for the HEIs. The range includes countries like India and Azerbaijan, where HEIs in the public space have very little autonomy, while in countries like Nigeria and Ethiopia the public sector HEIs have been given a significant amount of autonomy. Most countries in south Asia like Bangladesh, Pakistan and others give limited autonomy to their public sector HEIs. There are however different models of providing autonomy by various countries. For example, in Nigeria, HEIs have the right to decide curriculum and are also allowed to determine the student intake annually. In reality, HEIs have to take approvals from many regulatory bodies that go on to set standards for student intake, etc. Although public HEIs, have the freedom to choose not to follow the standards set by the regulatory bodies, they still have the risk of losing public funding in case they do so. Comparatively, private HEIs in most of the countries globally, have substantially more autonomy than their public counterparts, while countries such as Nigeria, Mexico, Tunisia, and Pakistan have given their private HEIs unlimited amounts of autonomy.

There is a study done by Aghion (2007, 2008, and 2009), which shows the importance of autonomy and competition for an HEI to be successful in research and innovation. European universities were studied to understand the common factors for successful HEIs. The various factors that are similar among them include:

1. The institutions do not seek government approval for their spending;

2. Student admission process is conducted in an independent manner away from government control;

3. Institutions are flexible to pay faculty independent of government interference;

4. Institutions have their own infrastructure;

5. Institutions have freedom to hire their staff;

6. They design their own curriculum;

7. These institutions have very low to no funding from government funds; and

8. They have a relatively high percentage of their funds from competitive research grants.

This was a path-breaking research, but it unfortunately did not consider accountability and its role in producing the overall outcomes in terms of national expectations and vision. The key policy question seems to be getting the right balance between autonomy and accountability of universities. Accountability is a very important factor as governments continue to be significant financers of higher education. Any discussion on increasing institutional autonomy must also include detailed assessment of how the stakeholders may be convinced that these institutions are held accountable and are delivering their mandated goals. The challenge is to decide how much accountability is optimum. Striking the right balance is the key. Too much accountability can lead to non-performance and lack of innovation and there is tremendous scope for corruption.

DESIGNING AUTONOMOUS INSTITUTIONS

There is a two-fold approach that could be adopted:

Step 1: Decentralising decision-making powers

Step 2: Providing autonomy at the operational levels

Decentralising Decision-making Powers

Decentralising the power to manage HEIs can be done in different ways. Suggested models of how governments can manage autonomous institutions in a state-supervised system are:

(i)   Delegation from centre to lower tiers of the government;

(ii)   Delegation to a specialised buffer body; and

(iiii) Delegation to the academic institutions themselves.

Most of the systems across the world are covered under the first two models, with states delegating to lower tiers of the government – like in the USA and Germany – where the centre continues to play

a central coordinating role and retain control over setting size and scope of the sector, strategic planning, negotiating overall funding with Ministry of Finance, and coordinating with other ministries.

By delegating power to a buffer body, the central government (specifically, Ministries of Education) delegate authority over all elements of funding and operations to the buffer body. The centre coordinates broader policy issues. In order to make these buffer bodies effective, it is essential that these bodies have the financial power to make appropriate decisions. Clear performance goals for HEIs could be charted out including providing them with performance incentives and encouraging them to develop strategic plans, financial audits, transparent reporting, performance assessments, and so on. The other way to enhance performance of HEIs is by linking institutions' compliance to access to funds and removing or reducing funding if institutions fail to comply. New mechanisms could be innovated for encouraging HEIs to perform better. One method could be to make institutions eligible for other sources of funding, i.e. competitive funds, etc if they are complying and following the rules. Institutional autonomy paves way for the state to exit from the day-to-day management of the HEIs to determine their own path, thus encouraging them to have the freedom to make choices.

Providing Autonomy at the Operational Levels

Jo Ritzen from Maastricht University, in his paper on *University Autonomy: Improving Educational Output*, mentions that universities deliver more competent graduates and higher quality research if they are more autonomous and well-funded. The four different dimensions of autonomy indicated are:

> *Academic Autonomy*: Freedom to deciding on curricula, methods of teaching, areas, and methods of research and other academic matters;

> *Financial Autonomy*: Freedom to acquire and allocate funding, deciding on tuition fees, surplus and other matters related to finance;

> *Organisational Autonomy*: Freedom to set university structures and statutes, making contracts, electing decision-making bodies and persons and so on; and

> *Staffing Autonomy*: freedom to recruitment, decide salaries, promotions and such other things related to staff.

Berdahl (1971) classified institutional autonomy into two categories, namely substantive autonomy and procedural autonomy (Table 2). Substantive autonomy covers the sphere of academics and research, specifically autonomy over areas related to curriculum design, research policy, awarding degree, etc. Procedural autonomy covers the non-academic areas, including budgeting, purchasing, entering into contracts, etc. It is found that around the globe HEIs face interference from governments substantially on procedural issues but vary in terms of their interference in substantive issues. In case of Anglo-American countries, there is more autonomy, especially on substantive issues, as compared to other regions. For instance, in the USA, there has always been substantial autonomy, but individual states within the federation vary vis-à-vis procedural autonomy. In Asian countries however, both areas of institutional autonomy are limited.

TABLE 2: BERDAHL'S TWO TYPES OF AUTONOMY

Substantive (academic and research)	Procedural (non-academic areas)
Curriculum design Research policy Entrance standards Academic staff appointments Awarding degree	Budgeting Financing management Non-academic staff appointments Purchasing Entering into contracts

Under state-controlled systems, accountability is universal, intrusive, and quite rigid. Alternative mechanisms of accountability have to be evolved as a systems' move towards being state-supervised until direct control is relaxed, especially over financial matters.

Case of China

In China, since 1978, reform efforts in higher education have attempted to develop close links between the higher education sector and the market. With the phasing out of the planned economy and the diminishing role of the state, the government became increasingly reluctant to continue to subsidise higher education. In place of subsidies, the country introduced cost-recovery measures, a trend further accelerated by the rapid expansion of higher education in the years since 1999.

In 1993, *the Outline for Education Reform and Development* was developed, which gave all universities more autonomy. A law entitled,

'Higher Education Law' was enacted in 1998, which legitimatised decentralisation and autonomy for HEIs and emphasised the need for freedom of scientific research, literary and artistic creation, and other cultural activities in these institutions. The 'Higher Education Law' mandates that the State Council should provide unified guidance and administration for higher education and the local governments shall undertake overall coordination of higher education. The law details out seven domains under which Chinese HEIs are granted autonomy namely:

1. Student admissions

2. Specialisation establishment

3. Teaching affairs

4. Research and service

5. International exchange and cooperation

6. Internal structure and personnel management

7. Financial and property management

The Chinese experience presents an example of how the HEIs were moved from a state-controlled model to a state-supervised model, where institutions enjoy more autonomy in academic and financial matters and in governance and management. There has been great emphasis for decentralisation of HEIs, including a strengthened role for provincial governments. Autonomy has been increased across the domains of teaching, research, and administration.

There is a varying degree of independence for HEIs: in some cases, universities enjoy full freedom of self-determination. For example, universities have full operational autonomy in the appointment of staff and the restructuring of academic and administrative departments but defer to central and provincial governments in the matter of appointments of university presidents and party secretaries. In other areas, universities may initiate actions and act on their own, but must submit their proposals and documents to the governments after, for example, making changes to disciplinary programmes.

Buffer agencies have been established by the government between universities and governments for the purpose of quality assurance in HEIs. These buffer agencies are affiliated to the Ministry of Education

(MoE) and are not really independent. Unlike those in western countries, which are independent from government authorities, China's emerging buffer organisations are often public service units (*shiyedanwei*) under the jurisdiction of governments, with financial support from central and provincial governments, and tasks and functions entrusted by the governments. Despite acting as extended arms of the government, buffer agencies operate as professional institutions, playing an important role in quality control, performance evaluation, implementation of governmental policies, and consultation on policymaking and planning.

Funding pattern for universities has become very diversified. In 2008, about half of the regular operating costs of the ECNU (about RMB 1,520 million) came from governments, and funds from central and municipal governments accounted for 32.1 per cent and 18.6 per cent respectively. Other funds came from a variety of sources: tuition fees, training, and consultancy projects brought in about RMB 345 million (22.7 per cent), and research contracts amounted to about RMB 279 million (18.3 per cent). A culture of fundraising and donations has appeared, although it has remained minimal, with a total of RMB 10 million in 2006. Both the central and municipal governments now have authority over and responsibilities for quality assurance of the HEIs under their jurisdiction. HEIs have their own internal quality assurance systems and mechanisms; the MoE mainly carries out higher educational evaluation.

CONCLUSION

In a good governance model for HEIs, delegation of powers from the centre to the grassroots levels is the key to success. The national government needs to transform their role from being a regulator to that of being a facilitator and keep away from interference in day-to-day management of affairs of the HEIs. The processes, procedures, and implementation systems in HEIs must be streamlined to become more transparent, responsive, inclusive and democratic. State supervision and oversight must be made more effective.

Within institutions, there is a need to further transfer authority over issues of personnel and resource allocation from the central administration to various academic units. This is to create an environment of shared, cooperative governance between senior administrators and individual academics. Institutions need to aim very high and work on the model of Harvard, Michigan and others in that

league, in terms of being world class institutions that are financially sustainable.

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REFLECTIONS ON INTEGRITY AND ITS COUNTERPARTS FOR ACHIEVING EXCELLENCE IN OUR UNIVERSITIES

BINOD KHADRIA

Modern-day behavioural economists stress that we need to go past the existing econometric and mathematical modelling to unravel the complete role of human capital in the process of future growth of economies and development of nations. India's first Census of the 21st Century was carried out in 2001. It revealed what we all know by the so-called catchphrase "demographic dividend" to be in the offing, lasting at least half a century, till 2050. This dividend is embedded in the world's youngest workforce that India has been projected to have. The activities of preserving, pursuing, disseminating, and creating knowledge and understanding require societies and universities to respect the autonomy and academic freedom of the scholars who research and teach in them, and of the students who come to them to become knowledgeable citizens and responsible leaders. International Center for Academic Integrity (ICAI), defines academic integrity as "commitment, even in the face of adversity, to six fundamental values of honesty, trust, fairness, respect, responsibility and courage." Apart from integrity, academic freedom is a fundamental right. It can be defined as the freedom to conduct research, write, lecture, teach, and publish, subject to the norms and standards of scholarly inquiry "without interference or penalty, wherever the search for truth and understanding may lead". A major long-term casualty likely to happen in the absence of such freedom would be the optimum level of integrity.

INTRODUCTION

I belong to a small genre of academics, working on the fringes of more than any one discipline. My disciplines of interest are economics and education, rolled into a singular branch called 'economics of education' and a specialised area of research in that common hybrid space I take interest in is international migration and diaspora studies. In reminiscing my explorations to find a precursor to the idea of 'human capital' at the time of commencing my doctoral research more than four decades ago – the concept central to the discipline of economics

of education – I had stumbled upon a speech by Swami Vivekanand that I thought carried its essence. It might be relevant to reflect on the relevance of that speech of Swami Vivekanand which is not as well-known as his celebrated, "My dear sisters and brothers . . ." speech at the World Congress of religions at Chicago over 125 years ago, to the very idea of an 'optimum university' if I may call it that.

Before I share that speech, let me state what the pioneer of economics of education in India and my late Professor, Tapas Majumdar, had taught me and my batch of doctoral students at JNU, as a tool for scientifically approaching a subject of academic inquiry. It involved two simple steps: First, of Identification of the variables – both the Independent or Determining Variables, and the Dependent or Determined ones. The second step involved Measurement of the dimension or intensity of the relationship between the two types of variables. Accordingly, let me delimit my universe of discourse here to that of a single identified thought of Swami Vivekanand that was immersed in the speech I had stumbled upon, as the determining variable, and a single identified aspect of the 21st century, as the determined variable, and then try to measure the relevance of the former to the latter.

Having spelled out this methodology as a prelude, let me briefly come back to economics of education as an interdisciplinary space that had emerged in the early 1960s. Theodore W. Schultz, then yet to be a Nobel Laureate in economics (1979), and a professor at the University of Chicago, coincidentally in the city associated with Swami Vivekanand's most celebrated 1893 address at the World Parliament of Religions, had given the argument that skilled labour was a 'man-made' produced means of production and, unlike plain untrained labour, not a 'gift of nature'. He thus gave the concept of "human capital", and wrote: "The economic value of education rests on the proposition that people enhance their capabilities as producers and as consumers by investing in themselves and that schooling is the largest investment in human capital. This implies that most of the economic capabilities of people are not given at birth . . . . There are long standing puzzles about economic growth that can be substantially resolved by taking account of investment in human capital," (Schultz, 1963).

This proposition of Schultz is supposed to have ushered in what was later called "the human investment revolution in economic thought". The proposition however evolved further over time. The framework of human capital paradigm has been expanded to

incorporate the analyses of not only returns to education and training, but also to health and fitness, and to migration, both internal and international. It is because of these researches in education, health, and migration that our knowledge today has become more definitive and conclusive about how these investments in human capital determine labour productivity, the growth rates, and the levels of development of nations. This knowledge of course took its own time to establish. Since Theodore Schultz, and later on Gary Becker, Jacob Mincer, Mary Jean Bowman and so on, the later stalwarts in economics of education found the role of human capital even more at the centre of the development process. Since then, the revolutionary transformations in the demand for goods and services and the ways of their production have impacted long-term growth trajectories, the relationship between the governments and their national economies, and that between nations by effecting the mobility of highly skilled "knowledge workers" and students across borders.

With the advent and growth of information and communication technologies leading the way for liberalisation, privatisation and globalisation, human capital embodied in the scientists, technologists, IT professionals, doctors, nurses, teachers and so on, all products of colleges and universities have been moving over the transnational space, and the barriers to immigration and return migration have been either relaxed or re-built at shortening intervals.[1] Apparently, the 1960s' proposition of Schultz and others was correct in underlining that human capital is an important input into the production process. Presently, modern-day behavioural economists stress that we need to go past the existing econometric and mathematical modelling to unravel the complete role of human capital in the process of future growth of economies and development of nations. It is in this context I would venture to say that the one thought of Swami Vivekanand that I had stumbled upon more than four decades ago, seems to have anticipated the concept of "human capital" six decades prior to Schultz.[2]

It was way back in 1897 when Swami Vivekanand had emphasised the centrality of what he called "strong men" in his address titled *My Plan of Campaign* and delivered at Victoria Public Hall, Madras on 9th of February. He was on his way back from the United States and Europe, and had said: "Men, men – these are wanted: everything else will be ready; but strong, vigorous, believing young men, sincere to the backbone, are wanted. A hundred such and the world becomes revolutionised." It is this quote of Vivekanand that I had stumbled

upon while starting my doctoral research in the late 1970s, casting an everlasting impression on my young mind then. Today, I would like to think back that it reflects one thought of the Swami which is of great relevance in the 21st century university system in India and the world, although the context in which he had expressed his plan "to start institutions in India to train our young men . . ." was a little different. It is this thought which incorporates my well-identified determining variable, the Swami's "hundred strong men".

India's first Census of the 21st Century was carried out in 2001. It revealed what we all know by the so-called catchphrase "demographic dividend" to be in the offing, lasting at least half a century, till 2050. This dividend is embedded in the world's youngest workforce that India has been projected to have. What has not been properly spelled out is that the advantage of demographic dividend would be arising from three things happening together (Khadria 2009a): The lower average age of the population thereby giving a better dependency ratio; the lower wages-bill due to lower wages on younger workforce and hence lower costs of production of goods and services that India would produce and export to the world; and the advantage arising from the fact that frontier scientific knowledge of the latest vintages would be embodied in the younger and younger generations of students, thus leading to the application of most cost-effective and environment-friendly latest technologies, continuously. This triple-advantage of the demographic dividend then is my well-identified determined variable.

This triple-advantage would provide us the 'sufficient condition' for establishing the relevance of Swami Vivekanand's "hundred young men" thought in the 21st Century India in a significant measure. But then what about the 'necessary condition'? Until and unless the necessary condition – that the country's education and health systems are revamped and migration policy is revolutionised in significant measure – to turn our younger generations of men (and women) into "strong" and "sincere" human capital, and see them "happily settled" within the country, the sufficient condition would be infructuous, and the demographic dividend would turn into a "demographic burden".

Instead, it would be the United States of America, the United Kingdom and Europe, Australia, New Zealand, and South-east Asian countries that would attract our young "semi-finished human capital" the late Professor Tapas Majumdar had called them, to immigrate and then to turn them into "strong" and "sincere" finished human capital by provisioning for the necessary condition of study and

work (Majumdar, 1994; Khadria, 1999, 2009b, 2012). Thus, these countries would reap the benefits of our demographic dividend as the sufficient condition for the global relevance of Swami Vivekanand's "hundred strong men" thought in a significant measure. This begs the significant question as to why so many Indian students emigrate to these developed countries in the Global North for further studies rather than studying in our own universities and other institutions of higher education.

According to the Ministry of External Affairs, of the approximately 750,000 Indian students studying abroad, over 200,000 are pursuing higher education in the United States.[3] Apart from the fact that there is a quantitative mismatch between supply and demand in seats available for higher education admissions within India that drives Indian students abroad, qualitatively, it is usually the best and the brightest of Indian students who do the self-selection for becoming international students in the United States—"the home to some of the best higher education institutions."[4] Answering the question, "Why do so many international students choose to study in America?", Bertman Gallant, the Director of the Academic Integrity Office at University of California San Diego (UCSD) has been quoted to say, ". . . Because the market value of American university degrees is high, *and the reason it is high is because of integrity*". International Center for Academic Integrity (ICAI), defines academic integrity as "commitment, even in the face of adversity, to six fundamental values of honesty, trust, fairness, respect, responsibility and courage." ICAI is a consortium of learning institutions in the US, founded to fight against cheating, plagiarism, and academic dishonesty in higher education. It also helps cultivate cultures of integrity in academic communities across the world, stating, "Promoting the fundamental values of academic integrity in education requires balancing high standards of integrity with the educational mission, as well as compassion and concern." The UCSD has a rigorous programme for promoting and implementing academic integrity through educational means rather than by punitive measures: Most students reported for cheating are directed into an Integrity Mentorship Program, which requires the students to write essays explaining why they cheated and then complete a number of additional assignments – with the objective to turn their bad practices into positive and communicable good experience. Its objectives stretch far beyond the time students spend on campus because universities develop professionals and leaders who ought to continue to behave with integrity and become fair, respectful, responsible, honest and trustworthy leaders in society, including as come-back teachers,

scholars and professors in the universities. "A true democratic society can only exist if the majority of people . . . act with integrity."

As a counterpart to the integrity of the students, scholars, and faculty of the university, there are requirements on the part of society and university too. The activities of preserving, pursuing, disseminating, and creating knowledge and understanding require societies and universities to respect the autonomy and academic freedom of the scholars who research and teach in them, and of the students who come to them to become knowledgeable citizens and responsible leaders. The universities need to be the "guarantor of academic freedom" in the performance of their scholarly functions.

At the International Conference by UNESCO in 1950, universities of the world had articulated the principles for which every university should stand.[5] These principles reflect the central role that university-based research and education play in the cultural, social, political, and economic development of societies. They apply to all universities: state-funded, state-regulated, and private. The principles upon which universities and academic activities they embody stand are widely recognised to be morally, legally, and politically grounded in the values that define academic freedom for their scholars across all academic disciplines spanning the humanities, social sciences, the arts, the natural, biological sciences, engineering, law, medicine, etc. Academic freedom is thus distinct from – and "not merely an extension of – the freedom of thought, conscience, opinion, expression, assembly, and association that has been promised to all human beings under Article 18, 19 and 20 of the Universal Declaration of Human Rights". In layman's terms, academic freedom would be defined as the freedom to conduct research, write, lecture, teach, and publish, subject to the norms and standards of scholarly inquiry "without interference or penalty, wherever the search for truth and understanding may lead".

The value of this academic freedom derives from the basic objective and mission of the modern university. The proliferating role universities assume in the Information Age only raises the significance of that value. The emergence of a worldwide knowledge economy, the growing number of higher education institutions, and the unparalleled transnational flow of information and ideas embodied as human capital in globally mobile knowledge workers – all call for ongoing re-examination and re-articulation of the nature and necessity of academic freedom. Indeed, across the globe, the defense of academic freedom

remains at the heart of ongoing debates over the role, autonomy, and duties of the universities.

According to the First Global Colloquium of University Presidents (GCUP, 2005) convened by Kaufi Annan at Columbia University, academic freedom benefits society in two fundamental ways: It benefits society directly, and usually immediately, through the impact and benefits of applied knowledge, the training of skilled professionals, and the education of future leaders and citizens. Secondly, it benefits society indirectly and usually over longer periods of time through the creation, preservation, and transmission of knowledge and understanding for their own sake, irrespective of immediate application. Thus, academic freedom has both practical usage and intrinsic value. Above all, by facilitating academic freedom laced with autonomy, it puts the onus on the teachers and students to be self-accountable for their conduct including to uphold integrity. Without self-accountability, neither academic freedom nor integrity would yield the desired results. "Academic freedom" here is bounded by what is "academic" in it that calls for optimum level of self-regulation. All the relevant governance bodies and administration within the university must provide scope for such self-regulation by various constituencies of the university rather than pre-empting it through regulation that is thrusted upon. This would contribute positively not only to an environment of academic freedom, but in helping people to learn to differentiate between their preferences and judgements, and choose to go with their judgement whenever there is a conflict of interest between the two. These must be reflected in their freedom of inquiry and speech, without which neither faculty nor students can be seen to have acted with integrity.

Scholars and students must be able to study, learn, talk, teach, research, and publish without fear of intimidation or reprisal, in an environment that allows for engagement with divergent opinions, free from institutional censorship or discipline: "Academic institutions bear a heavy responsibility to protect the scholars and students who work within them from improper pressures. . . . Universities must maintain and encourage freedom of inquiry, discourse, teaching, research, and publication, and they must protect all members of the academic staff and student body against external and internal influences that might restrict the exercise of these freedoms," (GCUP, 2005). A major long-term casualty likely to happen in the absence of such freedom would be the optimum level of integrity. Civil society institutions

and their common practices may also erode the integrity of faculty and students. For example, the pressures and lures of commercial initiatives and alliances, or attacks by outside groups may undermine their academic freedom which forms the basis of integrity. Universities must be free of obligation to external groups, alumni, community leaders, the media, or other elements of civil society. Among the most important mechanisms for maintaining and protecting academic integrity, one is peer-review system that determines how research is funded, conducted, and results published. However, because conflicts of interest are involved, peer-review systems must never be allowed to be driven by blind adherence to dominant viewpoints or motive to marginalise those perspectives that do not adhere to the reviewers' own or are likely to be superior than those of the reviewers. Not only should written declaration of possible conflict of interest be the norm wherever integrity of judgements is involved – be it membership of screening committees, selection committees, panel of examiners, panel of reviewers and so on – there should also be strict monitoring and penalties for misrepresentation and violations because these have been rampant in our education system when relatives, friends or own students happen to be the candidates.

All this brings us to ask who all would meet the characteristics of Swami Vivekanand's "strong men" (and women) that our universities in India and the world need the most today. Without trying to answer the question, I would like to reiterate what I have said at the beginning of this article: That in terms of identification as the first step in an academic inquiry, the concept of "strong men" was the precursor of the concept of "human capital" that Theodore Schultz was to coin six decades later in Chicago. Coincidentally, it was in the same city where Swami Vivekanand had mesmerised his audience by his well-known opening words at the Parliament of World Religions and from where he had returned to Madras and delivered the "My Plan of Campaign" address where he for the first time talked about "strong men" (which included "strong women" too) being wanted. In terms of the numbers needed, Vivekanand's scale then was limited to "hundred strong men" who would have revolutionised the world, in 1897. Almost a century and quarter later, in the 21st century today, the United States Bureau of the Census and the Indian government had both expected this magic number to be 54.5 million in 2020![6] In terms of the second step in academic inquiry and research, that of measurement of the relevance of Swami Vivekanand's thought, this difference in numbers to be only of degree, not of kind.

Endnotes

1. See IOM (2019). See also, Inglis et al (2019).

2. My talk delivered at the Panel Discussion on "Swami Vivekanand's Thoughts", held at India International Centre, New Delhi on 14 February 2012, to commemorate the year of his 150th Birth Anniversary.

3. https://www.mea.gov.in/rajya-sabha.htm?dtl/30181/question+no964+data+bank+of+students+going+abroad. Visited on 29 Feb., 2020

4. See Fox (2019, pp.36-37).

5. See, GCUP (2005, p.11).

6. In 2016, the Author jointly with N. Thakur and R. Asraf, constructed an Index of Service Production in Education in India for the purpose of comparable quantification of India's production in the education sector for Trade in Services under the GATS negotiations of WTO. See, Khadria, B., N. Thakur and R. Asraf (2016).

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TOWARDS GLOBAL BEST
TEACHING-LEARNING PROCESS

TEACHING-LEARNING IN INDIAN HIGHER EDUCATION INSTITUTIONS
SOME PRESCRIPTIONS FOR 21ST CENTURY AND BEYOND

SHEKHAR DUTT

It is the quality of higher education and ability to use technology which transforms a society into a knowledge economy. The 21st century is gaining recognition across the world as the century for Asia. India shall therefore have to be one of the leading knowledge economies of the world to truly become a country that our ancestors have dreamt of. For that, education would be the single largest driver. The need of the hour for our educational institutions therefore is to develop a sizable portion of our youth into productive human resource and global leaders. The universities of 21st century India need to play a very creative and inspiring role in tapping the intellect of students and scholars and to guide them to actualise their potential towards making India a global knowledge leader.

The 21st century is gaining recognition across the world as the century for Asia. It is a matter of only a few years that out of the four countries in the world having the largest economies, three shall be from Asia. India shall therefore have to be one of the leading knowledge economies of the world to truly be a country that our ancestors have dreamt of. For that, education would be the single largest driver since it is essential for the development of our country. However, for the production of goods and services which are essential for increasing our national economy, our youth would require to undergo higher education. At present, the Gross Enrolment Ratio (GER) of higher education of India stands at around 25 per cent, whereas China's is close to 40 per cent and Japan's around 64 per cent. It is clear that India would require an upsurge in the entry of our youth in the temples of our higher education at a very rapid rate. At the same time, the quality of education and learning in these institutions have to be such that the challenges of the 21st century can be squarely met by our youth and they should be able to find ways to overcome those. This

requires an extremely involved education in which no area should be left untouched and where the light of learning can reach. This includes covering both the spatial or regional dimensions along with all the traditional and modern subjects and disciplines. For the teacher and pupil ratio to be optimal, we require a large number of good teachers that are capable of engaging the youth right from the time of their entry to the portals of higher education and lead them into arenas of new knowledge and experiences. The time spent in the colleges by the youth should be such that it would enable them to take our country to the desired level of well-being and development.

National prosperity is basically dependent on three crucial factors: higher education and technology, raw materials, and capital. Of all these factors, higher education and technology gain advantage over the other two in order of importance because it can help to negotiate deficiencies in natural resources and shortage of capital. It is the quality of higher education and ability to use technology which transforms a society into a knowledge economy.

The explosion in population, particularly in countries like India, has created a situation wherein there are a large number of human beings but only a small percentage of human resource. This can be corrected only through the process of higher education. All efforts for improving the educational standard and quality of higher education therefore should be given the highest priority. In these days of emerging knowledge society, everyone should not only be concerned but also committed to provide high quality and relevant higher education to its younger generation on whose shoulder will rest the future of the country. Quality depends upon stakeholders like teachers, administrators, policy makers and students. All the stakeholders need to complement each other so that the country is in a position to instil good quality higher education in its universities.

We live in a time of accelerated globalisation, mounting information, growing hegemony of Science and Technology, and a clash of civilisations. Our times call for new ways of learning and thinking in educational institutions, business, and professions. In this connection, Howard Gardener's seminal book on education, *Five Minds for the Future* (Gardener, 2007) gives us a good direction. The word 'minds' in this book is used to represent the instruments of human thought, logic and thus attitudes. Describing the cognitive abilities of the mind, the author noted 'five minds' that will command a premium in future.

One needs to work hard to acquire these cognitive abilities in order to derive maximum benefits from the valuable knowledge that is being imparted in the educational institutions. The five minds described and discussed in the book are:

The Disciplinary Mind: This covers competence with regards to major schools of thought and approaches which can develop through the disciplines of Science, Mathematics, History or Religion.

Our world is at present going through the most severe environmental challenge. It is absolutely necessary therefore that the citizen must be extremely disciplined and be responsible towards preventing any further degradation of the nature.

The Synthesising Mind: This implies the ability to assimilate ideas from different disciplines or spheres into an integrated system and put forth these synthesised thoughts with a new meaning.

With the increasing volume of information today, the capacity to synthesise assumes greater significance. This is clearly seen at the highest levels of scientific development where different disciplines of basic sciences converge in a manner that it no longer remains in any single domain.

The Creative Mind: This calls for building capacities to uncover and create solutions to new problems, questions and phenomena.

The importance of both linear as well as lateral thinking is understood well through the creative mind. For finding correct and sustainable solutions, the leaders of tomorrow in any field will have to continuously foresee the effect of any action and plan the correct measures accordingly.

The Respectful Mind: This segment demands a unique capability. It seeks a mature mind that has awareness and appreciation for differences in point of view among human beings.

A respectful mind is needed in all spheres of activities where management of large organisations or resources are undertaken. Maintaining harmony inside or outside the organisation will be essential to ensure sustainable benefits out of the venture.

The Ethical Mind: It is indeed a built-in capacity for fulfilling one's responsibility as a worker and citizen simultaneously. This will essentially lead to working and succeeding with integrity.

This is absolutely essential for ensuring the long term success of any organisation which has substantial deployment of human power.

These five types of 'cerebral instrumentalities' are very important in a person's life because with these 'minds' a person is equipped not only to deal with what is expected, but also what cannot be anticipated. Further, a person will not be at the mercy of forces that they cannot understand.

In the light of the aforesaid, it appears necessary that the scholars as well as their guides and teachers need to nurture all the above mentioned minds. Honing these will be possible only if the youth are helped to build amongst themselves the following five essential capacities: enquiry, creativity, appreciation of technology and new thoughts, will to take up challenges, and assume leadership roles. If we develop and encourage these five capacities, we will produce autonomous learners: self-directed, self-controlled, lifelong learners who will have the capacity to respect authority and at the same time be able to question the authority in a manner that is appropriate.

The teacher in this new role requires to nurture in her/his students the desire to discover their abilities. The corner stone in this process is to instil in them 'the power of enquiry' and the 'will and capacity to seek'. The teacher of today needs to be a friend and guide to the student, and be able to communicate with them in a manner which enthuses the student to learn more and learn constantly. The teacher or *Guru* of Ancient India had been equated with God by the society of that time and *Gurukulas* were meant to be institutions where the youth sought knowledge, skills, and abilities. Today, more than ever, the teacher requires to be given that kind of position and respect in the society and be responsible for shaping the future of the country. Therefore, it will be imperative to give the teacher much more respect and dignity than is presently given.

The universities of the 21st century India need to play a very creative and inspiring role in tapping the intellect and generating awareness among its students and scholars to help translate the potential for growth and development in the region and therefore the country. Education is an endless journey which has to be experienced through knowledge and enlightenment. The aim of education is not only to enhance students' knowledge but also to equip them for

open-minded enquiries and reflections in many contexts. We have to enable our students to become proficient in the skills and acquire knowledge of their chosen fields so that they can develop their own creative imagination and abilities.

Young people have a keen mind, which is always looking for answers of myriad questions on nature and life. They are energetic, idealistic, and adventurous, which makes them open to positive influences. It should be the endeavour of our education system to develop and actualise this natural potential of the youth. The teachers therefore must be able to motivate and create enthusiasm in young minds for acquiring knowledge. Once these students are motivated, they will be able to acquire and use the knowledge that they have gained from experience, no matter where they live in the world. The need of the hour for our educational institutions therefore is to initiate significant efforts to motivate young minds to be curious, inquisitive, and search for new solutions.

India has the capacity to become the skill capital of the world. It will be necessary to develop a sizable portion of our youth into that kind of human resource. This is the era of globalisation and of rapid changes wherein new challenges are being posed and new opportunities are being discovered at great speed. The digital revolution has brought the whole world at our door steps. Whether to search for answers or to provide solutions, the digital world has connected us all through the click of a mouse. Reference libraries from all over the world are now within the reach of the research students and scholars. Teachers and guides therefore need to lead their students to find a wide range of reading material. Our educational institutions must take the benefit of this global connectivity.

In the light of above mentioned points, pedagogy in the sector of higher education, seems to place a teacher in the dual role of an information provider and also a guide, leading the scholars and students to find alternative thoughts and ideas. There should also be a greater opportunity for students to express their thoughts on what they have learnt by writing papers; teachers need to encourage their students in this regard. In fact, some part of the assessment of the student should be done by the quality of the papers they have written.

Needless to say, through this method of teaching and learning, the interaction between the teacher and students would need to be

comprehensive, objective and supportive, without being judgemental. In order to enable this, universities should provide a congenial environment for the teachers to carry out research in their domains of interest that is relevant for the overall benefit of our society. Teachers are the managers of knowledge, which comes from further research. In this process, students can also learn immensely.

The number of educated unemployed continues to be sizeable and traditional employment avenues like the Government, Public Sector Undertakings and the organised sector are also not expanding and keeping pace with the increase in the population. The situation cannot correct itself on its own. Sincere, genuine and visionary efforts therefore have to be made in order to make the higher education relevant to the needs of the society of tomorrow. With the decline in the proportion of 'white collar jobs', it is imperative that the attitude for 'entrepreneurship' be cultivated right from the first year of higher education. Universities and colleges have to evolve and develop methodology wherein the students are taught to take calculated risks for the sake of larger gains and for attaining the set goals. They must be helped in cultivating a disposition to do things in the correct way and not fall prey to corrupt practices or take short cuts in order to gain seemingly immediate advantage. The desired disposition and capacity building amongst students should be based on fundamental qualities like the spirit of enquiry, creativity, technology, commitment and moral character. This will ensure that students passing out of such universities and colleges can confidently meet the challenges that await them and also be able to carve out the correct path for themselves.

Students studying in Indian universities should not feel that they are there only to obtain degrees; rather, they must gain confidence in the fact that they can use their knowledge and abilities which they have obtained for meeting new challenges. This way, they shall be prepared for any eventuality to complete the tasks that they have undertaken. It is imperative to understand that learning is a continual process and at every stage of one's life and career, it is necessary to update oneself with the current scenarios in terms of processes or technology. Similarly, the experiences that students have gained in the colleges and universities with respect of sports and cultural activities shall enable them to take on leadership and team building roles that are necessary for their success as entrepreneurs.

Hence, it also becomes necessary for our higher education system to have enough encouragement for students to take up sports, cultural

and co-curricular activities which will also build team spirit and leadership qualities amongst them. Further, these days, excellence in the sports and cultural fields has huge income generating possibilities. In this regard, adequate sports infrastructure, scientific coaching and sports science backup is necessary to be provided in universities and colleges. Indeed, there are many sports and the performing arts' sectors that have significant income generating possibilities for the youth. In fact, there are many such talented sports persons and artists who have made a good career out of their abilities in respective fields and are amongst the role models of the current youth.

India in the 21st century is poised to take up the leadership role of the world and it is necessary that our higher education system should prepare our youth to be the future global leaders.

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21ST CENTURY CURRICULUM DESIGN FRAMEWORK

RAJAN WELUKAR AND SUCHETA PHADKE

The world of today is very different from that of yesterday and we do know that the future will be even more dynamic. It is high time that universities work on redesigning existing curricula to reflect the needs of the 21st century. India is already in the middle of the 'demographic dividend' with a surge in its younger and working-age population. Design thinking is a human centered approach. It is a systematic process which helps us develop an understanding of our user/learner needs. It helps to redefine and understand problems in depth and find compelling solutions. It is thus a solution-based approach. If we are to improve higher education to be able to face the challenges of the 21st century, we must focus on the design of a curriculum that addresses the concerns, meets the learning needs of students, takes cognisance of industry requirements, integrates technology along with making the learning experience meaningful, enjoyable and relevant. Higher education must give importance to formative assessments in order to improve the quality of the teaching-learning process. A three-layered 21st century curriculum design framework developed for the purpose proves to be the most apt solution. Understanding each of the layers and their importance in the curriculum design process is paramount if one is keen to develop 21st century curriculum.

PRELUDE

"We won't meet the needs for more and better higher education until professors become designers of learning experiences and not teachers".
— Larry Spence (2001)

Higher education in India is at a critical juncture. According to the Insights from the 2019 Deloitte Deans' Summit, "The higher education landscape has expanded over the past decade – from 436 universities in 2009-10 to 903 in 2017-18 and from 26,000 colleges to over 39,000. Student enrolment, at 36.6 million, is the third largest in the world, next to China and the United States. India is already in the middle of the 'demographic dividend' with a surge in its

younger and working-age population, which is estimated to become the world's largest by 2030," (Gupta et al., 2019). In 2020 there is further increase in number of Higher Education Institutions (HEIs) at a faster pace. As per University Grants Commission website there are 1040 universities in India as on February, 2020.

In addition, technology advances are changing how we learn and work. Automation, emerging job roles which were never envisaged, skills that require constant upgradation are challenges on one hand and provide immense opportunities on the other. Higher education could play a key role in addressing the disruption that this scenario presents. Some of the concerns that higher education deals with today are:

> *Lack of Quality Faculty*: Faculty vacancies remain high. For example, there are about 19-20 per cent open positions in institutes, of which only 5-6 per cent have been appointed (Wheebox, 2019). Skill gap is also a major concern.
>
> *Subject Experts Not Teachers*: Faculty are subject experts and are not trained on how to teach better.
>
> *Employability of Students*: According to the *India Skills Report* in 2019, only 47 per cent of the available talent is employable (Wheebox, 2019).
>
> *Freedom of Speed*: Number of hours are tied to the number of credits. Students do not have the freedom to gain the credits in lesser amount of time. We give freedom in other fields but not in the field that we need the most.
>
> *Lack of Life-long Learning Skills*: 'Learning to Learn' is not understood and is a missed out component of the curriculum.
>
> *Lack of Research Skills*: Required research skills are lacking in the faculty.

If we are to improve higher education to be able to face the challenges of the 21st century, we must focus on the design of a curriculum that addresses the concerns, meets the learning needs of students, takes cognisance of industry requirements, integrates technology along with making the learning experience meaningful, enjoyable and relevant.

THREE LAYERED CURRICULUM DESIGN FRAMEWORK

A three-layered 21st century curriculum design framework proves to be the most apt solution (Figure 1).

FIG. 1: THE THREE-LAYERED 21ST CENTURY
CURRICULUM DESIGN FRAMEWORK

KSSL_{TM}
Framework

Backward
Design
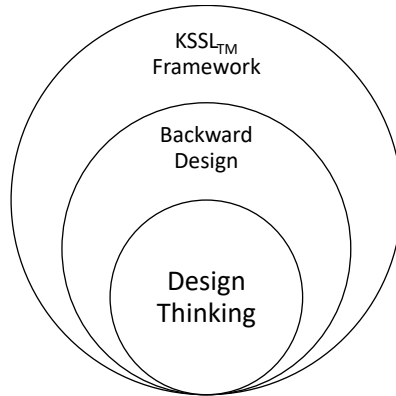
Design
Thinking

At the core of this three-layered framework is *Design Thinking*. The second layer is *Backward Design* and the third layer is the KSSL_{TM} Framework (Knowledge – Skills – Self Awareness and – Learn to Learn). While using this three-layered framework, the faculty changes their role from that of a teacher to a designer. This completely changes the quality of outcome and the mindset. Faculty should consider themselves to be designers, a much-needed shift in thinking. Understanding each of the layers and their importance in the curriculum design process is paramount if one is keen to adopt this framework.

Design Thinking

Computer Scientist and Nobel Laureate Herbert A. Simon was the first to mention design as a science or way of thinking in 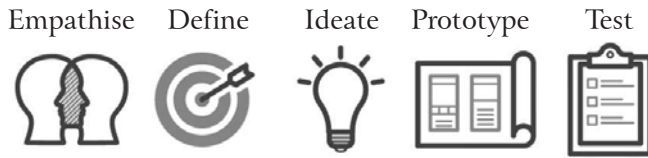his 1969 book, *Sciences of the Artificial* (Herbert, 1969). Design Thinking (Rikke and Yu, 2020) was popularised by IDEO, the design firm. Tim Brown, the founder of IDEO has explained how design thinking can be used to come up with innovative solutions in his book *Change by Design* (Brown and Barry, 2009).

Design thinking is a human-centered approach. It is a systematic process which helps us develop an understanding of our user/learner needs. It helps to redefine and understand problems in depth and find compelling solutions. It is thus a solution-based approach. Brands like Apple and Google have adopted Design Thinking successfully, so have many Universities. Stanford University has a well-defined course on Design Thinking. The Stanford design school called d. school has proposed a five-phase model for Design Thinking (Figure 2).

FIG. 2: FIVE-STEP DESIGN THINKING PROCESS

Empathise   Define   Ideate   Prototype   Test

Source - https://www.interaction-design.org/literature/article/
what-is-design-thinking-and-why-is-it-so-popular

The phases of the Design Thinking process are restated below with reference to higher education:

> *Empathise:* Empathise with your learners. Understand their needs, their interests, their aspirations, what do they feel, see, hear. Why do they want to take up a programme or course. What do they expect from the programme.
>
> *Understand Stakeholders' Needs*: What does the industry expect; what must students be able to do when they join the workforce; what is the expected knowledge, skills, abilities and attitudes that are expected as a working professional; and what does society expect from students who graduate from specific courses.
>
> Designers create user or consumer personas in the 'Emphathise' phase. For learning to be purposeful and relevant, we must create learner personas. Learner personas are learner profiles which we will cater too. When we create a detailed picture of who our learners are, it helps us to design a course which will be engaging and relevant for our learners.
>
> *Define*: Define learner and stakeholder needs. What are the insights from the 'Empathise' phase. Are the learner and stakeholder needs aligned with the purpose of the programme or course.
>
> *Ideate*: Question existing assumptions of course design. Think of innovative and engaging ideas and strategies to make learning compelling and purposeful.
>
> *Prototype*: Design the curriculum. Design representative units applying pedagogy and strategies which will engage learners and make them an active participant in the learning process.
>
> *Test*: Test the curriculum. When units are taught note what works and what can be enhanced.

Design thinking is an iterative process. It is an ongoing, continuous process of quality improvement.

It is important to understand that the five phases are not sequential. They can overlap and iterations can be done to keep improving the understanding of the needs and thus the design of the curriculum.

Backward Design

When designing a curriculum, usually the first consideration is the content – how to teach it, then the materials or the textbooks that are to be referred to, the assessment, and then the alignment with the outcomes or objectives.

Backward Design is a framework for curriculum design proposed by Grant Wiggins and Jay McTighe in their book *Understanding by Design* (Bowen, 2017). They propose a reverse process to the usual curriculum design. Thus, we begin with the end in mind as Steven Covey says, "When we know our destination, we can think of where we are and then plan the steps to reach where we want to go. This reverse process ensures alignment between outcomes, learning content or activities and the assessment." Backward Design goes through three stages as depicted in Figure 3 (Wiggins and McTighe, 2005).

> *Stage One* – Identify Desired Results: What should students know, understand and be able to do.
>
> *Stage Two* – Determine acceptable evidence: How will we know if students have achieved the desired results and met the standards.
>
> *Stage Three* – Plan learning experiences and instruction: With clearly identified results and appropriate evidence, the learning activities can now be planned.

FIG. 3: BACKWARD DESIGN STAGES

- Stage One • Identify Desired Results
- Stage Two • Determine acceptable evidence
- Stage Three • Planning learning experiences and instruction
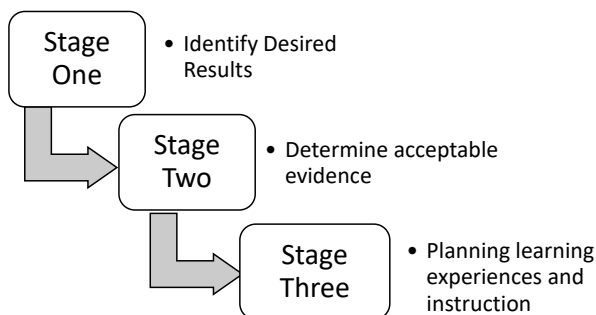
The process of Backward Design is well articulated for Higher Education by Mackh (2018) in his book *Higher Education by Design* as a course planning flowchart (Figure 4).

FIG. 4: COURSE PLANNING FLOWCHART –
HIGHER EDUCATION BY DESIGN

The course planning flowchart which is based on Backward Design has five stages:

1. ***Outcomes –*** As we begin with the end in mind, defining the outcome is the first stage of the curriculum design process. Outcomes are the knowledge, skills and abilities students should possess when they complete a programme or a course.

    If the programme outcomes are defined (as per specified standards) the next step is to define the course outcomes. Fink (2003) questions on curriculum design are a great way to start when writing the outcomes: What is it I hope that students will have learnt, that will still be there and have value, several years after the course / (programme) is over (outcomes).

2. ***Objectives –*** Objectives are specific and define the skills or knowledge that students will acquire or demonstrate at the end of completing a learning activity or lesson or session. There is usually a confusion between what outcomes are versus what objectives are. Most of the time they are used interchangeably. Iowa State University's Center for Excellence in Teaching and Learning have a practical and useful definition of outcomes and objectives: "Outcomes are where we want to be; and Objectives are steps needed to get there." This definition equips the curriculum designer with a powerful tool – define the outcomes and for every outcome define a set of objectives – the steps that will take the learner towards the outcome. This way the outcomes and objectives are consistent and align with each other. Objectives and outcomes must be measurable. Using action verbs from Blooms, Taxonomy to define them makes them specific.

3. ***Assessments –*** Going back to Fink (2003), the next question to be asked is, "What would students have to do to convince me that they have achieved the defined outcomes?" Traditionally,

assessments are considered at the end of the unit and are largely summative – a final examination. However, in backward design, assessments are designed as soon as the objectives are defined. This helps to structure a learning experience which will ensure attainment of the objective. For example, if the objective is to 'Justify the use of solar panels', then the learning activity must be pitched at a higher level so that students justify the need and not just 'explain' how solar panels can be used. 'Justify' is a higher order action verb than 'explain'. Because we defined the assessment first, we know at what level to pitch the content or learning activity. If we had not done that then, after defining the objective, we would have thought of the learning activity and the content that was suitable, not necessary the level that it has to be pitched and then the assessment would have followed at the end of the unit which would not have aligned with the objective at all.

Another point of consideration is that ongoing and continuous assessment checks understanding for every objective, thus making it easier for in-flight corrections to the strategies that are being used. Students also get interim feedback on their progress and have a much better sense of what they have understood, what they must work upon when formative assessments are conducted. Higher education must give importance to formative assessments in order to improve the quality of the teaching-learning process.

It is important to note that after defining the assessment type, the mechanism – marks, rubrics and checklists – for grading the assessment must also be chosen. Defining assessment after the objective helps in scheduling them in the learning process.

4. *Instructional Plan* – An Instructional Plan can begin with dividing the course into modules and further topics or sub-topics. Choosing appropriate instructional strategies which enable active learning is the next step. These include: interactive lectures, project-based learning, case study, flipped classroom, debates, demonstrations, group work, group discussions, paired learning all can make learning interesting. A detailed session plan gives faculty a guideline and the same can be worked upon as it is implemented, thereby ensuring that the instructional plan aligns with the objective and the assessment is paramount. Creating a session plan requires involvement and preparation. Gaining attention at the start of the session is most important

and specific strategies must be used to appeal to students. Enriching and extending learning at the end of the session is equally important. When students can apply their learning in newer contexts, learning transcends beyond the classroom.

Reflection is yet another strategy which can be a powerful learning tool. Getting students to reflect on the problem at hand, the experience, the situation and the learning has a deep impact on understanding of one's own thinking, progress and gaps in learning.

5.   *Materials* – Choosing materials in the form of textbooks, web references, videos, real life situations etc. are done in the last in the Backward Design process.

The KSSL~TM~ Framework

The third layer of the three layred 21st Century Curriculum Design Framework is the *KSSL~TM~ Framework* (Knowledge – Skills – Self Awareness and – Learn to Learn) (Figure 5).

FIG. 5: KSSL~TM~ FRAMEWORK
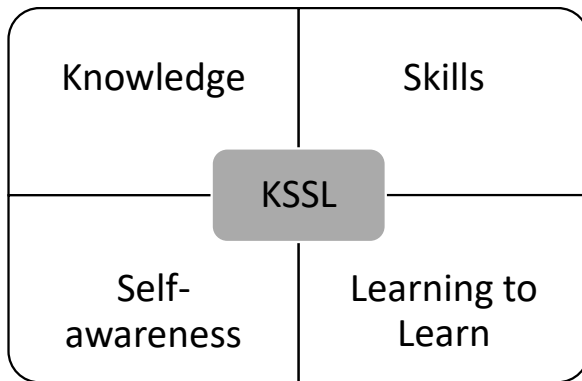
Knowledge – Traditionally, curriculum has always been content heavy. What is required though is a connect with the real world in order to make learning deliver to requirements stated by the industry and society of making students employable and the knowledge that they gain is relevant.

For students to be employable, performance objectives are the key. They must know what to do (perform) than just know what it is (concept understanding). When performance is the focus, concept

understanding is given. Thus, the focus of the knowledge component is on:

- Connecting content to real life and bringing in the required relevance.

- Redesigning from a topic-based (knowing what it is) to a performance based (knowing what to do) curriculum.

Skills – Skills are psychomotor as well as cognitive. They are about the abilities that students develop to perform various tasks. The 4Cs – Creativity, Critical Thinking, Communication, and Collaboration – are known as the 21ˢᵗ century skills, which are important for students to survive and work in a local-global workplace. So is the ease of using technology. Thus, the focus of the knowledge component is on:

- Encouraging abilities to apply knowledge in real world situations;

- enhancing the 4C skills; and

- awareness and skills of using technology for change.

Self-Awareness – Self-awareness means knowing your true feelings, thoughts, abilities and actions. It is also about knowing that your actions affect others. In today's demanding world, being self-aware is critical self-awareness is something can be developed. It is a process of tuning in, reflecting, introspecting. Knowing what you are feeling, labelling that feeling is the most important aspect. Understand ourselves builds positive self-esteem. It helps to recognise strengths and gives us insights to overcome challenges. A 21ˢᵗ century curriculum is not just about building knowledge and skills; it is also about making students aware of the benefits of being self-aware. Thus, the focus of the self-awareness component is on:

- Practicing Mindfulness – Mindfulness is paying attention in a conscious way without judging to the present moment;
- developing confidence;
- the right mindset; and
- emotional intelligence.

Learning to Learn – Awareness of one's own learning and cognitive ability, managing own learning, building on previous knowledge, thinking about thinking (metacognition) are all essential to building competence and lifelong learning skills. In today's world, technology

is evolving at such great speed, new jobs and roles not heard of before are emerging. Learning to Learn skills will enable students to cope up with the ever changing and demanding work challenges. Thus, the focus of the Learning to Learn component is on:

- The awareness of one's own learning abilities;
- reflection on each aspect of: Knowledge, Skills, Self-awareness; and
- learning from reflection.

CORRELATION IN THE THREE LAYERS OF CURRICULUM DESIGN FRAMEWORK

Table 1 gives the correlation between the three layers of the 21st century curriculum design framework.

TABLE 1: CORRELATION IN THE THREE LAYERS OF THE 21ST CENTURY CURRICULUM DESIGN FRAMEWORK

Design Thinking	Backward Design	KSSL$_{TM}$ Framework
Emphathise and Define – Creates learner personas and provides insights on the needs.	**Outcome – Objectives:** Use insights from the Emphathise and Define phase. Cater to the learner personas created.	**Define** the KSSL components for the identified learner person as and the expected needs that are to be met.
Ideate – Think of innovative strategies that will make learning interesting	**Instructional and Assessment Plan** – Use of engaging strategies for both to make learning enjoyable	**Design** – Connecting KSSL to real life and bringing in the relevance. Bringing in skills on Creativity, Critical Thinking, Communication and Collaboration in the design of learning activities.
Prototype – Designing representative units	**Design** of the curriculum map using the five stages: Outcome – Objective – Instructional Plan – Materials	**Design** – Integrating the KSSL components in the curriculum map
Test – Test the curriculum	**Implement and Evaluate** When units are taught note what works and what can be enhanced	**Implement and Evaluate** Testing the KSSL components and enhancing as required

IMPLEMENTING THE CURRICULUM
DESIGN FRAMEWORK

The world of today is very different from that of yesterday and we know that the future will be even more dynamic. It is high time that universities work on redesigning existing curricula to reflect the needs of the 21st century. The journey has begun as the 21st century curriculum framework is being implemented in educational institutions and universities. Following is an example of its implementation:

Mode of implementation: Interactive and hands-on workshops.

Client: Renowned educational institution in the region with more than 30 years in the field. Recently received university status.

Participants: Deans, Principals, and senior faculty responsible for curriculum/course design.

Duration: Three days, spread over two segments.

Workshop Methodology

The workshop focuses on:

• Learning by doing;

• Learning from each other; and

• Learning through reflection.

The three-day workshop is divided into two segments:

Segment One

Day One

• Defining the Purpose

• Importance of Needs

• Learner Personas

• Design Thinking

• Backward Design

• Understanding the $KSSL_{TM}$ Framework for Curriculum Design

• Group Assignment

  – Empathise – Interview Stakeholders

- – Creating an Empathy Map
- – Identifying Learner Personas
- Reflection – My Learning

Segment Two

The group meets after one week for a two-day session.

Day Two

- Review of Insights from the Emphathise Phase
- Understanding the Identified Learner Personas
- 21st Century Learning Strategies
- Assessment Strategies
- Flipped Classroom
- Home Assignment – Flipped Classroom
- Reflection – My Learning

Day Three

- Experiencing a Flipped Classroom
- Blooms Taxonomy
- Curriculum Design Template
- Group Work – Create a Prototype Curriculum Design Document (participants work in groups and focus on one unit)
- Group Presentations - Prototype Curriculum Design
- Discussion and Feedback
- Reflection – My Learning
- Workshop Wrap-up

The workshop has mindfulness activities embedded across the three days.

The key points that emerge from the workshop are:

Student Needs

- Students seek newer career paths and want to know what options are available.

- They want to learn in groups as well as individually.

- They want to upgrade their skills.

- They seek enriching learning environments.

- They want practical knowledge.

- They are open to working on real-world problem solving assignments.

- They are open to doing bridge courses to close their knowledge gaps.

- They are open to using technology to learn.

Industry Needs

- Industry would like higher education to focus on hands-on experience.

- They want students to be equipped with current knowledge in the field.

- They feel students are conceptually weak and lack in application of knowledge.

- They feel that soft skills are lacking in today's graduates.

- They see a lack of problem-solving skills in students.

- They feel that students are not workplace ready.

While faculty is entrusted with the task of redesigning the curriculum and using active learning strategies to ensure student participation in the learning process, they have their own fears and realise their own skill gaps. Some of the fears that emerge w.r.t curriculum redesign are:

- Getting expert faculty

- Getting students to enroll into new courses

- Will new thoughts and approaches be accepted?

- Will we be able to keep pace with industry and the technology changes?

The hope that they have for using a 21st century curriculum design approach is that:

- Courses will meet industry needs;

- Students will be employable;

- Quality will improve;

- Society upliftment;

- Faculty will be trained in newer pedagogy;

- Expertise can be built and shared using technology;

- Innovative curriculum design will attract students to the class;

- It will raise the benchmark; and

- The Industry – academia collaborations will enhance the overall programme.

Some of the training needs that emerge for higher education faculty through this workshop are:

- Understanding Educational Theory and Practice

- Designing and Planning Effective Learning Experiences

- Writing Effective Outcomes and Objectives

- Rubrics and how to design them

- Using Technology for Academic Engagement

- Effective use of Assessment as a Learning Strategy

- Self-Awareness

- Learning to Learn – Life-long Learning skills

CONCLUSION

The 21st century has brought about diverse challenges – from climate changes, to globalisation, employability and even personal happiness. Technology is disrupting in all walks of life. Education is lagging behind.

If we are to make a meaningful difference, we must revisit what and how we teach; we must get to know our learners better; and we must change our roles from being faculty who are sage on the stage to becoming more like designers who craft significant, purposeful, enjoyable and relevant learning experiences for our students. We must inculcate the attitude of being designers in the 'school called life' in our students as well, so they can take on the world with confidence and bring about the much-needed change.

Design Thinking is an attitude which helps in finding creative solutions to problems. Till date, the focus of education has been on the transfer of content and knowledge bytes. The focus has never really been human centric. Using Design Thinking for curriculum creation is a game changer. The journey is all about moving from: knowledge transfer, outcome, student-centered education to one where individual creativity, co-creativity, the ecosystem of learning, and ensuring that learning for development are encouraged and nurtured.

It is time for a 21st century curriculum design to take on the lead!

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CONSTRUCTIVISM-BASED BLENDED TEACHING LEARNING FOR TRANSFORMING INDIAN HIGHER EDUCATION

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Higher education has experienced significant changes as a result of the advancement and use of Information and Communication Technology (ICT). Online learning is facilitating teaching and learning experiences with the development in communication channels and technologies. In India, it is also dealing with constraints of diversity, gender, cultural and personality differences of learners and their needs, time availability, flexibility of the course content and innovative use of ICT. Blended learning is a mixed educational paradigm and offers promise for addressing these challenges through online learning parallelly to traditional learning by introducing a constructivism-based blended learning approach in higher education. It is an innovative concept that embraces the advantages of both traditional teaching in the classroom and ICT supported learning. By shifting the information transfer paradigm from teaching to learning, constructivism-based blended learning makes learners responsible for discovering, constructing, practising and validating the acquired knowledge in social collaboration with their peer group and teachers. As a result, the focus of the classroom shifts from a presentational format (i.e., lecturing and information dissemination) to one of active learning (i.e., discussion and debate). In this paper, an attempt has been made to discuss how constructivism-based blended learning can improve teaching and benefits the learning process in higher education. An attempt has also been made to highlight the implementation of blended learning in the Indian higher education scenario.

PRELUDE

For centuries, traditional face-to-face (F2F) learning or lectures were the most commonly used teaching approach in higher education. Though traditional learning facilitates exchange of ideas in a socially interactive environment, it allows very limited room for self-directed

and collaborative learning, limiting the possibilities for customising the course content to reflect learners' skills. Similarly, online learning brings with it the possibility to learn anytime from anywhere, with faster learning delivery and servicing unlimited number of learners. Yet, it is constrained with factors such as low motivation to course completion, lower learner satisfaction and lack of interaction with teachers and peers (Mackay and Stockport, 2006). A single mode of delivery seems unable to offer sufficient engagement, choices, relevance, social contact and context to facilitate effective and successful learning (Mohamed-Amin et al., 2014). Besides, having a mixture of students with different learning preferences and styles necessitates using multiple modalities for learning in order to deliver the right content in the right form (Singh, 2003).

21st century higher education is going through rapid socio-economic and technological changes. These changes have brought a clear call for higher education institutions to carefully examine their educational practices from a new perspective and face challenges that lie ahead in knowledge-based societies (Pittinsky, 2003). These challenges include a large population of learners from varied backgrounds, needs, motivations, abilities, learning preferences, time availability and course content requirements (Phillips, 2005); a demand for more learner responsive and flexible courses; and the drive to use ICT in teaching and learning (Challis et al., 2005).The widespread use of digital technology has changed the face of education; therefore, it is time that higher education complies with the growing expectations to help students survive effectively in such a technology-based world. Integrating technology with F2F instruction can reinforce both an interactive as well as a communicative learning environment and provide meaningful learning outcomes (Rooney, 2003; Garrison and Kanuka, 2004). One of the innovative solutions for this issue is the introduction of blended learning mode, in which various types of delivery modes are combined (Allen et al., 2007).

Over the last decade, blended learning has been growing in demand with growing popularity in higher education and has become a widespread teaching phenomenon. It becomes increasingly evident that blended learning can overcome various limitations related to online learning and F2 Finstruction (Alammary, et al., 2014). Blended learning provides learners with an opportunity to engage their teachers and peers in critical and creative reflection and discourse the conventional ideals of higher education. It helps to revisit and regain the ideals of higher education with the adoption of

approaches that value dialogue and debate. However, blended learning is more than enhancing lectures; it represents the transformation of how we approach teaching and learning. It is a complete rethinking and redesign of the educational environment and overall learning experience. Blended learning is a coherent design approach that openly assesses and integrates the strengths of F2F and online learning to address worthwhile educational goals (Garrison and Vaughan, 2008).

Researchers have suggested that constructivist strategies exploit technologies for the greatest impact on learning (Duffy and Cunningham, 1996). A complementary relationship appears to exist between technology and constructivism—the implementation of each one benefiting the other. Constructivism is a doctrine stating that learning takes place in contexts, while technology refers to the designs and environments that engage learners. To understand the potential of blended learning in enhancing the teaching-learning process, attempts to integrate technology in the classroom needs to be studied within the context of a constructivist framework. Constructivist strategies include collaborative and co-operative learning methods, engaging in critical and reflective thinking (Nanjappa and Grant, 2003).

The higher education system in India holds enormous potential to build a knowledge-based information society that can enjoy the fruits of technological know-how in the 21st century (Bansal, 2014). Blended learning has been found to be a viable and effective approach to deliver high-quality, up-to-date, on-demand learning solutions in the face of diminishing education budgets in higher education (Thorne, 2003; Valk et al., 2001). Again, constructivism provides an opportunity to learn through participation and co-operation in a collaborative environment, which is consistent with Indian culture and ethos and embedded in its social context. Hence, in a developing country like India, blended learning appears to be an acceptable approach to enhance the teaching-learning process in higher education, within the limits of diminishing budget allocation and inadequate infrastructure support (Bansal, 2014).

BLENDED LEARNING IN HIGHER EDUCATION

Blended learning is a concept that includes framing teaching learning process, incorporating both F2F teaching and teaching supported by ICT. It incorporates direct instruction, indirect instruction, collaborative teaching and individualised technology assisted learning (Lalima and Dangwal, 2017). "The basic principle is that F2F oral

communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose" (Larkin, 2010). The integration should be done in such a manner that blended learning should not appear as a heterogeneous mixture of isolated practices but rather it should be a fruitful blend as 'the best of both worlds'. A major requirement is that both the methods should complement each other in the best possible way, both in educational and technical terms (Bansal, 2014).

The goal of blended learning is to provide the most efficient and effective instruction experience by combining delivery modalities (Kumar, 2012). Learners and teachers work together to improve the quality of learning and teaching; the ultimate aim of blended learning being to provide realistic practical opportunities for learners and teachers to make learning independent, useful, sustainable and ever growing (Graham, 2005).

According to Garrison and Kanuka (2004), what makes blended learning particularly effective is its ability to facilitate a community of inquiry. Community provides the stabilising, cohesive influence that balances the open communication and limitless access to information on the internet. Communities also provide the condition for free and open dialogue, critical debate, negotiation and agreement—the hallmark of higher education. Blended learning has the capability to facilitate these conditions and adds an important reflective element with multiple forms of communication to meet specific learning requirements. It provides a platform for collaborative activities among the teachers and learners through interactive sessions, which help to improve the learners' level of satisfaction and improved academic performance (Khan et al., 2012).

Assessment is one of the major tools in teaching and learning process. Blended learning techniques enable teachers to deliver the lecture as well as assess students' learning using creative and innovative methods through digital assessments, mobile-based examinations, and online assessment exercises. Assessments determine how the teacher taught the course and how the students understood (Khan et al., 2012). Graham et al. (2005) highlighted the advantages of blended learning assessments, such as high student motivation due to availability of feedback on short duration (unlike traditional assessments), regular course upgradation by faculties through assessment of learners' feedback, and creation of an environment of

collective learning excellence with the availability of authentic results for both learners and teachers.

Bansal (2014), pointed out a number of advantages of blended learning in higher education, some of which revolve around accessibility, pedagogical effectiveness, reduction in drop-out rate, and course interaction. Many learners in higher education need to balance family, jobs, and study. Reduction in the number of required F2F interaction hours can help such learners manage other commitments. Higher education institutions and faculty are always looking for ways to reach and retain these learners. Blended courses can enable access to the course material online at any time of the day and be reviewed as needed, gaining increased flexibility. Blended learning also provides flexibility to students and enhances feedback time (Sharpe, et al., 2006; Ignacio et al., 2008; Alebaikan and Troudi, 2010; Korr et al., 2012). Sharpe et al. (2006) pointed out that blended learning designs have been implemented in higher education courses to tackle problems created by large group sizes. Studies have shown that overwhelmingly blended learning is used to improve pedagogy, increase cost-effectiveness, access and flexibility, and simplify revision (Graham et al., 2005; Osguthorpe and Graham 2003). Further research points out that blended learning has shown a considerable positive effect on the teaching and learning process (Alebaikan and Troudi, 2010). Not only had the students learned more when online sessions were added to traditional courses, student interaction and participation also improved (DeLacey and Leonard, 2002; Alebaikan and Troudi, 2010; Korr, Derwin et al., 2012). Harvard Business School faculty DeLacey and Leonard (2002) reported that students not only learned more when online sessions were added to traditional courses, but student interaction and satisfaction improved as well.

CONSTRUCTIVIST PERSPECTIVE ON LEARNING

In contrast to traditional classrooms where teachers used a linear model and one-way communication, modern learning is becoming more personalised, student-centric, non-linear and learner-directed (Cagiltay et al., 2006), wherein teachers facilitate innovative teaching strategies to not only strengthen learners' independence and autonomy in learning, but to encourage them to work co-operatively and collaboratively. Underpinning this new way of teaching-learning is a new epistemology (i.e. theory of knowing) which is constructivism, that portrays the learner as an active conceptualiser within an interactive learning environment. Constructivism describes a way

of learning, in which learners collaborate reflectively to co-construct new understandings, especially in the context of mutual inquiry grounded in their personal experience (O'Connor, 1998). Central to this collaboration is the development of communicative competence that enables learners to engage in open and critical discourse with both the teacher and peers (Taylor and Maor, 2000).

Constructivist instruction, on the one hand, gives pre-eminent value to the development of learners' personal ideas. Traditional instruction, on the other hand, values only established techniques and concepts. In constructivist instruction, learners are encouraged to use their own methods for solving problems. They are asked not to adopt someone else's thinking but encouraged to refine their own. Through interaction with peers and teachers, the learner's own intuitive thinking gradually becomes more abstract and powerful (Clements and Battista, 1990). The role of the constructivist teacher is to guide and support learners' invention of viable ideas rather than transmitting established ways of task completion. The constructivist teacher, by offering appropriate tasks and opportunities for dialogue, guides the focus of learners' attention, thus unobtrusively directing their learning (Bruner, 1986).

Constructivism is a doctrine stating that learning takes place in contexts, and that learners form or construct much of what they learn and understand as a function of their experiences in situation (Schunk, 2012) and perspectives within meaningful contexts and interactions (Oliver, 2002). Technology, according to Jonassen et al.(1999), refers to the designs and environments that engage learners. Hence, the focus of both constructivism and technology are on the creation of learning environments. These environments create engaging and content-relevant experiences by utilising ICTs and resources to support unique learning goals and knowledge construction (Young, 2003).

The moves towards constructivism in higher education have been pushed by the emergence of universal connectivity through ICTs (Wims and Lawler, 2007), which enabled the learners to globally communicate and most importantly access the world knowledge resources. Given the access to broader sources of knowledge, research suggests that collaborative learning is the most effective means of facilitating teaching and learning (Phillips et al., 2007). Constructivism is gaining foothold in higher education around the world because teaching and learning can now easily be undertaken as a community activity (Bondarouk, 2006), thereby propagating collaborative learning

along with individual learning through experiences (Klamma et al., 2007).

CONSTRUCTIVISM IN A BLENDED LEARNING ENVIRONMENT

Access to knowledge, social interaction and personal agency are identified as some of the key motives that educators have for utilising a blended learning environment (Osguthorpe and Graham, 2003). The potential for blended learning to provide access to knowledge is evident in the use of blended learning to create inquiry-based learning opportunities. The use of blended learning to create social interactions becomes prominent in the use of online discussions. Personal agency can be achieved through the creation of constructivist online learning systems that can be introduced in the blended environment (Pensinger, 2016). The rapid growth of ICT has facilitated knowledge accessibility from anywhere and at any time. Yet learners must have critical thinking skills so that they can analyse and compare information, construct arguments, respect diverse perspectives and construct new knowledge (MacKnight, 2000). Moreover, solving complex real life problems requires a variety of knowledge from different people with different experiences. Constructivism-based blended learning environment has the characteristics to improve students' critical thinking, analysing, problem solving skills, knowledge construction, and collaborative working, through its variety of learning strategies and ICT support tools. One of the main goals for designing a constructivism-based blended learning model is to encourage students to actively construct and share new knowledge (Koohang et al., 2009).

To create a constructivist blended learning environment, the emphasis needs to shift from an instructor driven, linear progression through a set curriculum, to a learner driven exploration of potential resources. Inquiry-based approaches use case studies, experimentation, and research and data analysis to encourage learners to solve authentic problems or develop solutions to meaningful questions (Avsec and Kocijancic, 2016). The learner-driven arrangement allows students to select resources that are appropriate to their learning needs and preferences. The final product – project or answer that is developed through inquiry – reflects the understanding that learners have developed for themselves. When learners work independently, this model tends to reflect cognitive constructivism; and when learners work together to develop their final product, they are experiencing a social constructivist environment (Pensinger, 2016).

Dalsgaard and Godsk (2007) examined the effectiveness of transitioning from a traditional lecture-based classroom experience to a constructivist blended learning experience. In this case, the teacher prepared a specific collection of resources: basic hard-copy curriculum texts, PowerPoint presentations from the lectures, and supplementary digital materials. Learners could access the resources as necessary while they worked to assimilate the course contents and solve the related exercises. A pre-test and post-test indicated that this method was effective in increasing student understanding of a concept, decreasing the amount of lecture in the course, allowing students to review materials as often as they desired, and creating some differentiation to support diverse learners in mastering difficult concepts.

In a blended learning environment, teachers use a variety of ICT tools such as synchronous (F2F) and asynchronous (text-based internet) learning technologies to facilitate and encourage collaboration, interaction, communication and knowledge construction and sharing among the students. However, one of the criticisms of blended learning is that it focuses on the teacher for creating the knowledge, rather than on the student (Carbonaro et al., 2008). To overcome this drawback, constructivism theory is applied in blended learning environment, which increases learners' interactivity and focuses on the learner to construct new knowledge based on previous experience (Al-Huneidi and Schreurs, 2012).

Characteristics of Constructivism-based Blended Learning

Gharacheh et al. (2016) highlighted the characteristics of blended learning based on constructivism, where the emphasis is on learning through cooperation, interactive learning, critical thinking, purpose-oriented learning thinking and performance in group, and multilateral interaction between the group members. Constructivism based characteristics of blended learning are presented in Table 1.

IMPLEMENTATION OF BLENDED LEARNING IN INDIAN HIGHER EDUCATION

In India, the traditional education system of F2F learning has not been able to cope with ever-increasing learners' population in terms of numbers and quality. Online learning has arisen, but in a supplementary role, and is currently struggling to carve out a niche for itself. The KPMG-Google report of May 2017 projects increased adoption of the blended mode by existing online as well as offline

TABLE 1: CHARACTERISTICS OF CONSTRUCTIVISM-
BASED BLENDED LEARNING

Characteristics of Blended Learning	Constructivism
Learning	Personal discovery based on intuition, creating meaning from social experience, thinking in synchronous F2F and online learning environment and using social interactions of both methods.
Factors influencing learning	Individual, environmental factors, social factors, multilateral interactions between individuals.
Learner's role	Student-centered, learners' control over learning process and information.
Teacher's role	Director and facilitator, provider but not lecturer, cooperation of the teacher as analyser of problem solving strategies, observer, organiser of the environment for researching, and social environment to get experience and produce knowledge, organising group discussions and student interactions.
Learners' activities	Interaction with online and written content, multilateral interaction with the students' groups and professors, thinking about the subjects with respect to social context, solving real problems and doing related projects in group and through cooperation, and emphasis on group learning activities instead of only the teaching process.
Teaching strategies	Emphasis on active and student-centered teaching strategies, emphasis on cooperative and interactive teaching methods, emphasis on providing various viewpoints, emphasis on social learning environments, and on a wide variety of interaction between the students.
Group activities	Intense group activities, emphasis on learning activities through cooperation, and group discussion for providing different views to get knowledge.
Evaluation	Emphasis on self-evaluation and peer evaluation, evaluation is a part of teaching, evaluation of real outcomes of learning, evaluation based on higher levels of cognitive stages, qualitative and dynamic evaluation, the evaluation of students' group work and cooperative situations.

players in the field of higher education in India. While India is making headway in digitising the learning process the world over, higher education institutions are disrupting and innovating teaching and learning (moneyconrol.com, 2017).

The conventional system of education in India is plagued with many inherent disabilities such as of diversity, gender, cultural and personality differences of learners and their needs, time availability and flexibility in course content. Online education, on the other hand, is witnessing low completion rates and distrust due to lack of feedback and interaction with a teacher/instructor. Higher education institutes imparting online learning in India are increasingly realising the need to have multiple touch points with learners apart from online for elevated engagement levels. Even for the traditional higher educational institutes, in order to become competitive, it has become a necessity to provide some online services like counselling, student support, downloadable notes, documents, mock tests, etc. (Courseware World, 2019). The quality of higher education is also a serious issue. Indian higher education institutes are increasingly becoming non-competitive in comparison to other top institutes of the world. To survive in the competition and to enhance quality, adoption of blended learning will be a good option. When students will get experience of both types of modes, their knowledge will be enriched. Easy access to the experts and content material online will enable Indian students to gain advanced skills that will make them strong eligible candidates for the 21st century knowledge society (Lalima and Dangwal, 2017).

In higher education, some private organisations like Symbiosis International University and Sikkim Manipal University have developed an entire virtual learning system comprising of webinars, videos, text documents, e-books, and other online tools along with offline counselling sessions/practical sessions etc. India's indigenous Massive Open Online Course (MOOC) and Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) are serious attempts to provide some exposure to online component in higher education. Even the re-skilling professional online course providers like Talentedge, Simplilearn, Imarticus and upGrad liaison with eminent universities for providing offline internship and work experience to the learners are doing commendable jobs. To its credit, the Government of India is formalising the online education space, ensuring regulatory recognition for online courses and encouraging higher education institutions to develop their own online curricula. The blended classroom of the

future can leverage the power of online courses and free up classrooms time for interactive collaboration and discussion, testing and problem-solving, redefining how education is administered, while at the same time retaining the ethos of India's traditional classroom system (Courseware World, 2019).

CONCLUSION

Recognising the strengths that blended learning holds, many educational settings, including higher learning institutions, have changed their delivery method to blended programs (Godambe et al., 2004). Blended learning is becoming a newly emerging trend in higher education as it combines the best of synchronous and asynchronous learning approaches to meet specific educational goals (Levin et al., 2013).

There are many benefits which make teachers choose blended learning over other learning strategies, such as extending the reach, increasing flexibility, pedagogical richness, reusable patterns (reusable contents and functionality), optimised development cost, social interaction that are easy for revision and customisation. However, the blended learning system tends to focus on the teacher for creating knowledge rather than on the student (Carbonaro et al., 2008). Therefore, there is a need to improve the blended learning environment in order to apply student-centered learning methodology to increase learning outcomes, which can be achieved by applying constructivism. Constructivism tends to focus on the student to construct new knowledge based on experience, which increases and improves learning outcomes. Blended learning environments and strategies possess the characteristics to facilitate adapting and employing constructivist principles, and also elements in the learning process, which improves students' critical thinking, analysing, problem solving skills, knowledge construction, and collaborative working, through its variety of learning strategies and ICT support tools (Al-Huneidi and Schreurs, 2012).

Blended learning can prove to be a powerful strategy, if learning experiences are well designed. It has the potential to impact Indian higher education in a positive way by forming the underpinning of a transformational model that irrevocably holds expectations for teachers and learners. New pedagogies (the change in emphasis from teacher-centred to student centred paradigms), new technologies (the rapid spread of internet and World Wide Web), and new theories of

learning (constructivism) are enabling entirely new models to enrich teaching and learning (Bansal, 2014).

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STRATEGIES FOR REIMAGINING INDIAN HIGHER EDUCATION LANDSCAPE

RL RAINA AND KAVITA CHOUDHARY

Estimates reveal that India will become world's largest nation by 2030 in terms of youth population. To nurture this youth as a talent pool, skill and competency-basedcourses as expected by 21ˢᵗ century workplace scenario needs to be imparted to the students. Also, a globally respected learner centric integrated educational ecosystem needs to be created in the country. For this, the Indian higher education system must align its activity-mix to international accreditation standards, along with those put in place by Indian accreditation bodies to receive its respect at the global landscape of higher education. At present, the Indian higher education system is fragmented into too many silos marked by several lacunae. Some of these lacunae can be removed by adopting the STEAM approach in developing inter as well as multi-disciplinary teaching-learning methodologies, offering flexibility and credit based recognition to the courses; expanding access to higher education through online courses; sensitisation on 'sustainability'; exposure to new-age technologies; and fostering experiential learning pedagogy backed by continuous assessment and evaluation mechanismaimed at holistic development of the learners.The paper is an attempt to indicate broad strategies required for reimagining the Indian higher education landscape in accordance with 21ˢᵗ century skillsets and competencies as expected of this young talent pool.

PRELUDE

Estimates reveal that India will become world's largest nation by 2030 in terms of young talent pool. Being the largest education system in the world, there is a huge potential for development through constantly focusing on quality of education and strengthening its position in the global student market. India's prospects as a rising power on account of being world's fastest growing economy with integration into global economy, strategic culture, and material position in the international system have received significant attention. But the Indian higher education system is afflicted with many drawbacks

like: fragmented into too many silos; segregation into departments or disciplines; lack of educational access in poor socio-economic areas; lack of faculty and institutional autonomy; inadequate mechanism for career enhancement and progression of faculty and institutional leaders; lack of research at most institutional setups and the lack of transparent and competitive peer-reviewed research funding across disciplines; suboptimal governance and leadership of comparatively older higher education institutions; and a regulatory system allowing sub-standard institutions to thrive while constraining young, excellent, innovative institutions. In order to eliminate these drawbacks, the Indian higher education system must align its activity-mix to international accreditation standards, as well as those put in place by Indian accreditation bodies to receive its respect at the global landscape of education. Broad strategies are required for reimagining the Indian higher education landscape in accordance with 21ˢᵗ century skill sets and competencies as expected of this young talent pool. It is important to create a globally respected and learner-centric integrated educational ecosystem with the provision of skill and competency courses as expected by 21ˢᵗ century workplace scenario through the following: the Science, Technology, Engineering, Art and Mathematics (STEAM) approach in developing inter as well as multi-disciplinary teaching-learning methodologies; offering flexibility in credit based recognition; online learning; sensitisation on 'sustainability' through curriculum; exposure to new-age technologies; and fostering experiential learning pedagogy for real value addition in the learner, backed by continuous assessment and evaluation mechanism, aimed at holistic development of the learner with gender sensitisation, are some such strategies.

GLOBALLY RESPECTED LEARNER-CENTRIC AND INTEGRATED EDUCATIONAL ECOSYSTEM

In accordance with globally respected higher education systems, integrating the system in the country at various levels (primary to higher education) will ensure that we educate our youth with a larger purpose in view, wherein teaching-learning will not happen in compartments (as an end in themselves,) but will stay linked all through from primary to higher levels. The complete separation of 'arts' and 'science' or between 'academic' and 'vocational' streams, as also talked about in National Education Policy (NEP)-2020, needs to be done away with. Undergraduate (3-4 year) degree courses with multiple exit options, masters, doctoral, professional, and vocational programmes to be significantly enhanced by being accessible in vibrant multidisciplinary institutions. As per NEP-2020, Higher Educational

Institutions (HEI) comprising of large, multidisciplinary universities and colleges will be called multidisciplinary only if they offer at least two programmes or majors in the arts and humanities, at least two in science and mathematics, and at least one in the social sciences. It is expected that most multidisciplinary HEIs in the long run will offer far more than this minimum requirement and will also include professional and vocational programmes.

In alignment with the NEP-2020 (Figure 1), integration of Primary-Secondary-Tertiary-Higher Education systems with industry and regulatory bodies, is the way forward. Due to cut-throat competition at various levels, no minimal level of interaction exists between two HEIs (GoI, 2020). There should be no silos for arts-science-management-design, and other similar streams as well; more close collaboration among local institutes to bridge the gap between learning and market requirements; and providing opportunities to attract young talent from poor communities.

FIG. 1: EDUCATION SYSTEM MEETING GLOBAL STANDARDS
(THINK TANK)

- Primary-Secondary-Tertiary-Higher Education System with Industry & Regulatory Bodies

Integration

Flexible

- Interdisciplinary Liberal Studies in Curriculum

Opportunity

Collaboration

- Young Talent from poor communities

- Local Institutes / Universities
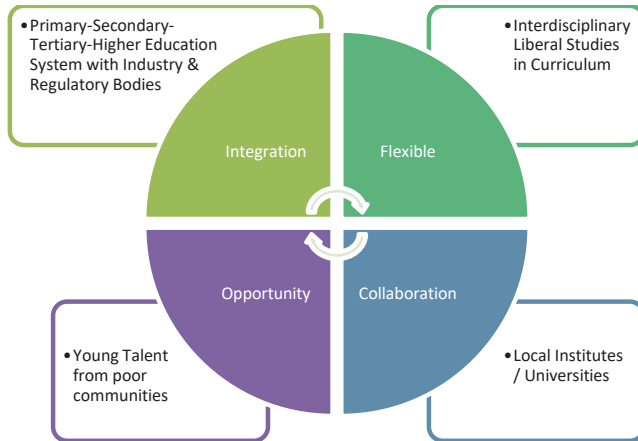
TEACHING AND RESEARCH IN INDIAN UNIVERSITIES

While the NEP-2020 gives a roadmap for improving the condition of undergraduate education in India; it also advocates that universities (Figure 2) have to be contributing to all the three components of the Knowledge Cycle (KC), which are: (i) Knowledge Generation (KG) – Research; (ii) Knowledge Dissemination (KD) – Teaching; and (iii) Knowledge Application (KA) – Services, typical of a world class

FIG. 2: UNIVERSITY AND KNOWLEDGE CYCLE
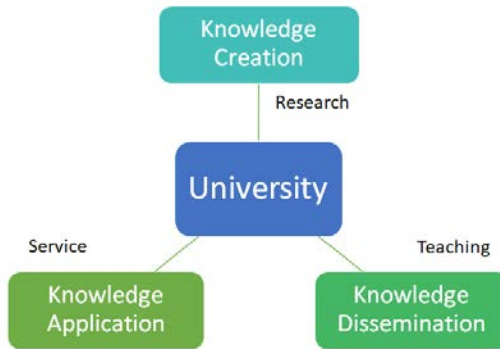
institute for higher education. According to the policy, categorisation of institutes to be either: (i) research universities, with equivalent focus on research and teaching; (ii) teaching universities, with primary focus on teaching and considerable concern on research; or (iii) autonomous degree granting colleges with their main focus on teaching, and should be understood in that frame. A blend of teaching and research is the need in the present scenario where the prime focus of higher education institutions should be to impart knowledge through effective teaching-learning process and integration of research component to it.

Bringing in and building on the elements of 'quality' in three of the critical components of a University system, which are the: (i) input; (ii) the processes; and (iii) the output, which are what will make our universities, globally respected. Putting quality measures in place will result in graduates getting adequate domain knowledge plus 21st century skill sets and competencies, to meet industry and community requirements: (i) admitting students, augmenting faculty, developing curriculum and building infrastructure (input); (ii) effective teaching-learning process integrated with continuous assessment and evaluation mechanisms ably supported by co-curricular and extra-curricular activities (processes); and (iii) acceptance of graduates by the competing market environment (output). JK Lakshmipat University (JKLU) is successful in re-modelling education as an Input-Process-Output system, which is applicable to concerned stakeholders (Salam, 2015).

As shown in Figure 3, the critical parameter of 'Input' is important for any institute. New entrants (students) to the education system have to be evaluated intensively by checking their aptitude and considering the passion possessed by them for any course of their choice. Intellectual capital should be aligned with the vision and mission of institute and the curriculum needs to be contemporary as per market demands.

FIG. 3: HOLISTIC QUALITY HIGHER
EDUCATION ECOSYSTEM IN AN HEI
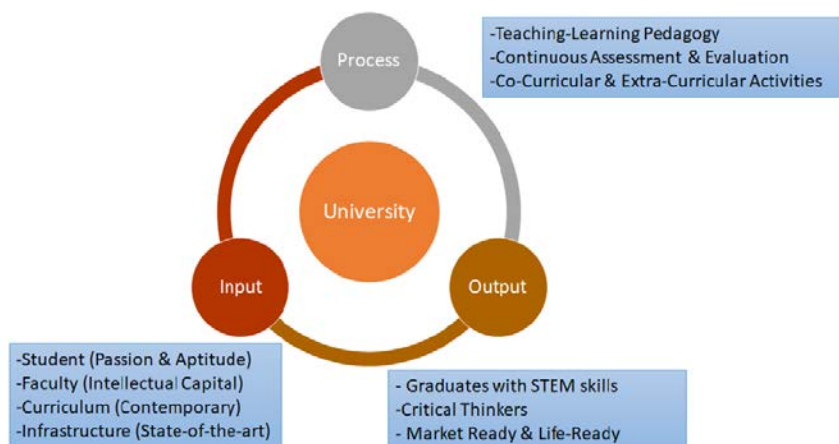
State-of-the-art infrastructure is required to impart effective quality education. In the 'Process' component, teaching-learning pedagogy needs to be given utmost priority to embark experiential learning for learners. Continuous assessment and evaluation is another important parameter for any institute. Evaluating and assessing students at regular intervals will help in doing fair evaluation and invoke the feeling of healthy competitiveness in students. Life beyond the curriculum ensures involvement of students in numerous co-curricular and extra-curricular activities for a healthy mental well-being of learners. The third component, 'Output', focuses on graduates possessing Science, Technology, Engineering and Mathematics (STEM) skills, so that they can become critical thinkers who can be easily deployable in industry.

STEAM—(STEM plus the Arts – Humanities, Language, Liberal Arts, and Design)

As we are aware, STEM includes Science, Technology, Engineering and Mathematics, while explicitly focusing on scientific concepts. On the other hand, STEAM includes all components of STEM with an additional flavour of the arts by giving weightage on Humanities, Language, Liberal Studies and Design to be integrated with Science and Technology. STEAM education provides an opportunity for the learner to learn creatively through inquiry, project and problem-based learning approaches. Here, learner groups work collaboratively to create physical project, based on understanding of scientific (STEM) concepts. Special mention to the approach applied at the authors' workplace, through an inquiry-centric project-based learning where

students are applying concepts of integration (Mathematics) in finding volume integral while building a coracle (boat). In the same context, management students are applying basic principles of define, ideate and prototype design aspects in their learnings. Similarly, design students are learning computer languages to automate their task. STEAM is revolutionising the education system globally to create a new way of learning that is engaging, multifaceted, and diverse in a way which is prevailing in the open culture of a Design Studio and Maker Space. In continuation with the same, many universities has a unique state-of-the-art Centre for Communication and Critical Thinking where learners are trained to critically analyse problems from multiple perspectives, solve them creatively, and communicate their thoughts effectively. Figure 4 highlights the various course offerings for all students irrespective of their disciplines. Every student is required to pursue these 21st century courses in order to fulfil their credit requirements.

FIG. 4: CENTRE FOR COMMUNICATION AND CRITICAL THINKING
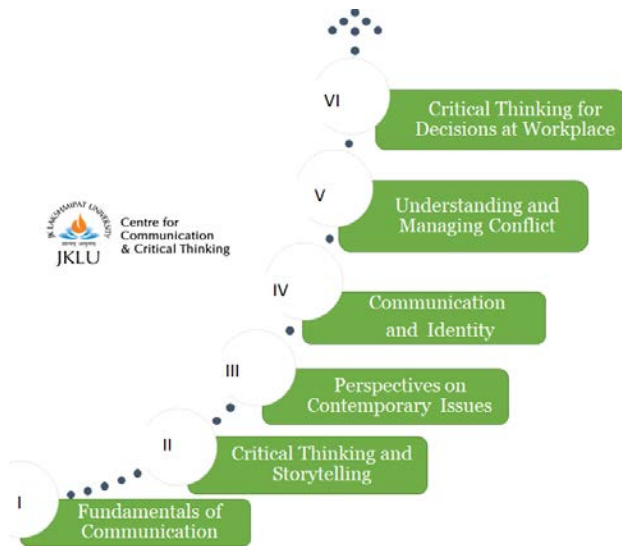
Provision of Skill Courses, as expected by the 21st Century Workplace Scenario

India is one of the largest producers of Science, Technology, Engineering and Mathematics (STEM) graduates. Higher education must therefore build expertise that community will need over next 20-25 years. The future workplace will require critical thinking skills, communication skills, problem-solving skills, an innovative mindset, and interdisciplinary capability. Single-skill and single-discipline jobs

are likely to become obsolete and further automated in the near future. Therefore, higher education must develop innovative and creative learners with intellectual desire, and a spirit to learn and apply for the larger societal benefit. The author's workplace successfully integrated courses like entrepreneurship, Artificial Intelligence, Information Security and Cloud Computing, programmes like Interaction Design, Product Design, and Interdisciplinary Design, and inclusion of capstone project to learn business strategy.

Developing Inter as well as Multi-Disciplinary Teaching-Learning Approach

Nalanda and *Takshashila* describe education as knowledge of 64 *kalas* or arts including singing, playing musical instruments, medicine, engineering, mathematics, etc., also known as liberal arts now, which is the need of the 21st century. Each university must launch a few new-generation highly interdisciplinary degree programs with a nearly equal contribution by at least two different departments. Emphasis should be on integrating seemingly very different disciplines, like Philosophy and Governance; Computational Social Sciences; Sustainability & Innovation; Healthcare Engineering, Digital Humanities; Technology, Art, and Psychology; Medical Informatics; Law and Technology, Technology and (different areas of) Management, Technology and Psychology, Urban Studies; Education Technology; Museum Technology, and so on. Research universities, as envisaged in the NEP -2020, must have at least 60 per cent student population in masters' and doctoral programmes with an overall student-faculty ratio of 12:1 or better. At teaching universities, at least 20 per cent of the student population must be in masters' and doctoral programmes with an overall student-faculty ratio of 15:1 or better. At the core of student-centric programmes, the authors' institution has done its bit in reimagining education through introduction of experiential project-based learning in the engineering curriculum, which was designed and delivered with the support of Olin College of Engineering (USA) where engineering courses are amalgamated with interdisciplinary subjects pertaining to application domain (GoI, 2020).

Offering Flexibility in Credit-based Recognition

Moving towards more liberal undergraduate education with imaginative and flexible curriculum in order to fulfill the needs of the industry and society by giving credits for such courses. Applicability and acceptability of new courses/programs as part of a programme; linking school education with higher education; balanced structuring

of liberal education; and emphasis on spiritual development and yoga, are what will work, going ahead. The authors' university follows a choice-based credit system and flexible curriculum like some percentage of total credits are given to courses offered in plus domain areas through Massive Open Online Courses (MOOCs) (curated MOOCs), entrepreneurial initiatives, independent seminar, and capstone projects. Flexibility in opting for interdisciplinary subjects without any compartmentalisation in sciences, arts, social sciences, etc. is what the authors' university encourages.

Online Learning Expands Access to Higher Education

Online learning is playing an important role in reforming higher education system. During the pandemic, it has been observed that a total shift and transition occurred in the education system worldwide. Self-quarantine and social-distancing compelled educational institutions to suspend classes and move to the online learning mode. By using online meeting and webinar platforms, students are getting a chance to listen and interact with seasoned professionals and professors through signature and distinguished lecture series. Online education is surely helping in the coronavirus pandemic across the world to put minimal impact on students: online master classes, seminars, workshops, e-panel discussions, online internships in augmented way with online teaching-learning process, which are all pivotal for higher education system pervasively. However, online learning has many challenges in terms of poor connectivity, network issues, software-hardware resources etc., still battling with issues like skill-gap, lack of hands-on practical experience, fair assessment and evaluation mechanisms (Raina, 2020).

Exposure to New-Age Technologies

In technology-led innovation driven context, students similarly need to be exposed to new-age technologies to stay abreast and ahead on the same. Exposure of courses like Robotics, Automation, Design Thinking, Internet of Things and Data Analytics across all disciplines in undergraduate and graduate level teaching in Engineering, Management and Design are mandatory for all students in the university where authors are working.

Sensitisation on 'Sustainability' through Curriculum

Students need to be caught young on issues and concerns on critical areas like 'sustainability'. As part of almost each and every course/

programme they are studying, students need to be sincerely sensitised on this aspect. In the authors' university, learning outcomes of the courses reflect this factor.

Balance between Learning and Market-readiness

In reimagining the education system, institutes need to strike a balance between learning and market opportunities by integrating key employment skills, life skills, entrepreneurial abilities through courses like Power of Storytelling, Law and Ethics, Design Thinking, Critical Thinking, Social, Emotional and Ethical (SEE) learning into curriculum. Imparting education and learning primarily focuses around the preferences of the learner and this results in migration from traditional modes of learning. In the technology-led innovation driven context, students need to be exposed to new-age technologies to stay abreast and ahead on the same.

Fostering Experiential Learning Pedagogy for Holistic Development of Learners

Structural and learning reforms are needed to become a world class educational institute. It is crucial to design innovative solutions to foster the best teaching learning pedagogy to cater to the needs of 21st century skill sets and competencies for better a learner-centric model. Incorporation of project-based learning or experiential learning is crucial in the higher education system through intense checks on student intake quality, fair evaluation and assessment policy are as per global standards. Engagement of industry experts in curriculum design, delivery as well as continuous assessment and evaluation mechanisms will definitely accelerate the performance of higher education institutions to meet market demands. At the authors' institution, they have implemented Project-based Learning in coordination with Olin College of Engineering, USA. Standard academic practices, ethics, and integrity to be maintained at zero tolerance. Institutes should provide learning facilities to students with experiential research works and projects to earn valuable hands-on exposure of the industry. This way, students get a basic idea of the actual industry they are going to get absorbed into and are able to pick up ideas and tactics much quickly when it comes to solving complex business problems, creating new development plans for a company, or taking up new challenges with a certain level of conviction.

Gender Sensitisation

Gender gap is closing in as the number of male students globally moved from 17.7 to 75.1 million and the number of female students

rose from 10.8 to 77.4 million. Discourse of feminisation is limiting. NEP-2020 also includes gender-related themes and provisions across the teaching-learning curriculum for better gender ratio. Government has also implemented various schemes and programs to provide equal opportunities and status to females in the country (Pessoa, 2009).

CONCLUSION

The digital-age education system calls for reimagining Indian universities to provide experiential learning pedagogy, collaborative coalition among educational institutes local as well as international, employers, students, schools, regulatory bodies, professionals, and industry to bridge the existing gap and help in driving reforms. There is no purpose in continuing to operate in silos. Fostering strategic collaboration among all stakeholders is needed with an objective to nurture and groom young talent according to the market and society's demand. Another objective behind Reimagining Indian Universities is to inculcate habit of 'Learning through Life' by developing eagerness in mind of young learners and raising inquisitiveness to learn and apply new concepts or contents.

Acknowledgement

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RESEARCH AND INNOVATION

MEASURES TO PROMOTE RESEARCH AND INNOVATION IN INDIAN UNIVERSITIES

TALAT AHMAD

The higher education sector in India is progressing and transforming gradually and steadily. As our higher education needs are enormous and dynamic, beset by a number of challenges like population explosion, unemployment, and brain-drain, the need of the hour is to drastically re-energise and rejuvenate our higher education sector through innovation and excellence – both in academics and research. There is an urgent need for reassessment of our research policies, procedures, and practices in our country followed by brainstorming deliberations on the challenges emerging out of the fast-changing international scenario. In this very context, there is a need to develop strategies and take necessary measures for enhancing research and promoting research quality at our higher education institutions. A goal-oriented and focused blueprint needs to be developed to achieve highest possible standards in research and teaching-learning in order to keep pace with changing global trends. Top ten measures that need to be taken to enhance research and promote research quality at our higher education institutions are discussed here.

PRELUDE

India has been the seat of learning and abode of knowledge and wisdom since times immemorial. Our natural and material scientists, applied scientists, social scientists, literati, doctors, engineers, technocrats, and artists have brought laurels and left an indelible impression worldwide by a dint through their strong credentials and noteworthy academic achievements in their respective fields. The higher education sector in India is progressing and transforming gradually and steadily. Even though considerable gains have been made over the past few decades towards improving our higher education sector, several emerging issues are fast gaining momentum and throwing new challenges because of the fast changing international scenario: rise of artificial intelligence and other disruptive technologies related to the impending fourth industrial revolution; globalisation of higher education; tremendous scientific progress made worldwide; global ranking of higher education

institutions; an ever-increasing population of learners; constantly rising focus on skill enhancement and employability of the graduates; market utility of academic programs; and translational value of research.

Though our higher education indicators including access, affordability, quality, and relevance are fast improving, a lot more needs to be done to achieve excellence in quality through research and innovation. The need of the hour is to drastically re-energise and rejuvenate our higher education sector through innovation and excellence – both in academics and research – as our higher education needs are enormous and dynamic, beset by a number of challenges like population explosion, unemployment, brain-drain. There is an urgent need for reassessment of our research policies, procedures and practices in our country, followed by brainstorming deliberations on the challenges emerging out of the fast-changing international scenario. In this very context, there is a need to develop strategies and take necessary measures for enhancing research and promoting research quality at our higher education institutions. A goal-oriented and focused blueprint needs to be developed to achieve the highest possible standards in research and teaching-learning in order to keep pace with changing global trends. Top ten measures that need to be taken to enhance research and promote research quality at our higher education institutions are discussed here.

TOP TEN MEASURES TO ENHANCE RESEARCH QUALITY AND OUTPUT

Funding for Research

One of the most important requirements for research is the availability of adequate funds. We need to explore possibilities of funding for our research at regional, national and international levels through public institutions, private industries, Non Governmental Organisations (NGOs) as well as through opportunities for public-private partnership. National level funding agencies like Department of Biotechnology (DBT), Department of Science and Technology (DST), University Grants Commission (UGC), Indian Council of Agricultural Research (ICAR), Science and Engineering Research Board (SERB), Indian Council of Medical Research (ICMR), etc., in addition to funding opportunities from the industry, academia and NGOs need to be tapped to their fullest. However, in certain cases, funding from national public and private agencies might not suffice, in which case international funding agencies like World Health Organisation

(WHO), World Trade Organisation(WTO), World Bank, United Nations Organisation (UNO), etc. need to be approached for research grants.

Infrastructure for Research

We need to develop our research infrastructure for enhancing and improving our research quality drastically. This can be made possible by identifying and establishing research institutes and research centers within those institutes that are capable of undertaking high quality research. Besides adequate, trained manpower, these centers need to be fully equipped with sophisticated instruments required to conduct high-end research that are required to undertake systematic literature reviews, meta-analyses, and access to literature through databases like Scopus, Science Direct, Pubmed, Medline, Toxline, etc.

Manpower for Research

Apart from funds and infrastructures it is the trained manpower that really makes things happen. Adequate, qualified, trained, well-oriented, and specialised staff is needed in the right numbers to run the research centers and carry out research in identified thrust areas. For developing such manpower, courses related to research, methodology needs to be incorporated into the UG and PG curriculum at college as well as university levels so as to develop a research culture and harness a research temperament among our students and scholars. Even at the school level, curriculum should be inquisitive enough to promote creativity, critical, analytical, and innovative thinking among our students who in the later course of their life could emerge as ace researchers. Specialised training needs to be imparted to the selected manpower on need-basis depending upon the prioritised thrust areas of research identified by the experts.

Policies for Research

We need comprehensive, goal-oriented and focused research policies at the institutional, regional/state levels as well as the national level for enhancing research and promoting research quality in tune with fast changing global trends. Such policies should be contextual and need-based and address the most intriguing problems faced by our society. As envisaged in the National Education Policy 2020, we need to develop research universities and autonomous colleges for carrying our intensive research on thrust areas identified by the experts. Such

policies should be evidence-based and practiced and implemented in a time-bound manner.

Incentives for Research

While good research needs to be encouraged through appropriate incentives, making use in terms of appointments and promotions of teachers is debatable as introduction of API (Academic Performance Indicators) based assessment of teachers by the University Grants Commission in 2010 has come under criticism, since it is thought to have resulted into mechanisation of the research output and led teachers towards a rat race of accumulating API points in pursuit to their promotions. Quality of research must receive priority over quantity of research under all circumstances, and the peers and experts in the field must evaluate the quality of research-based on their experience and by using journal metrics like impact factor and citation index. Further, there is a lot of debate going on whether research output should be used for providing financial incentives to teachers, awarding fellowships and giving recognition to them in their academics, whether it must be reserved only for the quality of new knowledge added to the existing body of literature.

Collaborative Research

In epistemological terms, the concept of inter-disciplinarily research may be regarded as a form of cooperation between various disciplines, which contribute to the achievements towards a common end, and can further the emergence and advancement of new knowledge through their association. Based on the degree of integration of disciplines in research, it is considered that the quality of inter-disciplinarity depends on the degree of influence exerted by the respective disciplines in the cooperative process. If one discipline is dominant, quality will be poor. If the influence is balanced, quality will be high. For instance, trans-disciplinarity is a state of complete balance of influence between all relevant participating disciplines at the highest possible level of co-ordination.

Depending upon the balance of influence between different participating disciplines, collaborative interdisciplinary research can be further classified into cross-disciplinary, pluri-disciplinary and multi-disciplinary research. Collaborative research needs to take into account these different levels of interdisciplinary involvement and collaboration between different participating disciplines for the sake

of clear definition of their respective roles. However, it goes without saying that carrying out interdisciplinary research is the need of the hour since knowledge cannot be compartmentalised and confined to disciplines. All such boundaries need to be dissolved and knowledge needs to be liberated from all such confines and made freely available to all those who seek it. Education is passing through the era of undisciplining of knowledge from the shackles of disciplines and we must not lag behind in this progressive endeavor.

Contextual, Need-based Research

Addressing needs of the society through contextual research is the need of the hour. In developed nations, universities organise research fairs and establish research shops that allow community members to visit them and register their problems, based on which research projects are prepared and research undertaken to find solutions to their actual problems. Similarly, timely and regular communication about research output to the masses is equally important for greater transparency of our research activities. Research institutions must consider these best practices apart from establishing entrepreneurship and innovation-incubation cells within their research centers so as to harness the spirit of entrepreneurship through research. These cells must provide sufficient startup grants as seed money to the budding entrepreneurs for incubating their innovative ventures.

Translational Research

Merely carrying out research is of no use unless the evidence generated out of scientific inquiry is translated into policy and the policy is practiced and implemented to resolve day-to-day issues on the ground. It is generally observed that the evidence generated through our research hardly translates into policy and whatever little does, it is hardly implemented in actual practice, which makes the whole exercise fruitless and results into confining of research dissertations onto the shelves of our libraries. There is need for greater coordination between researchers and policymakers for incorporating research findings and recommendations into our administrative policies. Researchers need to be made part of policymaking for better productivity, effectiveness, and robustness of the government policies.

Integrity in Research

Maintaining integrity in research is of paramount importance and therefore young researchers need to be imparted adequate education

about related issues like plagiarism, duplication, gift and ghost authorships, salami publications, outsourced publishing etc. at an appropriate level of their training. It is hard to achieve quality in research unless awareness about the importance of integrity, transparency and accountability is promoted and incorporated as an inherent component of the research. Problem of predatory journals (under API pressure) that has alarmingly surfaced over the past few years needs to be countered and controlled effectively. Any cases of malpractices in research need to be dealt with severely to set an effective deterrent.

Ethics in Research

Just like integrity, ethics in research is a high priority area for maintaining quality and high standards of research. Prime importance needs to be accorded to the issues like confidentiality, privacy, non-malfeasance, beneficence, autonomy, and justice without which no credible and substantive research is ever possible. Awareness about these components needs to be created from the very beginning of research and Institutional Ethics' committees need to be vigilant, proactive about any such malpractices in research and therefore be strict in ensuring full compliance with ethics in research. Unless integrity and ethics are maintained, no substantial gains can be made in achieving high standards of quality in research.

It is universally agreed that high quality of research refers to a process that covers all aspects of the object of study by raising pertinent questions and arriving at reliable answers, which significantly enhances the prevailing knowledge base and also creates new knowledge. Its parameters are as under (UGC, 2019):

i)   Significant questions, which can be investigated, empirically as well as conceptually;

ii) Independent, balanced, and objective approach to the research problem with transparency;

iii) Use of appropriate methodology to address the research problem;

iv) Proper conceptualisation of the research problem and reliable measurement of variables; and

v)   Engagement with internal and international intellectual networks and learned societies.

In our march towards reimagining our Indian universities through research, innovation and excellence, we need to adopt following ten strategies:

- redesigning and remodeling our course curriculum;

- re-engineering our academic and research infrastructures;

- restructuring and re-orienting our human resources;

- redeeming and restoring our glorious past in education;

- revamping the organisational structure of our educational institutions;

- re-examining and rethinking our future goals, objectives and plans of actions;

- revisiting our vision and mission statements;

- reviving and re-energising our faculty improvement programmes and student welfare culture and practices;

- refurbishing our student and teacher amenities and on-campus facilities; and

- re-aligning and repositioning our march towards growth, progress, and development.

INNOVATION OF COURSE CURRICULUM AND TEACHING PEDAGOGIES

Course curriculum that is being taught at our universities can be modified in light of the remarkable technological changes taking place worldwide. Our higher education system has not gone through substantial reforms and changes vis-à-vis curriculum innovation over the past several years. We continue to offer the same post-graduate programs in Science, Arts, Commerce, Social Science, and our education faculty has been teaching for decades with little innovations, although their internal review and upgradation is carried out from time to time. Multidisciplinary campuses of private universities that are coming up across India are offering some of the most innovative and modern courses. However, our public sector universities are lagging behind in keeping pace with them. The rigidity of our course curriculum, organisation, implementation and evaluation of curriculum content and its little relevance to the needs of our society are some of the problems associated with our higher education system. For any meaningful advancement to be made in our education system,

a mid and long-term strategic orientation of our curriculum needs to be undertaken and some time-bound goals need to be fixed to achieve the desired results.

Curriculum renovation that is realistic and student-centered, quick in rejuvenating, and revitalising hope and passion for acquisition of broad-based knowledge that is worthwhile for a learner, should be the focus of our higher education structure. Methodology that will aid self-discovery and problem-solving ability, allows learners the opportunity for creativity, should be entrenched in our curriculum. Quality and relevance are the two main features that curriculum development in our university system needs at present in India. At the same time, changes and innovations of our higher education system must involve the emergence of elastic curricula models and educational policies which emphasise interdisciplinary courses, open-ended systems, inter-generational and inter-professional relationships and sustainability (Parashar and Parashar, 2012).

Lack of initiatives, innovation, skills, independent constructive mindset, and creative ideas characterise our system of higher education today. We need to shift from a system that encourages memorisation in learning processes and theoretical explanation to areas that need practical (Darling, 2019). Our present system favours cognitive development above other domains of education. Therefore, the need of the hour is to keep pace with brisk technological advancements in the teaching learning process. There is need to modify conventional teaching methodologies and introduce recent advances in technology into the teaching-learning process. We must switch over from chalk and talk to more interactive modes of teaching and learning by making use of smart classes with audio-visual aids, e-content, databases, e-learning objects etc. We should not lag behind in adopting the latest technologies in every sphere of our education system, be it in teaching, devising the syllabi, evaluation methods, certification and automation.

The role of a teacher in our education system should change from knowledge disseminator to that of knowledge creator. At university as well as college levels, innovation and greater diversification of our courses and disciplines are the need of the hour. We need to offer more specialisations in all existing subjects and faculties and introduce new subjects wherever not available at present, so that a broader choice is made available to the students and they emerge as specialists in one specific area rather than ending up being generalists.

There is need to innovate our programmes and course curricula by starting new courses like industrial production, biomedical technology, nanotechnology, fashion technology, microprocessor technology, embedded systems, nuclear science technology, hotel management, microbiology, polymer chemistry, textile chemistry, hydro-chemistry, petrochemistry, electro-chemistry, chemistry of natural products, astrophysics, geophysics, nuclear physics, optical physics, particle physics, economic botany, phytochemistry, phytomedicine, disaster management, rural and urban management, hospital management, investment management, education management, enterprise management, entrepreneurship development, business law, e-commerce, corporate tax planning, consumer protection, rural finance and credit, advertising, international business, agricultural marketing, genetics, microbiology, cell biology, molecular biology, biophysics and structural biology, immunology, biostatistics, radiation biology, virology, privatization and deregulation, environmental economics, political economy, public policy and regulation, resource economics, visual communications, travel and tourism, interior design etc. just to name a few.

INNOVATION OF METHODOLOGY, DESIGNS AND GOALS OF RESEARCH

Our academic research should focus on the creation of new ideas, perspectives, and arguments. We should promote critical, analytical, and creative thinking among our researchers at all levels in order to generate innovative ideas and solutions to our research problems. The research process is not simply collecting data, evidence, or 'facts', then piecing together this pre-existing information into a paper. Instead, the research process is about inquiry—asking questions and developing answers through serious critical thinking and thoughtful reflection. Research process is recursive, meaning that the researcher regularly revisits ideas, seeks new information when necessary, and reconsiders and refines the research question, topic, or approach. In other words, research almost always involves constant reflection (William F. Ekstrom Library Website).

Further, we need to foster trans-disciplinary approaches in research. Development of common science instrumentation centers for joint utilisation by research centers in its vicinity that will foster interdisciplinary and collaborative research needs to be promoted in our higher education institutions. Such centers should be well equipped with sophisticated, state-of-art science instruments for use by the

teachers and scholars of all educational and research institutions in a particular area. Trans-disciplinarity is a state of complete balance of influence between all relevant participating disciplines at the highest possible level of co-ordination, which in this sense entails an optimum use of cross-contact or cross-communication. The extent and quality of co-operation are both so advanced that a new discipline may be established analytically and socially. The level of coordination, cross-communication and balance of influence progressively declines as we move down from trans-disciplinary research to inter-, cross-, pluri- and multi-disciplinary research. Multi-disciplinarity is considered to be the least developed form of inter-disciplinarity; it represents a potential for future connection and a milieu for an unrealised potential that could later be mobilised towards a common end. It is the simple juxtaposition of different disciplines without any apparent connection between them (UNESCO, 1986).

Owing to the vastness of our country's educational landscape, for any meaningful innovation to take shape, there is need to devise a comprehensive investment policy for our higher education sector in India. For this purpose, our education sector must be segregated into school education, college education and university level education or primary, secondary and tertiary education in order to develop and clear roadmap for progress and development and clear distinction of the goals and targets in these three sectors. Intended goals of the investment policy may further be divided into short-term goals, mid-term goals and long-term goals in order to fix definite timelines for their fulfilment. Such type of classification will make the policy more robust, goal-oriented and focused. There will be no overlap of policy initiatives among these three sectors and accomplishment of goals will become easier.

These are important times for education throughout the world. The never-ending search for competitive advantage in the global knowledge economy has led all public policymakers to focus on education as a key factor in strengthening competitiveness, employment, and social cohesion. This is an inevitable consequence of the increasing complexity of all our economies. Indeed, the pace of technological change worldwide is now so fast that, to a large extent, we must plan for the unknown. The only certainty is that education needs to drive these changes. Therefore, investment in information technology and e-governance in the higher education sector should not be ignored in the proposed education investment policy.

Further, the higher education investment policy should make sufficient allocations on advance technologies like Block-chain Revolution, Big Data, Artificial Intelligence, Robotics, Internet of Things, etc., in higher education. We are at cross-roads of the fourth industrial revolution, and in order to keep pace with the fast-changing global scenario, we must start thinking in this direction and invest well in advance towards developing sufficient infrastructure and manpower required to adopt and assimilate these emerging technologies in our higher education both in terms of teaching pedagogy and teaching technology. We need to strengthen our e-governance structures for incorporation of Management Information Systems in our teaching-learning process as well as in the management of higher education institutions.

FRAMING SCIENCE AND TECHNOLOGY POLICIES FOR FOSTERING INNOVATION AND ENTREPRENEURSHIP

Substantial progress in Science and Technology is the key to sustained development for any nation in the 21st century. Keeping in view the contemporary developments in Science and Technology at the international level, Indian universities too need to enunciate a comprehensive policy framework to synergise Science, Technology and Innovation (ST&I) in order to achieve faster, sustainable and inclusive growth and foster, promote, sustain cultivation of science, scientific temper, and scientific research in all spheres with special emphasis on innovation that are the essential drivers and sustainers of socio-economic transformation. There is need to promote Science and Technology Innovation and application in our universities in order to create favourable conditions and an enabling environment for innovations to occur. Being part of a cohort or being co-located builds a great community feeling amongst the entrepreneurs. This camaraderie makes entrepreneurs actively contribute to each other's success through ideas, networks, and resources. We need to create necessary framework for enabling integration of ST&I.

Science and Technology departments in every Indian state and union territory, and every university in the state/UT should establish a vibrant consortium of innovation incubation centers where ideas are allowed to germinate. Incubation centers of different universities and research centers of the state must not duplicate research and development activities in common areas, rather different institutions of the state must focus upon different areas and sectors and utilise the

facilities liberally amongst themselves allowing open access to students and scholars to common facilities without any delays and painstaking procedures. This will save a whole lot of resources that can be used in promotion of STI activities. Scientists and technocrats should be involved in the formulation of a premier Science, Technology and Innovation Policy for each state/UT and the existing gap between primary stakeholders including the government, scientists and citizens needs to be bridged by fostering greater interaction and collaboration at all levels.

Science and Technology departments must promote student-exchange and faculty-exchange programs within and outside the state for greater exposure of the youth to opportunities and ground realities in entrepreneurship and innovation. We need to accord due importance to innovation as an instrument of policy and, for this, sufficient and suitable mentorship needs to be made available to the entrepreneurs and innovators. Curriculum and teaching methodology at different levels of education must address the needs of budding entrepreneurs and inculcate an entrepreneurial culture, scientific temper and innovative mindset. Academic curricula and research programs need to be novel and innovation driven that promote constructive mindset and creative outlook among the students. There is also need to bridge the gap between academia, society and the industry in a manner that promotes need-based and community-centric research besides generation of evidence by the academia, formulation of comprehensive and all-encompassing policy by the scientists and effective implementation of the policy and its conversion into practice by the government.

Consortium of innovation incubation and entrepreneurship centers must help entrepreneurs turn ideas into viable businesses and thereby help convert knowledge into value and wealth. Such centers should not merely be dumping grounds for applications and ideas, but also active facilitators for networking with mentors, corporates, development agencies, buyers and investors, and thereby cultivate a rare breed of entrepreneurs by seeding, incubating, accelerating, mentoring and funding innovative startups. Joint efforts by Science and Technology departments and Innovation Incubation Centers of the universities must aim at building sectoral expertise within the network of relevant experts. They must have in-house teams of accounting, HRD, R&D and admin professionals to meet the basic needs of budding entrepreneurs. We need to have strong investor networks and dedicated staff that can help new ventures raise funds.

Science and Technology consortium with innovation incubation centers must provide adequate risk capital in the form of prototyping grant, seed-funding and venture funding. Entrepreneurs must benefit from this consortium in multiple ways during incubation, acceleration, or post-investment phases. There should be an equal emphasis upon both supply side interventions and demand based investments. The top ten sectors of high impact potential may be identified for directed STI intervention and deployment of requisite resources that may include energy and environment, food and nutrition, water and sanitation, telecommunication, affordable healthcare, skill building and unemployment. Innovation for inclusive growth implying equitable access, availability, and affordability of solutions to as large a population as possible must be the key to ST&I Policy of the state. Emphasis should be upon bridging the gap between STI system and socio-economic sectors by developing a symbiotic relationship with economic, industrial, ICT and other policies of the state.

The complex value chain of innovation – from idea to market – calls for STI intervention at all levels including research, technology inputs, manufacturing and services and the policy must enable a holistic approach to intervention, support and investment (GoI, 2013). Government must take steps to address the inadequacy of STI funding, which has handicapped the progress of our universities in the past, and would increase public expenditure to achieve the ends of the renewed commitment to use science and technology as major drivers of sustainable economic growth. Government must make appropriate arrangements for financing the science and technology developments and delivery systems. STI policy must aim at enhancing skills and competencies for applications of science among the youth from all social strata besides making careers in science, research, and innovation lucrative enough for talented and bright minds. It must trigger changes in the mindset and value systems to recognise, respect and reward performances that generate wealth and value from S&T derived knowledge.

CONCLUSION

In order to achieve quality and excellence in academics and research, we need to innovate each and every sphere of our higher education sector holistically be it curriculum design, teaching pedagogies, research designs and methodologies, community outreach and extension activities, publishing practices, faculty improvement and enrichment programmes, student and teacher exchanges with foreign universities,

performance linked incentives and career progression, student feedback mechanism, assessment and accreditation, national ranking criteria, skill enhancement practices, vocational training programmes, green campus initiatives, student placement opportunities, deputation regulations, development plans and long-term strategies for progress and growth of our higher education institutions. Unless all these areas are addressed simultaneously on a war-footing through well-documented policies and procedures, it is hard to re-imagine, redeem, and rediscover our universities as world-class institutions.

However, through persistent brainstorming, policy-planning and timely execution of our mission statements, it will not be unrealistic to think about converting most of our universities into future-ready higher education institutions of global standards within a span of 10-15 years. All that we need to transform this dream into a reality is dynamic political and academic leadership, visionary governance, and dedicated workforce of our higher education institutions. Together, we can make this happen by the end of this decade.

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EXCELLENCE IN RESEARCH AND INNOVATION IN INDIAN UNIVERSITIES
RETROSPECT AND WAY FORWARD

PK SUDHIR AND SAV SATYA MURTY

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. There are many inventions made by inventors that has changed the life of mankind. It took centuries to establish organised research laboratories throughout the world. 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) established in 1909 in Bangalore with active financial support from Jamsetji Tata on the advise of Swami Vivekananda. Some of the parameters for measuring Research, Innovation & Excellence are the number of products developed, scientific ideas conceptualised, patents filed, scientific journal papers published, citations per paper published, h-index, i10 index etc. Though India is among the top 5 countries in terms of scientific publications, it does not match up in investments. As a fraction of 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. Steps taken to improve the research ecosystem and to motivate the faculty and students in universities make a mark in the research.

PRELUDE

Research and innovation contribute significantly to the 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 datasets 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.

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 many inventions made by inventors that has changed the life of mankind, some of which are disruptive or incremental. Disruptive invention 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 early years. Science and Mathematics were highly developed during the ancient period in India. Some famous ancient Indian mathematicians were Baudhayan, Aryabhatta, Brahmgupta, 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 from the classical age of Indian mathematics and astronomy. He invented *Zero,* which changed the understanding of Mathematics (Wikipedia—Aryabhatta). Varahamihira's mathematical work included the discovery 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 to research and innovation. Indian Institute of 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 co-worker 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).

Public funded research laboratories and academic institutes were established in the post-independent 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 extraordinary 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 Institue of Technology (IIT) Kharagpur had published 15,797 and Indian Institue of Technology (IIT), Delhi had published 14,956 journal papers. According to data available with the Human Resource Development (HRD) Ministry, Indian Institue of Technology (IIT)-Madras has filed 132 patents by its students and faculty in 2018. Indian Institue 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.

TABLE 1: NO. OF PUBLICATIONS BY TOP 5 INSTITUTES OF IIT, CUS, NIT AND PRIVATE UNIVERSITIES (2010-16)

IITs	TP	Central Universties	TP	NITs	TP	Private Institutions	TP
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

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 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).

TABLE 2A: QUALITY OF RESEARCH (IITS)

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 2B: QUALITY OF RESEARCH (CUS)

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 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

TABLE 2D: QUALITY OF RESEARCH (PVT. UNIV.)

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

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.

TABLE 3: QUALITY OF RESEARCH VS RESEARCH EXPENDITURE

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

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 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 q^2 proxy, where q^2 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 (q^2). The single composite term, $X = q^2 Q$ 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 institutions belonging to this sector for the period 2003-2011.

TABLE 4: RANKINGS OF HEIS APPEARING IN SIR 2013
ACCORDING TO VARIOUS INDICATORS

Values				Rankings		
HEI	No. of Publications	Q^2	X	Output	Q^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

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-art-technologies. 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 carryout 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 satisfactory. 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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OVERHAULING RESEARCH IN INDIAN UNIVERSITIES

N RAJENDRAN

In the era of global competition for world rankings, accreditation and ever-growing influence of technology, the higher education sector is increasingly becoming important in India's growth strategy. Researches would help industries in the context of Industry 4.0 to perform better without polluting the environment, and the government policy should be to encourage close liaison between institutions and industries. The inter-university research collaborations advocated in the New Education Policy 2020 (NEP 2020) will help the universities to improve the standard of research and teaching in various fields. Government funding for research projects in India is about 70 per cent and the corporate sector spends only about 30 per cent, but in developed countries, most of the research and development projects are mainly funded by the corporate sector and the government spends only a meagre percentage. The future vision of industrial revolution 4.0 urgently requires young men and women with innovative thinking for inventing new things for the future industrial world and, in this respect too, overhauling research is required in the Indian universities.

PRELUDE

It is an undeniable fact that the Indian universities are giving added impetus to research and innovation for developing and taking the nation in all its fields to the next level. Researchers are encouraged to discover and invent new technologies in every sphere, and getting funds is not a problem today for serious researchers. Ministry of Education (MoI) erstwhile Ministry of Human Resource Development (MHRD) has allocated enormous funds for research projects and is helping universities to enhance and improve quality in the areas of teaching and research that would ultimately benefit the society at large.

In the recent years, towards achieving this goal, the University Grants Commission (UGC) has initiated a number of new schemes like Study Webs of Active-Learning for Young Aspiring Minds

(SWAYAM), Digital Learning, Smart and *Swachh Campus*, Smart India Hackathon (Startup), National Apprenticeship Promotion Scheme (NAPS), Unnat Bharat Abhiyaan (Socio-Economic Betterment of the Community) and Learning Outcome Based Curriculum Framework (LOCF), etc. Smart and Swachh campus programmes have been implemented in all universities to equip them with smart and digital classrooms i.e., to offer digital learning in an aesthetically appealing green and clean environment. Every campus is evaluated and ranked by the MoE for its quality and standard of maintaining cleanliness and hygiene. Digital learning is encouraged through SWAYAM, which offers free online courses to students with a view to making them employable in the job market on completion of their courses of study.

MoE INITIATIVES TOWARDS RESEARCH

In the era of global competition for world rankings, accreditation and ever-growing influence of technology, the higher education sector is increasingly becoming important in India's growth strategy. Some of the other significant initiatives of MoE have to be noted here:

- The IMPRESS Scheme (Impactful Policy Research in Social Sciences) aims to identify and fund research proposals in Social Sciences with an impact on the governance and society.

- The SERB-STAR Scheme (Science and Engineering Research Board's Science and Technology Award) has been supporting basic research in frontier areas of Science and Engineering.

- The STRIDE (Scheme for Trans Disciplinary Research for India's Developing Economy) aims to build multi-sectoral linkages between university, government, community and industry for national development.

- The SPARC (Scheme for Promotion of Academic Research Collaboration) has the objective of promoting joint research projects between Indian institutions and the best of the global universities from 25 selected countries. It provides funds for visits and long term stay of international faculty and researchers in Indian institutions, and also gives funds for training Indian students in premier international laboratories.

- LEAP (Leadership for Academicians Excellence Programme) aims to equip senior faculty members to take up leadership roles in future at various levels in higher educational institutions.

RESEARCH AND INDUSTRY 4.0

Researches, in fact, should help industries in the context of Industry 4.0 to perform better without polluting the environment, and the government policy is to encourage a close liaison between institutions and industries. This linkage is expected to boost the production so as to develop and sustain the economy. The inter-university research collaborations advocated in the New Education Policy 2020 (NEP 2020) will help universities to improve the standard of research and teaching in various fields. The introduction of inter-disciplinary courses would provide combinations of various disciplines for helping students develop a holistic approach. The research collaborations will meet out the industry expectations; the holistic approach of learning will make the students well versed in all fields.

It is relevant and important to note here that the government funding for research projects in India is about 70 per cent according to available information and the corporate sector spends only about 30 per cent, but in the developed countries most of the research and development projects are mainly funded by the corporate sector and the government spends only a meagre percentage. This is the real situation globally. Hence, the Indian government's role in promoting research and innovation needs to be appreciated. The MoE has drafted a number of policies and initiated many programmes to make the Indian universities places for relevant research and innovativeness, and the policies also aim at achieving excellence in extension activities that would benefit the society. The Smart India Hackathon Scheme has helped a number of students to become entrepreneurs and they have started their own startups, which would provide more employment to the next generation. Skill India is yet another scheme of the government that endeavours to make the student community a highly skilled work force ready for employment. The industry expects highly skilled manpower from universities. The National Apprenticeship Promotion Scheme (NAPS) is one of the schemes implemented by the state to promote apprenticeship training in industries. On-the-job training/practical training is encouraged through this scheme to fulfill the expectations of new industries.

In the World Economic Forum meeting held in January 2016, Davos-Klosters, Switzerland, highlighted the importance of Fourth Industrial Revolution for the future world. Industry 4.0 is the new industry trend that has transformed the obsolete technologies with the introduction of smart technology. The upgradation the

technological advancement brings a lot of changes in the production of goods and services. The new industrial revolution has brought forth Smart Factories and Smart Manufacturing. Cognitive Computing and Artificial Intelligence are the new technologies emerging in the contemporary technological age. The MoE is funding universities to build better infrastructure, resource creation and conducive ambience for learning and gaining quality education. Inclusive growth is the policy of the government to make the educational institutions develop in every aspect to provide standard education to all irrespective of their economic and social strata.

The collaboration between University and Industry will help to identify the needs of the industry and plan research projects according to the societal and commercial needs and attract the best talents with high research caliber to take up research. The future vision of industrial revolution 4.0 urgently requires young men and women with innovative thinking for inventing new things for the future industrial world and in this respect too overhauling research is required in the Indian universities. The government policy for e-governance is being implemented in the universities besides smart and digital learning. The Industrial Revolution 4.0 is accompanied with the vision of Education 4.0 because the future India is going to witness a growth catering to the needs of teeming millions.

ROLE OF UNIVERSITIES IN PROMOTING RESEARCH

It may be recalled that India was known for imparting good education during the ancient times. The ancient Nalanda University was one of the first five best universities in the world then. It was founded in the 5th century BC and reported to have been visited by Buddha during his lifetime. The students studied Science, Astronomy, Medicine, Logic, Metaphysics, Philosophy, *Samkhya, Yoga-shastra*, *Vedas* and the scriptures of Buddhism, which were the noted features of this university. The Indian educational system was highly philosophical with truth seeking nature in every art or field. Now, restoration of earlier golden periods of Nalanda University has to be realised, so as to make the present universities to regain the ancient glory and attain global standards.

Commercialising research and development projects in Indian universities will encourage more researchers to develop their research

interest in every field of discipline. The holistic approach of inter-disciplinary research and projects will create new inter-disciplinary courses for imparting new perspectives in every subject. Sponsoring research projects has to be carried out intensively and the young researchers have to be encouraged to bring forth quality in their findings and inventions.

The researchers have also to be encouraged to file patents for their original inventions and discoveries, and get due recognition and acknowledgement for their scientific work and achievements. The scientific inquest and search for finding new inventions and discoveries will make the world a better place to live in and help people derive the benefit of smart and technological improvements to facilitate new ways for doing things easily and comfortably.

The call for Sustainable Development Goals (SDGs) is indeed a universal call reminding all the developing and developed nations to address the social and economic issues with more caution and responsibility. Researches can be carried out to achieve SDGs with the objective of creating a better society with lasting peace and happiness in the world. Scientific temper and perspective must be inculcated in the youth through the education system so as to make them comprehend the natural and social phenomena.

The aptitude for innovation and creativity in Science and Technology will stimulate the research inquest and rigour among the young scientists for creating a technological society to realise the goals of fourth industrial revolution in the field of industry and education. The innovativeness and creativity should also be encouraged among the school children to make them participate in developing Artificial Intelligence (AI) to reduce the work of manpower and use robots and machines for doing the work with ease.

The future world will do only smart work rather than hard work. Everything will be done by machines and robots. This will be possible only with the development of Artificial Intelligence (AI) in every field. So, the Indian universities must be fully equipped to train students for creating a better technological society. Less work by humans and more production by the introduction of smart machines and robots are the goals of industrial revolution 4.0 and it will be in operation for the future industry. This should be taken into account while framing curriculum in institutions of learning.

Excellence can be realised in Indian universities only when the quality of education is improved. Improving the standard and quality of teaching, research and extension should be given utmost care and attention by all higher educational institutions and that is what will enhance and establish excellence in all domains of education. All possible ways and means should be explored and implemented to raise the standard and quality of teaching and research. Bringing about these changes will not be an easy task to accomplish. The suggestions and ideas of educational stakeholders and activists must be welcomed and given a platform for their innovative ideas to reform our educational system.

The New Education Policy 2020, which is the first 21st century India-centric educational policy, aims at bringing in major reforms to suit the modern needs. With its proper implementation, the Indian educational system will be witnessing remarkable changes in its governance pattern and methods of teaching in schools and higher educational institutions. The entire educational system has to be geared up to adapt to the changes that will occur in the future on account of the implementation of new education policy.

Practical knowledge must be imparted to make students compete at the global levels. Competency in using advanced technology is imperative to make the nation a well-developed one across all fields. The industry requires competent professionals with skills to maximise the production of goods and services in the business sector. Competency will also develop entrepreneurship skills and shape them to become innovative entrepreneurs by creating new job markets to the large pool of young talents. The world job market is always searching for young innovative talents to make their country rich in every field. More innovativeness will lead to more inventions and discoveries in various fields and create a better society with advantages of advance technology and make this world a better place to live in. Excellence is possible with radical changes occurring in the fundamental educational system.

Morality and ethics must be given emphasis and followed scrupulously in research to present a true picture of the findings. Ethical codes of doing research must be taught to the researchers at the very initial stages. Researchers must be encouraged to focus on intuitive and objective ways of doing research to enhance the quality of their researches. The quality of research is one that will give a true, picture of findings and that should be the aim of every research.

The Non-Resident Indians (NRIs) who have settled in foreign countries are contributing a lot to the countries of their settlement. The remarkable talents of NRIs can be utilised by making tie-ups with them. For example, Venkatraman Ramakrishnan won the Nobel Prize in Chemistry for studies on the structure and function of ribosome. He is now considered a British-American Structural Biologist though he is an Indian. Many such NRIs can be used for promoting research and innovation in Indian Universities.

Every effort should be taken to recognise and utilise the young talent. If it is not done seriously, developed nations will use our young talent for their countries' development. Brain drain is a very big issue; the world is looking for innovative people. The skill of young talents must be acknowledged by our universities. Indian universities have the responsibility to retain the best talents of young scientists by providing them all facilities and sumptuous monetary gains. Otherwise, we will face the issue of brain drain in a bigger way.

Besides having the responsibility to make our students competent and skilled, we also have the responsibility to make the best use of the young talents and recognise their potential and abilities. Excellence is possible only when we acknowledge and recognise the best talents of young scientists. Otherwise, global institutions that look out for and nurture the best talents will recognise and retain them, and make use of them for their nation's development and enrichment.

CONCLSION

Promoting research, innovation and excellence in Indian universities is a very big task. This would only be possible when changes occur in the methods of teaching and research. Adherence to the code of ethics in research is another key factor that need to be given importance, and all resources have to be created to make students competent. Young scientists must be recognised, appreciated and awarded for their meritorious achievements. More research collaborations need to be initiated and integrity in recruiting best faculties with greater potentialities and capabilities will do good for the nation and the society.

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INNOVATION AS AN ANTECEDENT OF THE UNIVERSITIES OF THE FUTURE

UPINDER DHAR AND SANTOSH DHAR

Nearly half of today's jobs will be redefined within a generation, and nearly two-thirds of CEOs identify technology as their firm's greatest source of future competitive advantage. The future of employment and education demands continuous reskilling and delivering learning for life. Universities will have a central role in supporting an ever–growing population of lifetime learners. To switch over to a flexible lifelong learning is both a challenge and an opportunity for the universities. In the coming years, long standing models of higher education that prefer tradition and stability will be supplemented, if not displaced, by new models that embrace organisational innovation, responsivity, and adaptation. There is a need to move beyond the system of rote learning and facilitate students in choosing their own learning paths. The university of the future would promise to be an exciting place as it will enable the students to study wherever and whenever they like. Each student will be allowed to take charge of his/her own education by choosing one's own modules and mode of learning, whether it is on campus or online.

PRELUDE

India has the demographic edge—a young talent pool that is estimated to become the world's largest by 2030. But, is the higher education sector ready to face the challenge? The higher education sector in India has produced some of the world's best talent. The CEOs of some of the biggest Fortune 500 companies – Microsoft, Google, Mastercard, and Adobe – are products of the Indian higher education system. The landscape has also expanded over the past decade – from 436 universities in 2009-10 to 1040 in 2019-20 and from 26,000 colleges to 39,931. Student enrollment, at 37.4 million, is the third largest in the world, next to China and the United States (Government of India, 2011 and Government of India, 2019).

India is already in the middle of the 'demographic dividend' with a surge in its younger and working-age population, which is estimated

to become the world's largest by 2030. The country is expected to account for about 20 per cent of the total young talent pool supplied by G-20 countries. Within this scenario, higher education in India will continue to play a critical role in driving the nation's talent competitiveness (Ghosh, 2019).

GLOBAL FORCES OF CHANGE

The rise of Artificial Intelligence (AI), the Industry 4.0, and the future of work are disrupting the ways of learning and working. There is a growing debate about the impact of AI and automation on jobs, shelf-life of skills, and changing learning models in the digital era. Other factors, such as the growing cost of education, funding constraints, and the rise of non-traditional ways of learning, are changing the education sector globally. In addition, the growing challenge of the skills' gap across sectors, has made it crucial to align learning with the industry demands.

The advent of the fourth industrial revolution has ushered in an impending skills gap. Nearly half of today's jobs will be redefined within a generation, and nearly two-thirds of CEOs identify technology as their firm's greatest source of future competitive advantage. No industry can afford to remain immune to the impact of technological change. From Law and Fine Arts, to Fashion and Agriculture, the shift from using technology to being driven by technology is likely to be an irresistible force.

The future of employment and education demands continuous reskilling and delivering learning for life. Universities will have a central role in supporting an ever-growing population of lifetime learners. The essential skills for our future will not be defined by a single period of tertiary education. Individuals will not seek to advance by taking a break from their careers to enter full-time education for extended periods. Rather, every person will prefer to upgrade the skills that can connect across multiple careers and can be integrated into an entire lifetime.

The role of the university must expand from a typical three or four year-degree program with limited industry and employer engagement. Individuals need continuous learning opportunities and support, as well as complete reskilling if possible, throughout their careers. Universities will grow by providing opportunities for learning supported by the best academic and contemporary industrial practices.

Switching over to a true model of flexible lifelong learning is both a challenge and an opportunity for the universities, governments and regulators everywhere. Education and industry need to deepen their partnership and create more permeable borders between them, allowing individuals to apply their knowledge immediately in an industry context while learning full time, and learn new skills although working full time. The Indian higher education sector is at a critical juncture and needs to prepare well for such disruptions.

Key Challenges

While the Indian higher education has grown substantially in terms of enrollment, some areas still need attention. Challenges include gaps between the skills being imparted and the skills needed at the workplace; skill gaps among faculty; paucity of funding agencies; and the amount and quality of research being carried out in these institutions. Some of these are discussed here.

The Growing Divergence between Curricula and Market Demands

In the post-industrial era, the skill sets one obtained in college or university served one for a lifetime: a professional who picked up his/ her skills in college could hope to tap into them throughout his career. However, over time, the shelf-life of skills has receded. Educational institutions, unfortunately, have not conformed with these changes. The absence of an updated curriculum is a challenge for the Indian higher education system (Gupta et al., 2019). The growing gap between curricula and market demands has led to a widening skills' gap in the talent entering the market. For instance, next to China, India is the largest producer of Science, Technology, Engineering and Mathematics (STEM) graduates: 2.6 million in 2016 versus China's 4.7 million. However, in India only 47 per cent of the available talent is employable (Wheebox, 2019).

The Quantity and Quality of Research

There is much debate about the quantity and quality of research around the world. One view is that the extensive research published globally is putting tremendous pressure on the peer-review system, which in turn affects quality. Besides, many people question the value of research papers that are not freely available for everyone to read: only 25 per cent of global research is available through open access platforms and without a subscription.

Despite these drawbacks, research – as measured by the number of publications, number of citations, citations per document, and the H index – remains one of the factors that determines the quality of higher education. The importance of research in education, especially higher education, was realised in the 19th century. Humboldtian model of education in Germany, proposed research as a core component of university studies. Since then, the quantity of research has improved.

According to some estimates, more than 30,000 scientific journals publish over two million articles every year globally. The number of publications from India has gradually increased over the years, but it is still lagging behind the leading countries such as the United States, China, United Kingdom, and Germany. The same is true for the H index of faculty and researchers in India.

Faculty Vacancies and Skills' Gap could Dampen the Quality of Education

Faculty vacancies in higher education remain high. The current lot of permanent faculty is inadequate. The skill sets of students as well as faculty are not in line with the needs of the institutions. Lack of quality faculty is the biggest challenge for the Indian higher education sector. Therefore, the faculty needs to up-skill more than once a year to match industry expectations. Otherwise, faculty vacancies pooled with skills' gap could dampen the quality of education.

Lack of Funding Alternatives

The quality of research is also a result of adequate sources of funding. Insufficient funding is another top concern. The decline in public funding, coupled with want of the corresponding rise in tuition fee, has put pressure on the current education system. The numbers also show that public funding for higher education has stagnated. In 2015, India's expenditure on research stood at 0.62 per cent of Gross Domestic Product (GDP) versus China's 2.06 per cent. Public funding for education remained at around 3 per cent of GDP in the past 5 years against 6 per cent for other developing nations such as Brazil and South Africa.

Structural and Learning Reforms

The Indian education sector is in the process of transforming into a more targeted and learner-oriented model. During the times to

come, it will be crucial to design innovative solutions to accelerate the performance of the higher education to meet market demands, improve access to students, and drive efficient operations.

The most important challenge involves a shift in the way students would undertake higher education. Instead of attending a single institution, students shall receive credits in multiple ways: through early college/dual-degree programs, online providers, and multiple universities. Students shall be adopting online courses by turning to alternate providers. As a result, higher education institutions must become more agile, entrepreneurial, student-focused, and accountable for what students learn. The education shall have to be outcome-based now.

Emergence of Massive Open Online Courses (MOOCs), new learning styles and rising financial and sustainability pressures are affecting the education sector. Leaders in the higher education sector are developing new strategies to leverage these emerging challenges and opportunities. The common denominator amidst all this change is students. Universities need to evaluate how they offer a student life experience that prepares him/her to be healthy and dynamic in the future. That means universities need to embrace sustainability and wellness as key components of campus life.

In the coming years, long standing models of higher education that prefer tradition and stability will be supplemented, if not displaced, by new models that embrace organisational innovation, responsivity, and adaptation. A dual transformation design strategy has proved especially effective for addressing both legacy and evolving markets. A new white paper on the future of higher education predicts that artificial intelligence, analytics, augmented and virtual reality, robotic telepresence and cyber defense will be driving forces in digital learning at colleges and universities over the next 20 years (Mattis, 2019).

Broader Education Ecosystem

Currently, the various components of higher education – educational institutions, students, alumni, regulatory and accreditation agencies, employers, and governments – operate in silos, resulting in barriers for students. There is a need for a broader education ecosystem; ideally one that goes beyond the university and includes industry, government, regulatory agencies, and think tanks. Partnerships and networking between industry and higher education will emerge as normal practice.

Learning and Job Readiness

People are more concerned with getting a job on the very first day of the placement season, rather than looking at whether the job offered will lead to a sustainable career ahead. A sole focus on employment diminishes the focus on learning. Universities need to strike a balance between learning and employment opportunities. One way to approach this is to integrate some of the key employment skills – such as problem solving, critical thinking, communication, and entrepreneurial abilities – into the curriculum. This will help to shift the focus to practical methods of learning and would also ensure a relatively smoother transition to employment.

Interdisciplinary Learning

Today's learner cannot be confined to a constricted education model as one needs a mix and match of disciplines. The onus of executing this is on the universities. There is a need to move beyond the system of rote learning and facilitate students in choosing their own learning paths. Such interdisciplinary learning can help students broaden their knowledge beyond a single domain.

Online Education

Virtual modes of learning are popular across the world. India's e-learning market is likely to expand to over 9.5 million users by 2021. Building a credit system for such learning will be important to encourage students to draw benefits from these courses as part of their overall education. For instance, Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) by the Ministry of Education (MoE) erstwhile Ministry of Human Resource Development, offers free online courses, which allow students to continue 'life-long learning' and help them to reskill and upskill.

REIMAGINING UNIVERSITIES IN INDIA

The university of the future would promise to be an exciting place as it will enable students to study wherever and whenever they like, with immersive learning experiences. The universities need to innovate in this rapidly changing world, as the students will be adept in using high-tech software and gadgets at the time of entry. The pace of change at the world's top higher education institutions has to be brisk. The intensity that comes with a physical or virtual learning environment stimulates and accelerates learning in a way that traditional learning methods sometimes can't. Over the last two decades, the reality of

academic world filled with rapidly advanced technology is a reality. Such learning environments are transforming higher education today. Some of the models which can be adopted for reimaging the universities are:

Experiential University Model that shall facilitate students to alternate between classroom learning and work related to their field of study. It would allow both employers and students to evaluate the level of suitability before committing to a full-time position.

Partnership University Model that shall facilitate businesses and other employers, such as the government, research institutions and think tanks, to help the institution in preparing talent for the knowledge economy. For instance, businesses can provide insights on curricula, financial assistance for equipment, and other essential resources. Institutions can partner with employers to include longterm internships in the curriculum that provide the same number of credits as a course.

Cluster University Model that shall facilitate students to have access to the courses across disciplines and campuses. Students will be encouraged to choose their own career paths.

Subscription University Model that shall facilitate the institutions to become a platform for continuous learning – both for technical and soft skills – throughout a student's lifetime. Students shall walk in and out of the system to gain and update their knowledge and skills by paying an annual subscription fee.

Sharing University Model that shall allow sharing of repetitive activities with other institutions to draw benefits from an individual institution's strengths. Some of the shared services include career services, centralised marketing function, and admissions.

According to the UNESCO Institute for Statistics, an estimated 120 million people will be studying in higher education by 2030, with 2.3 million of those studying overseas. As a result, universities are beginning to offer a wider range of degree programs than they did traditionally, allowing students to study at a time and pace that suits them. This is especially important when it is taken into consideration that how many more students are entering education while balancing a family life, a career or both. Higher education institutions around the world are continuing to establish strong links and official partnerships with other top global universities as a way of encouraging networking between both students and faculty. As a result, the ability to travel overseas for education and work is becoming much easier.

The students have the opportunity to take part in an international exchange program, so whether one takes part in an exchange program, study abroad for a semester, or study one's entire degree in a new country, such experiences allow the student to mix, work, and live alongside a wide range of individuals who are from various backgrounds, cultures, races and faiths. Such global opportunities enrich a student's learning experience and allows him/her to understand and appreciate others' points of view, which can facilitate in preparing the student for a career in a global setting (Lukins, 2019).

CONCLUSION

Rigid traditional teaching methods are no match for state-of-the-art technology and e-learning platforms, as universities will be required to cater to the needs of individual students. The students need not to fit within strict time schedules and inflexible academic boundaries. Perhaps the biggest change one can expect to see is more universities switching the focus from the teacher to the student. Each student will be allowed to take charge of his/her own education by choosing one's own modules and modes of learning, whether it is on campus or online. By doing this, students shall be active in their own learning and will also be able to foster technical and transferable skills when it comes to taking the responsibility of learning in their own hands.

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INTERNATIONALIZATION OF HIGHER EDUCATION

INTERNATIONALISATION OF HIGHER EDUCATION
GLOBAL TRENDS AND INDIAN INITIATIVES

NV VARGHESE

No country in the world can remain isolated from global developments in knowledge production and academic influences they exert on national education systems. Knowledge is produced nationally but shared globally. International collaborations and cooperation in knowledge production and its sharing becomes an important step towards enhanced visibility to gain international academic credibility. Internationalisation is a process by which nationally produced knowledge is transmitted to people and countries other than where it is produced. The most common direction of cross-border student flow is from developing to developed countries. Developed countries and their knowledge economies rely on migration of the highly skilled personnel from developing countries. This 'internationalisation' promotes interactions within and between cultures so that the curriculum becomes cross-national and intercultural in nature. India envisages to enrol an increasing number of international students in its universities. The target is to attract 500,000 international students by the year 2024.

EDUCATION FOR NATIONAL DEVELOPMENT AND INTERNATIONAL ENGAGEMENT

Universities were conceived in the medieval period as international institutions. The Paris model served as a common global academic model attracting international students professors, and following Latin as the common language of academic discourse (Altbach, 1998). The newly independent countries in the post world war II period were committed to nation building and relied on universities to promote national development. Nationalising development in the new nation states implied replacement of expatriates in administration, developing capacities to design strategies for economic and social development, and developing a national education system. The higher education system helped national governments to achieve these objectives in the post-colonial period.

The governments in developed countries relied on education as one of the means to build and sustain diplomatic relationships with the newly independent countries. These developed countries maintained their engagement with developing countries by internationalising higher education. The most visible forms of internationalisation implied cross-border education taking place through cooperation projects, academic exchange programmes, and scholarships (Knight, 2006). The scholarship programmes such as USAID and the Fulbright programme, Colombo Plan, British Council and Commonwealth scholarship programme, and the German Academic Exchange Service (DAAD) are examples of schemes initiated to promote internationalisation of higher education.

GLOBALISATION AND THE BATTLE FOR BRAINS

The development strategies in the 1980s relied on market forces to globalise production. The globalised production relied on higher order skills and competencies such as:

a) theoretical knowledge to design;

b) technological knowledge to develop production;

c) technical knowledge to produce; and

d) vocational skills to support production (Hansen, 2008).

No single country in the world had adequate number of workers with the required skills and an education system with capacity to produce requisite number of graduates with these skills.

Countries were left with two options (Varghese, 2011): a) educate citizens at home; and b) hunt for talents abroad. The former was very expensive and time consuming. The latter option was easier, faster and cheaper. Developed countries and their knowledge economies relied on migration of the highly skilled personnel from developing countries. The hunt for global talent intensified the 'battle for brains' (Chanda, 2002) to promote national competitiveness and global production. Many countries introduced new visa formats to encourage the flow of highly skilled personnel to their countries. The H1B visa of the USA, the Blue Card visa of the European Union, and point-based emigration policies followed in countries such as the UK, Australia and New Zealand are examples of new strategies to attract the best brains and bright minds from developing countries.

The battle for brains promoted globalisation of higher education. It was felt that the best way to attract talent to a country was to 'catch them young' and train them as per the requirements of the global labor market. Expanding the scope of study abroad programmes and promoting student flows became important strategies to promote faster growth of knowledge economies. In other words, cross-border education became a source of future labour supply in the developed world since an overwhelming majority of those who enrolled as students in the universities of the developed world did not return to home countries after their studies. Many countries liberalised post-study visa provisions to retain global talents within the confines of the host country boundaries.

INTERNATIONALISATION IN A GLOBALISED WORLD

Internationalisation is a process by which nationally produced knowledge is transmitted to people and countries other than where it is produced. Internationalisation of education implies the imparting of knowledge, skills, and values that have a universal application. It is a process of integrating an international, intercultural, and global dimension into the purpose, functions (teaching, research, service), and delivery of higher education (Knight, 2004). Internationalisation promotes interactions within and between cultures so that the curriculum becomes cross-national and intercultural in nature.

Internationalisation can take place both at home and abroad: at home, it is a campus-based activity and does not involve the movement of persons or programmes across borders, whereas abroad implies cross-border activities or cross-border education involving the movement of people (students and teachers), programmes, and providers across national boundaries (Knight, 2006). Internationalisation involving cross border flow of services is more in discussions than internationalisation at home.

In the context of globalisation, education became a commodity to be traded under the General Agreement on Trade in Services (GATS) framework. A university became a provider, an educator became an investor, students became clients, and customers in the market mediated framework of trade in education. Economic rationality and commercial interests became the driving force to promote cross-border flows in education and in the production of graduates for the global labour market.

The priority concerns of universities shifted from focusing on national development to imparting globally accepted standardised skills and promoting international language. Qualification frameworks and instructions in English language became a commonly accepted feature of internationalisation of higher education in a period of globalisation. English became the language of profession, the 'Latin of the 21st century' and a lack of its knowledge "seriously disenfranchised" (Mathews, 2013) graduates from seeking jobs in the global market.

Internationalisation of higher education in the context of globalisation became a market mediated process traded through four modes under the GATS' framework:

a) Cross-border supply of service where consumers do not cross borders. E-learning-based distance education programmes: online universities and massive open online courses (MOOCs) are good examples of this mode of trade;

b) consumption abroad where the consumers (students) cross the borders. The study abroad programmes are the most visible form of this mode of trade;

c) the commercial presence of the provider in another country in the form of branch campuses or twinning and franchising arrangements between cross border universities; and

d) presence of persons in another country to provide the service. The most visible form of this mode is the mobility of professors from one country to another.

While the most visible mode of cross-border education traditionally has been through student mobility, institutional mobility acquired importance in the first decade of this century and programme mobility, especially through MOOCs, became common in the second decade of the present century. The commercial interest and profit motivations have been best served through student mobility and institutional mobility. At times, students and institutions move from different countries to converge in a third country destination as seen in the case of education hubs.

INTERNATIONALISATION THROUGH STUDENT MOBILITY

According to UNESCO sources (UIS, 2018), more than 5.09 million students crossed national borders in 2017 to pursue higher education.

The most common direction of cross-border student flow is from developing to developed countries. A group of nine countries in North America and Western Europe continue to be favorite destinations for most students. They host nearly 60 per cent of the cross-border students followed by East Asia and the Pacific region accounting for more than 20 per cent of the internationally mobile students. It seems there is an increase both in the number and share of students moving to East Asian countries (UIS, 2018).

The USA continues to host the largest share of international students, although its share has been declining in the recent years. The USA is followed by the UK, Australia, France and Germany. The regional flow of students is interesting. The most favorite destination for Arab students is France; Germany for Central and Eastern European students; Russian Federation for Central Asian students; and the USA for Asian and Latin American students.

The most important sending countries are China, India, Saudi Arabia and the Republic of Korea. These countries together accounted for more than one-fourths of the international students in 2015. Among these countries, China has been making the highest increase in sending students abroad for studies. Their share in total internationally mobile students increased from 6.8 per cent in 1995 to 17.4 per cent in 2015. India too has increased its share of international students from 2.3 per cent to 6.0 per cent. India sends around 305 thousand students abroad for studies. Five countries – USA, Australia, Canada, UK, UAE and New Zealand – host more than 70 per cent of the Indian students going abroad.

Japan is one of the few countries which has consistently reduced the number of cross-border students. Although it used to send a large number of students and remained a major contributor to cross border education, there is a decline of 33 per cent of cross-border students from Japan between 2004 and 2016. A recent survey found that 53 per cent of Japanese students are not interested in study abroad programmes. The high cost of education abroad and easy opportunities for high paying jobs without foreign degrees (due to labour shortages) make many prospective students keep away from study abroad programmes (Economist, February 29-06 March 2020).

It seems post-study visa facilities and employment opportunities are factors influencing student decision to choose a destination

country. This is evident from the decline in student flow to UK when the post-study visa rules changed and increased dramatically when the UK revised its post-study visa rules in 2019. A foreign degree enhances employment opportunities and higher returns to investment when the student is employed in the host country. The foreign degree holders enjoy premium in the labour market in the country of origin. For example, information on the return plans of doctoral graduates from US universities indicates that nearly 90 per cent of Chinese and Indian doctorate students would like to stay in the USA after their studies (Kapur and McHale, 2005). This shows that cross-border education, especially student mobility, becomes fertile ground for recruiting future highly skilled workers in many developed countries (Tremblay, 2002).

CROSS-BORDER INSTITUTIONAL MOBILITY AND EDUCATION HUBS

Institutional mobility takes place through different forms: branch campuses, franchising, or twinning arrangements. The branch campuses primarily provide face-to-face instruction leading to award of a degree from the parent institution or jointly with a partner institution (ACE, 2009). Franchising denotes the delivery in-country by an authorised domestic institution; and twinning denotes the joint ownership and delivery by institutions in the home and host countries (Cao, 2011).

The decade of 2000s has seen the rapid growth of US, UK, and Australian higher education institutions offering degree programmes and establishing branch campuses abroad. Many countries establish branch campuses that act as education hubs attracting students seeking cross-border education within the country and abroad. Development of education hubs has become an objective of some of the national governments in developing countries. Countries such as Malaysia, Singapore, Hong Kong, Abu Dhabi, Dubai, Doha, Qutar, Mauritius, etc., are good examples of education hubs.

Malaysia has developed an international educational hub targeting the graduate education market. Dubai Knowledge Village (DKV) and Dubai International Academic City (DIAC) house over 20 international universities. Qatar has established an education hub attracting academic programmes from US universities with a view to reduce the outflow of Qatari students. The Qatar Foundation provides loans to attract foreign students and will write off the loans if the students stay and work in Qatar after their graduation. Hong Kong has promulgated the notion of Hong Kong as a regional education

hub. Bhutan is building a US$1 billion education city to encourage prestigious foreign universities to establish n branch campuses. Mauritius has already developed collaborations with prestigious foreign universities of the USA, the UK, France, India, South Africa, etc., to establish a 'knowledge hub'.

Some branch campuses receive financial or material support from their host countries except in Europe. The support very often came in the form of facilities, such as land leases at a discounted rate or on rent-free basis. Some of the branches in the Middle East received financial support from the government. Students attending three of the seven branch campuses in the Middle East were eligible to receive financial aid from the local government.

The ACE survey (ACE, 2009) showed that business programmes continue to dominate the branch campuses in Asia and Europe. IT courses occupy the second position followed by international courses common in Europe and Computer courses in Middle East. The field of International Relations was common in Europe but not in other regions. Almost half of all degree programmes in the Middle East were offered in STEM fields.

A survey among students in branch campuses in the UAE found that students prefer studying at a branch campus in the UAE to a Western university for reasons of financial benefits (less expensive), a 'hassle-free' life, personal safety, religion, familiarity, comfort with the local culture and lifestyle, and improved prospects in the local/regional labor market after graduation (Wilkins and Balakrishnan, 2012).

CROSS-BORDER PROGRAMME MOBILITY AND MOOCS

Correspondence courses offered by the traditional universities existed as a form of distance education programme. Open universities emerged in the 1960 and became popular with the Open University of UK. The online courses and fully accredited online universities came into existence by the turn of this century. The Open Educational Resources (OER) facilitated provision of digitised materials free of cost to all. The MIT Open Course Ware project of 2002 and the Open Learn Programme of the Open University, UK in 2006 extended free access to their online courses popularised OER. Programme mobility has assumed unimaginable heights with the emergence of Massive Open

Online Courses (MOOCs) in the 2010s as the major form of learning without boundaries (Varghese, 2017). The expansion of enrolment in MOOCs has been exponential. MOOCs have become an event changing the landscape of global higher education provision (Yuan, et al., 2008).

The fast expansion of MOOC courses and technological advances have encouraged introduction of online courses by many governments in the developing countries (Varghese, 2014). The investors are also influencing national governments and their policies to accommodate the changes to take advantage of the opportunities provided by MOOCs (Levine, 2013) since online education opens immense scope for cross-border trade. With the increasing popularity of MOOCs, universities and colleges are also readjusting their curriculum, courses and delivery modes. The flexible learning pathways have become a way to incorporate these changes in the higher education system.

INTERNATIONALISATION AND INDIAN HIGHER EDUCATION

Higher education in India is in a stage of revival. The growth in student enrolment within the country and abroad is an indication of the revival of the sector. Indian higher education has transited from a slow growing and low enrolment sector to a fast growing massified system. In this century, the growth rates in domestic enrolment in higher education accelerated to reach two digits, student numbers increased by more than 4.5 times to reach 36.8 million, the number of colleges more than quadrupled to 40,000 and the gross enrolment ratio reached 26.2 per cent in 2018 (Varghese, 2019).

INDIAN STUDENTS ABROAD

The number of Indian students abroad increased by 5.2 times – from 66.7 in 2000 to 305 thousands in 2017 – accounting for an average annual rate of growth of 9.4 per cent. With more than 305000 Indian students studying abroad, India is the second largest student-sending country after China. USA remains the leader in hosting Indian students, although its share has declined over a period of time.

Four countries, namely, USA, UK, Australia and Canada accounted for 73 per cent of the Indian students abroad in 2000 and the same countries account for the same share in 2017. However, the relative share of students hosted by these countries changed during this period:

the student share decreased from 59 per cent to 45 per cent in case of USA; increased from seven to 15 per cent in case of Australia; one to seven per cent in case of Canada; and remained stable at six per cent in case of the UK (Choudaha, 2019). These changing trends in Indian student flows indicate a close association between choice of study destination and immigration policies followed by the countries.

Ever since financing of study abroad programmes have been mainly from household budgets, Indian students have become 'highly-price-sensitive' and 'value-maximisers'. Cross-border Indian students look for options that lower cost and increase career opportunities. The surge in Indian student flow to Canada can be attributed to the Post-Graduation Work Permit Program (PGWPP) introduced in 2006, which allowed students to gain permanent residency in Canada. Similarly, the point-based immigration policies increased Indian student flows to Australia. The student flow to the UK declined when it abolished post-study work visas (Choudaha, 2019). Further, when the UK revised the post-study visa rules, the flow of Indian students to UK increased by 93 per cent in 2019.

India ranks second in enrolment in MOOC courses after USA. Similarly, a large number of Indian professors teach in foreign universities. However, the country does not permit foreign universities to open and operate independent branch campuses in India. As per the indications in the new policy on education (NEP, 2020), this position may be revised to permit foreign universities to operate independent branch campuses in India. It needs to be noted that as of now India is very favourably placed in terms of three out of four modes of cross border mobility, namely, student, programme and teacher mobility.

FOREIGN STUDENTS IN INDIA

Indian universities have traditionally been international institutions in their orientation. The ancient Indian university of Nalanda in the 5th Century BC had a strength of 10,000 students and 2,000 professors. The Nalanda University attracted international students and teachers from China, Indonesia, Korea, Japan, Persia and Turkey. The international influence on Indian higher education continued even after independence since many of our universities are modeled after the Euro-American universities, relied on foreign trained faculty, imported laboratory equipment and facilities, and continued active collaborations with institutions abroad.

India attracts only around 46,000 international students. While Indian students abroad account for six per cent of the total, foreign students studying in India accounts for less than 1 percent of internationally mobile students. Although there is provision for enrolling 15 per cent foreign students in some of the Indian higher education institutions and 10 per cent in all higher education institutions, these targets remain a distant dream. The low enrolment of international students in Indian institutions is an area of concern for Indian policy makers.

INDIAN APPROACH AND INITIATIVES FOR INTERNATIONALISATION OF HIGHER EDUCATION

Internationalisation of higher education under the GATS framework is a market mediated process to trade education. Indian approach to internationalisation of higher education stems neither from commercial interest nor from revenue generation motivation. Internationalisation of higher education is seen in India mainly from two premises:

a) as a means to extend soft power and diplomatic relationship with foreign countries; and

b) as a means to enhance the quality of domestic higher education to improve India's position in the global ranking of universities.

The government has initiated various steps to expand the scope and operations of internationalisation of higher education. The country's efforts to develop India as an education hub is part of this strategy. To attract international students and to make India a favourable destination for international students, the government launched the 'Study in India' programme with 2500 scholarships. The study in India programme attracted around 6,000 students from over 30 countries in 2018. More and more countries are expected to be covered under this programme in the near future.

India envisages to enrol an increasing number of international students in its universities. The target is to attract 500,000 international students by the year 2024. The government is also expanding student support facilities, for example, the number of student scholarships will be to 50,000 by the year 2024. India is also exploring possibilities of legislating to permit foreign universities to establish independent branch campuses in India. This may have an added incentive to attract foreign students to India.

Although India has a comparative advantage in terms of low fees and low costs of living, the student flow to India has been slow. It seems the quality of higher education offered and the future employability of international students play a more crucial role in influencing their choice of study destinations. Unfortunately, India is not an attractive destination on both these counts. A majority of international students in India come from South Asian and African countries partly because of the relatively better quality of higher education in India compared to that in their own countries. Some of the private universities in India attract good number of foreign students.

The other factors that constrain foreign students seeking education in India are absence of an internationally relevant curriculum, poor teaching methods, limited number of foreign faculty in the institutions of higher education, and limited exposure of local faculty members to the international context. The inordinate delay in administrative processes including declaration of results is also an important concern for many international students.

Another programme was launched to in 2017-18 to attract foreign faculty members to teach for short durations in Indian universities. The Global Initiative for Academic Network (GIAN) attracted around 1800 scholars from 56 countries to offer courses in 2017-18 and 2018-19. In its extension in GIAN II, the government intends to promote mobility of Indian faculty members to teach in the universities abroad.

Several programmes such as 'PM Scholars Return to India' have been initiated to bring back Indian scholars settled abroad. This will increase the number of internationally trained professors offering courses in Indian universities. Similarly, the Scheme for Promotion of Academic Research and Collaboration (SPARC) was launched in 2018 to promote research collaboration between reputed institutions abroad and Indian institutions.

The collaborations with foreign universities help internationalisation in several ways. The institutional collaboration enhances academic credibility of domestic institutions, increases the number of international publications of Indian faculty members, gains international exposure and experience which self-pressures to maintain international standards in teaching and research, and helps developing a comparative perspective and enhanced analytical competencies. All these will certainly contribute to enhance quality of higher education institutions in India.

India developed its MOOC platform Study Web of Active Young Aspiring Minds (SWAYAM), which is gaining popularity. The SWAYAM courses are offered to foreign students as well. Similar to open universities in the UK and UNISA in South Africa, SWAYAM has the potential to attract enrolment of foreign students in large numbers.

CONCLUDING OBSERVATIONS

No country in the world can remain isolated from global developments in knowledge production and academic influences they exert on national education systems. Knowledge is produced nationally but shared globally. Therefore, there is a need for Indian education institutions to remain globally connected and engaged. International collaborations and cooperation in knowledge production and its sharing become an important step towards enhanced visibility to gain international academic credibility. It is important is to take advantage of the opportunities provided by international collaborations to place Indian higher education in the global context. This will certainly help India to play a more promising global role in education.

Most of the discussions on internationalisation of higher education centers around cross-border mobility of students, programmes, institutions and teachers. Cross-border mobility forms only a small part of the broader issue of internationalisation. For example, less than one per cent of Indian students in higher education cross borders and more than 99 per cent of students study in India. If internationalisation is to be a broad-based experiment and a successful experience, we need to focus on the students studying in Indian institutions. In other words, India needs to focus not only on internationalisation abroad but also on internationalisation at home.

Internationalisation at home takes place through curriculum changes, changes in teaching methods, learning strategies, student evaluation methods and the socialisation process that takes place in campuses. The NEP-2020 envisages to produce globally competitive and nationally grounded university graduates. The new initiatives such as GIAN and SPARC may help promote internationalisation at home by the foreign trained professors and by establishing collaborations with foreign universities, by revising the curriculum to make it globally relevant to produce globally competitive graduates from institutions of higher education in India.

Internationalisation needs investment – both in institutions and facilities, and on individual faculty members and students. It seems that India plans to invest Rs. 93 billion (around USD 130 million) on internationalisation initiatives. This investment may help India emerge as an important global player in education if we succeed in internationalising curriculum contents and curriculum transaction methods.

Note: The opinions and views expressed in this paper are of the author and hence should not necessarily be attributed to the institution where he is employed.

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INTERNATIONALISATION AS THE PATHWAY TO THE FUTURE UNIVERSITIES

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Radical transformations brought on by globalisation drive higher education institutions to redefine their identity, vision, and functions. These transformations however are not unique to higher education institutions at present. Throughout history, universities have continued to evolve, as they have responded to their environments. If we are to draw accurate outlines of these transformations, we must first achieve some clarity about the many competing forces and undercurrents of the present-day globalised world that impact contemporary societies. India is a very important case in point; it stands at a crucial crossroad—an expanding higher education demographic cohort; policy-driven re-casting of the country as 'knowledge economy'; and a compelling drive to forge links with global knowledge networks and labour markets necessitate that the Indian policy makers and higher education leaders collaborate and view globalisation as an imperative. The author argues that in order to contribute to socio-politico-economic institutions and processes in the future institutions in India, as with institutions in other developing countries, need to bring internationalisation to its shores. Universities of the future must view internationalisation as a national and institutional policy imperative, not a matter of discretion.

PRELUDE

"What is it to be a university? In what does the being of the university reside in the 21st century? . . . To address such questions seriously . . . requires in the first place a sense as to the past and present trajectory of the university. The dominant ideas—and forms—of the university have to be identified. A further step taken here is that of furnishing conceptual resources that may help us imagine the university into the future".

— Barnett, 2011, p. 439

Historically, universities have functioned in varied ways to serve their respective societies. Indeed, it is through their roles and

responsibilities that they have evolved over the years: in the medieval times, universities served state religions; in post-industrial societies, the primary responsibility of universities was to advance technology and research in the service of economic growth; and in the present day, the key role for universities relates to their contribution to 'knowledge economies' and a globally-mobile and competitive graduate labour market (Barnett, 2011).

Many researchers have argued that the mutual relationship between institutions and their surrounding environments have strengthened over the years. This has certainly been the case in India. The growth trajectory of higher education institutions in India has reflected the changing environs in the country. At a very broad level, the higher education sector has witnessed the following trends and emerging pathways: growing massification, privatisation, and tertiarisation.

All the three patterns of growth are not unique to India; rather, these are observed in many developing countries, such as the BRICK nations (Brazil, Russia, India, China, and Korea), in varying proportions. Internationalisation – a phenomenon more pronounced in many fast-track developing countries – has grown in India in a 'fits and starts' kind of way. This is primarily because internationalisation has not been a centralised, top-down policy agenda item in higher education. It has found more prominence within institutional activities than in 'think-tanks' and policymakers' discussion tables. Further, even within institutions, it is limited to individual, unintegrated collaborative exercises with international universities (many of which aren't even documented or reported to the apex agencies such as Association of Indian Universities or University Grants Commission).

This has resulted in a dismal scenario—internationalisation is neither channeled nor is it directed through central, nodal bodies; it does not benefit sufficiently from budget apportionments; it carries on in an unplanned *ad-hoc* manner, and often it does not find place in official documents and catalogues. Unless internationalisation is viewed to be at the root of the higher education-'knowledge economy' alignment, it will continue to be poorly regulated and under-funded.

THE CURRENT SCENARIO IN INDIA

Growth in the higher education sector in India has panned out quite summarily, as a response to a compelling requirement to address a richly diverse and exponentially growing base of higher education

cohort; this has occurred without sufficient strategic planning, channeling, or direction. There is no gain in saying that the sector is witnessing unparalleled expansion and divergence; however, there are also systemic afflictions present, which keep it from serving the human capital base in a satisfactory manner. These gaps require remedial measures at the top levels of the central policy-making apparatus. For the sector to achieve sustainable and meaningful growth, Indian institutions and the entire sector in general need to follow planned differentiation, in order to be able to fulfill the leadership role as the country scales global (and regional) value chains, moves closer to its goal of emerging as a 'knowledge economy' and make good its pledge of 'access, equity, and quality'.

According to (AISHE, 2020), the total enrolment in higher education is 37.4 million and the Gross Enrolment Ratio (GER) in higher education is 26.3 per cent. As per UGC website there are 1040 universities, 51,000 colleges and 10,725 stand alone institutions in February, 2020. Privatisation has been precipitous; the same source reports that 85 per cent universities and 77.8 per cent colleges are privately managed.

Internationalisation does not figure prominently in the growth chart of higher education. The number of international students in India has continued to be worryingly low. The demographic profile of this student group, on the other hand, does not vary significantly from year to year. The above-mentioned source states that the total number of foreign students enrolled in higher education institutions in India is 47,427 (consider the figure in the context of total enrollment of 37.4 million). The foreign students come from 164 different countries from across the globe. The top ten source countries constitute 63.7 per cent of the total foreign students enrolled. The highest share of foreign students come from the neighbouring countries, of which Nepal represents 26.88 per cent, followed by Afghanistan (9.8 per cent).

This is not to say that internationalisation has been insignificant. Many initiatives have borne fruit, and these have been guided by internal factors (Indian participants aspiring to achieve internationalisation), as well as external (international actors aspiring to expand their internationalisation efforts in India).

The internal factors include, "plugging the demand-supply gap in provision and the quality gap in teaching and learning; closing the

knowledge-creation gap in research capacity and performance; and equipping graduates with twenty-first century skills for employment . . . also trying to leverage its comparative advantage in South Asia and Africa in order to be recognized as a rising educational hub. . . Externally, India is often a sought-after source for additional revenue generation, in light of its college-age cohort projected to reach 400 million by 2030 and an ever-growing Indian middle class with increased wealth and aspirations to study abroad" (Khare, 2015).

These complex aspirations and approaches frequently intersect and run parallel to each other. In the face of public policy inertia and lack of institutional vision, the multiplicity of interests and perspectives has impeded progress and resulted in haphazard, *ad hoc* initiatives which do not amount to meaningful progress.

UNIVERSITIES IN INDIA: EMPOWERMENT THROUGH INTERNATIONALISATION

In the present times, nation-building, global positioning, and international competitiveness are intrinsically linked to knowledge creation and innovation. Internationalisation is the singular pathway to advancement of the higher education sector. Across the world, countries aspire to move away from the post-industrial, and towards the knowledge-economy model, where higher education assumes centre stage. In this backdrop, the following considerations emerge for Indian institutions in the future.

Institutions must view internationalisation as the ultimate path to emerging opportunities in the globalised world, which must be leveraged to serve national development goals, while also contributing to sustainable regional and global development. For this to materialise, internationalisation goals must not be limited to universities; rather, national governments and supra-national organisations must assume overarching responsibility related to regulatory management, integration, and provision of funds. Unless national and international authorities step in, the risk that internationalisation could fall prey to neo-liberal market principles, will continue to loom.

At the very outset, it must be emphasised that universities by themselves cannot withstand the onslaught of commoditisation of transnational education. Unless the government takes the onus and places ethical considerations first by providing financial and policy incentives, it is unlikely that institutions can overcome the

commercialisation that come with the monetary compulsions of revenue generation. Internationalisation must be value-laden, and not value-neutral, for it to hope to survive as an ideology in the future. In the absence of governmental encouragement and funding, it is likely that internationalisation will be reduced to an institutional rhetoric for brand-building or a strategy to serve the imperative of the profit motive.

1.   It is vital that Indian universities begin to appreciate the value of ushering in internationalisation *within the campus,* by embedding it in the length and breadth of their curricular and extra-curricular efforts. For too long, we have viewed student mobility as the sole mode of internationalisation. Ironically, international student mobility presents a very skewed and discouraging picture in India. In 2017, as many as 586,183 Indian students were enrolled in foreign universities (Ministry of External Affairs, 2018); compare this figure against the figure of inbound student mobility mentioned elsewhere.

       Universities of the future must aim to increase inbound student mobility by improving academic and infrastructural resources and streamlining administrative procedures. Indian universities have focused excessively on internationalisation abroad and neglected internationalisation at home. A developing country like India, with limited financial and infrastructural resources, stands to benefit far more from internationalisation at home.

2.   Universities must also gain awareness about the many modes of internationalisation. Student mobility, which has been doing most of the 'heavy lifting' in internationalisation, must be seen to be only one of many modes. Other modes have largely gone ignored or have not been pursued adequately. Faculty mobility in Indian universities has been very limited, in general. Programme mobility, which is seen in dual-degree programs, is more or less limited to top-tier private institutions. The singular expression of institutional mobility has been branch campuses of Indian universities in Asian and African countries; the sad truth is that many of these had to be shut down. The regulatory framework is far from conducive to successful operation of branch campuses, and this goes both ways—branch campuses of foreign universities haven't recorded great success in India either.

3.   Indian universities must work to improve their international advantage by achieving standardisation, collaborative

compatibility, and compliance with regional/international regulatory structure. There is much to be done in this regard: academic qualification recognition, credit transfer, methodisation of academic workload and assessment, curricular reforms etc. Thus far, Indian universities have collaborated with foreign universities mainly in one-on-one (institution-to-institution) agreements.

4.   Pedagogical reforms, with special focus on technological advancement of instructional delivery, will be paramount for universities of the future. There is an urgent need to supplement and improve traditional education routes. For Indian universities to contribute optimally to India's emergence as an education hub in the future, they must address the fluid dynamics of graduate labour market requirements.

In the future, institutions will need to ensure that degrees arm students with more than subject-specific knowledge: cosmopolitan capital, intercultural competencies, and personal/professional proficiencies that allow the student to navigate his way in the global workplace will become essential. Career preparedness in the future will be a multi-faceted concept, not confined to the workplace, but tied closely with 'learning communities', 'communities of practice', and the global network of research and innovation.

Digitisation – a concept limited to online learning in the past – has now become an integral part of teaching-learning reforms, as upskilling/reskilling, automation, and Artificial Intelligence (AI) have assumed common popularity in the workforce: "These students are aware of the ever-changing landscape of requirements that employers need to meet, especially with the rise of automation which is expected to affect 14 per cent of the global workforce – nearly 375 million workers. As the learning sector broadens and meets digitisation, India is at the forefront of this dynamic, steadily becoming the greatest education hub in the world."   — (Vijay, 2019, n.p.)

Job readiness assumes centrality in the discussion on internationalisation when we consider that India is likely to have the world's largest workforce by 2027, with a billion people aged between 15 and 64 (Sharma, 2017). Unless curricular content and pedagogic practices are improved with the view to cater to professional contexts, universities cannot align their goals with the requirements of the future workforce. Higher education

can respond to the changing job market only if it incorporates transferable skills as part of core education. Technology is not the only way to achieve these goals; there are many others, such as inclusive and multidisciplinary curriculum and combining liberal education with professional and Science, Technology, Engineering, Mathematics (STEM) programs.

5.   The universities of the future will have to establish equilibrium between the dialectic of the global and the local through international education. They will have to shoulder the responsibility of striking a balance between the 'local' sphere (for instance, national autonomy, institutional self-governance, and nation-building goals) and the global sphere (for instance, global job market, global competencies, and supra-national regulatory frameworks to achieve standardisation of international education). The global-local nexus is a salient feature of globalisation for higher education. Local entities re-interpret and reform the global dimension in higher education by incorporating global challenges and solutions (Gacel-Ávila, 2005; Rossello, 2016; Steiner-Khamsi, 2004). In order to incorporate the changes in the shifting global environment, higher education must reconceptualise 'global consciousness' in 'educative paradigms': "Educational strategies in the 21st century must begin with a common foundation, which would include the search for a standard . . . on an international level but adapted to local conditions" (Gacel-Ávila, 2005, p. 123).

GLOBAL CITIZENSHIP, THE SUSTAINED GOAL OF INTERNATIONALISATION

"Universities are at a crossroads of justifying their existence and meaning for knowledge and civilisations perhaps as never before . . . The role of universities in extension [of knowledge, culture, and information] is also paramount today. In fact, it is this role that facilitates their integration in communities worldwide in order to pursue similar goals" (Torres, 2015, pp. 273).

"Universities in India, as with universities elsewhere, must work to bring global citizenship education into the core of internationalisation of higher education" (Rossello, 2016; Torres, 2015; Yemini, 2017). The concept of global citizenship education has followed on from the globalisation of higher education. The idea of global citizenship, with its emphasis on sensitivity for issues of global concern and humanistic values for people across the globe, was originally defined

in relation to national identity. As globalisation has ushered in an 'era of knowledge' (Rosello, 2016, n.p.), it has also created a need for re-working of the idea of education for the global citizen. Rosello (2016) explains why global citizenship is paramount in a globalised society: "[internationalization of higher education must be about developing] . . . international conscience through holistic and participative learning. Adding the "citizenship" aspect to the global education equation reflects a refocusing on a more active role involving global responsibilities and human rights . . . [higher education must] provide this understanding of human plurality . . . As such, developing intercultural competencies must become an integral part of any university's institutional fabric . . ." (n.p.).

Global citizenship assumes that identities are spread across many denominators, not just nation-states, and that global citizenship is an affirmation of our shared role as interdependent entities within the global domain. Torres (2015, pp. 268-269) has defined global citizenship as "an understanding of global ties and a commitment to the collective good." Relating the notion of global citizenship to the context of higher education institution and learners, Rhoads and Szelényi (2011) state that global citizenship refers to ". . . three basic dimensions of social life: the political (including civic aspects), the economic (including occupational aspects), and the social (including cultural aspects) . . . (Rhoads & Szelényi, 2011, p. 17)" (as cited in Torres, 2015, p. 269).

Global citizenship is inherently about plurality, interdependency and therefore global sustainability: "The global citizen is committed to act and assume responsibility in making the world a more sustainable place. . . The global citizen should have working knowledge of the interdependency. . ." (Rossello, 2017, n.p.). Schechter (1993, as cited in Schoorman, 1999), has advocated that universities of the future must pursue three goals in higher education that are aligned with global citizenship: the development of the pragmatic (global career preparedness skill), the liberal (inter-cultural empathy), and the civic (community-based activism).

In the globalised world, the prime goal of higher education must be "the fostering of a global consciousness among students . . . of interdependence . . . and respect for pluralism. All these aspects are the foundations of . . . global citizenship. In this context, the objective of internationalisation must be focused on . . . making global phenomena

understandable while promoting intercultural understanding and sustainable human development . . . " (Gacel-Ávila, 2005, pp. 123).

LEARNER-CENTERED APPROACH

Indian universities, in keeping with global trends, must move away from institution-centered approach, and towards a learner-centered one. Internationalisation is a wonderful instrument with which one can achieve a learner-centric orientation.

In the discourse on internationalisation, a shift from institution to the student has been documented by many studies (Gregersen-Hermans, 2014; Hawanini, 2011). Yemini (2017) has argued that this "narrowing of scope from organisational to individual outcomes is not unique to the field of internationalisation" (pp. 178); rather, this is a reflection of a much larger phenomenon in the higher education sector. In response to the many effects of globalisation, the focus has now converged on each learner's unique, personal gains (Deardorff, 2006). As institutions have gained greater self-governance, in their bid to respond to the higher education market, they have had to devise ways to deliver 'international capital', and therefore 'capital-based advantage', to the student (Weenink, 2009). This implies that, in the future, rationales and assessments in internationalisation of higher education must focus on 'individual-based factors', (such as global competencies) both in the academic discourse and practice in institutions (Resnik, 2012).

The future universities must ensure that pedagogic practices undergo transformation in favour of greater interaction, 'learner-centred' environment, real-world problem-solving, and multidisciplinary approach to curriculum development. Further, academic assessment must be reformed such that it captures each student's learning and experience. The future emphasis should be based on academic 'portfolio management', competency-based assessment, skills-enhancement rather than earning a transcript. Personal and professional proficiencies must also be included: for instance, teamwork, research and analysis, critical thinking, problem-solving, and decision-making, communication, independent and self-directed study, non-traditional learning models (such as peer-to-peer interaction), and student engagement experiences. Last, but not the least, teachers must provide inspirational mentorship in addition to the traditional teaching responsibility.

At the broader institutional level, a learner-centred approach would drive academic departments to grow less rigid and more fluid as curriculum, especially course development, becomes more interdisciplinary. Research must become an integral part of the whole spectrum of higher education, not merely post-graduate programs. Further, research must be encouraged at all institutions, not merely the elitist, research-oriented institutions. In India, especially, there exists a divide between research and teaching institutions.

SERVICE LEARNING

Indian universities in the future must incorporate service learning through internationalisation into student learning outcomes in a thorough and meaningful fashion. Across the world, service learning has moved inward to become part of the sum total of curricular content and assessment criteria. The concept of global service learning captures the significance of interdependence and reciprocity amongst the participants in a higher education system. Inherent in the idea is the recognition that higher education institutions are not the only source that support educative growth, but also that a rich diversity of groups of people, events, and organisations offer core learning opportunities. In the years to come, service learning will not be limited to national boundaries, and this empathises the significance of internationalisation. Bringle and Hatcher (2011, pp. 19) have defined international service-learning as follows: "A structured academic experience in another country in which students (a) participate in an organized service activity that addresses identified community needs; (b) learn from direct interaction and cross-cultural dialogue with others; and (c) reflect on the experience in such a way as to gain a deeper understanding of global and intercultural issues, a broader appreciation of the host country and the discipline, and an enhanced sense of their own responsibilities as citizens, locally and globally."

Thus, an education system that brings together traditional modes of internationalisation of higher education (such as semester exchange programs) and service-learning on the same platform and as integral components of the student learning experience could be said to embrace international service learning. Although an emerging area in theory and practice, international service-learning shows promise to grow as a key pillar of internationalisation of higher education, primarily because it champions the contemporary movement to strengthen the civic-engagement arm of higher education. International service-learning emphasizes that civic engagement, which has traditionally

focused on local community services, must be re-oriented such that the practitioners think globally while acting locally as well as expand their efforts to connect the local with the global.

CONCLUSION

Indian universities of the future will have to assume leadership roles as powerful nodes in the global knowledge and innovation network. They will have to strike a balance as they fulfill their nation building and developmental responsibilities, while staying true to the growing global dimensions of the modern society. Internationalisation will carry institutions forward as they cope with multi-dimensional global forces and currents, move across borders, and gain global dimension.

Indian universities will be encouraged to deliver an immersive learning experience and student-centric education by combining traditional teaching-learning methods with the non-traditional ones. Certainly, technology will play a big role here, but it will be aided by novel pedagogic practices that are proven to deliver positive learning outcomes and wholesome student experiences. Indian universities will have to align their vision and goals better with the industry, so that the students turn out to be thriving members of the global workforce and prove to be valuable human capital for the country.

As territorial boundaries are relegated to the past, the need to create global citizens will only grow. These global citizens must be sensitised to global concerns so that they may live peaceably with each other, while appreciating that diversity and a sense of service to others brings deep enrichment.

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HIGHER EDUCATION INSTITUTIONS IN BUILDING INDIA
BENCHMARKING WITH WORLD'S BEST UNIVERSITIES

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In the present society, an individual's survival has become crucially dependent on higher education. As per today's academic landscape, which direly needs to be more research-oriented, the mission of higher education is to educate and train individuals in various specialisations, improve focus towards research and thus, serve the community. Today, most of the highly ranked institutions in the country are public funded where students need to pay very less fee but admissions in these universities or colleges is strictly merit based and rejection rate is as high as almost 90 per cent. Considering these circumstances, students migrate toward private universities for higher studies. The rising costs of private education and non-availability of seats in good public institutions is impinging upon the choice of many bright students to make compromises. Many students are going abroad straight after secondary school, which shows that there is money, a demand, and an available market. What we need to do is raise the bar of higher education in the country and also create more educational opportunities so that we can retain those who go abroad for higher education. Ranking and evaluation of higher education are two of the main pillars that support the development process of universities, institutes of higher education, R&D facilities, scientific institutes, and all institutions that aim at providing higher education. Formulation of stable, long-term and robust policies and regulatory pathways needs to be undertaken by the government. This will help in the establishment of the trust of various stakeholders in the educational system and will help in a big way to refurbishing the Indian universities.

PRELUDE

Higher education is a critical tool that catalyses the overall development and growth of the nation. It is an integral cog to which the dual task of polishing an individual's aptitude and skills in a specific niche and

also enhancement of his view of worldly matters in different walks of life, is attributed. In the present society, an individual's survival has become crucially dependent on higher education. As per today's academic landscape, which direly needs to be more research-oriented, the mission of higher education is to educate and train individuals in various specialisations, improve focus towards research and thus, serve the community. As the world is morphing into a global village, the scope and demand of higher education have undergone a manifold increase, and delivering excellent quality education is the only means to meet this demand. The current education system, in all its levels, sticks to the '*mantra*' of quality education which is at par with the global standards. The growth of the nation is propelled further by higher education because it yields a skilled workforce with specialised knowledge and a considerably better status of cognitive and cerebral development.

After USA and China, India is home to the largest higher education system globally. The regulatory roadmap of this sector is laid out by the University Grants Commission (UGC), which devises appropriate guidelines and standards, keeps a check on their implementation, and establishes coordination between the central and the state governments. The key stakeholders in the education system, i.e., the students, the faculty, the parents, the institution's management, policy-makers and even the society as a whole, are concerned with the quality of higher education being delivered. Barring a few universities, the Indian higher education is nowhere near the so called 'global standards'; Indian universities found no place in the list of world's top 100 universities. It is a matter of concern that even top-notch Indian institutes like the IITs and IIMs fell short in terms of finding a spot in the top 200 universities globally as per the recently released rankings of Times Higher Education, Shanghai Jiao Tong University, and QS World University Rankings. The US universities enjoyed domination in all three rankings, out of which, some universities were privately owned. It is indeed a paradox that despite the absence of such recognitions, students graduating from IITs/IIMs etc. are much sought after internationally and many of them are heading top educational institutions in the US, Europe, and so on. This raises a serious question of gaps/biases in international rankings. Having flagged the above paradoxes, it can be said that the approach adopted by the Indian education system should be multi-dimensional and broad-based. The functioning of various educational institutions should be regularly reviewed either through self-assessment or through the engagement of unbiased, external agencies. The accreditation of institutions by

unbiased governmental bodies can also help keep the system in check. With a growth in the number of institutions providing higher education, the education system has also fallen prey to malpractices, like substandard infrastructure, poor faculty and management, exorbitant capitation fee other than the tuition fee, and much more. The rapid privatisation of the education sector has led to an increased involvement of the faculty members, non-teaching staff, managerial staff and other stakeholders in legal matters, which adversely impacts the quality of education.

Today, most of the highly ranked institutions in the country are public institutions where students only have to shell out a minimal fee or the fee is highly subsidised—a situation that is just opposite to what is common in the west. Students' admissions in these universities or colleges are based on their academic credentials. Due to this, the rejection rate is as high as almost 90 per cent, where the students' choice of institution is compromised. Considering these circumstances, students migrate toward private universities for higher studies. However, the course of study offered by many colleges is often outdated due to lack of well-skilled faculty and infrastructure. A vast majority of the present higher education institutions are insufficiently equipped to provide services like proper induction/orientation programmes, healthcare facilities, hostels/ accommodation, and career-related direction and counselling. Some other factors which also impact the quality of higher education are a general lack of motivation among the teachers and students, lack of facilitation of the teaching-learning process by the external environment, and relentless adoption of irrelevant and obsolete teaching methods and curricula, without revision. The factors mentioned above result in low employability and incompetent professionals.

HIGHER EDUCATION IN INDIA: PRESENT SCENARIO

Since independence, the Indian higher education landscape has undergone rapid development. The number of higher educational establishments, students enrollment, number of faculty members, infrastructure, technology, quality of medical, vocational and technical education, and education management have improved substantially. This is credited to a better level of monitoring, stringency in the evaluation and constant quality maintenance being undertaken by various national agencies. It raises socio-political awareness among the people, aids the functioning of the democracy and engages the

citizens in the nation-building process. Attaining higher education leads people towards research, which goes on to the birth of innovation. As said by Pt. Jawaharlal Nehru, the first Prime Minister of India, in his convocation address at Allahabad University (1947), "A university stands for humanism, for tolerance, for reason, for the adventure of ideas and the search of the truth. It stands for the onward march of the human race towards ever-higher objectives. If the universities discharge their duties adequately, then it is well with the Nation and the People."

As reported by All India Survey on Higher Education (AISHE), 2018-19, in the country, there are 993 universities, 39931 colleges and 10725 independent institutions; 385 universities in this list are privately managed. The Bangalore urban district has the highest number of colleges, which is 880 whereas Jaipur has 566 colleges. In terms of college density, Bihar ranks the lowest, with only colleges established per lakh of eligible population (18-23 years of age), whereas Karnataka tops the list with its 53 colleges in contrast to the national average of 28. Around 88 per cent of colleges in Andhra Pradesh & Uttar Pradesh are private-unaided facilities, while 87 per cent and 16 per cent are of the same nature in Tamil Nadu and Assam, respectively. As far as student enrolment trend goes, less than 100 admissions are made in 16.3 per cent colleges, and a meagre four per cent of colleges have an enrolment figure of 3000 students and above. A net estimation of enrolment amounts to about 37.4 million, with figures of 19.2 million and 18.2 million for males and females respectively. The Gross Enrolment Ratio(GER), as calculated for the eligible group, i.e., 18 to 23 years, is also just a little more than 26 per cent, with almost equal figures of 26.3 per cent and 26.4 per cent, for males and females, respectively. The figures for SC and ST candidates are around 23 per cent and 17 per cent, as compared to the national average of 26.3 per cent with Muslims at the lowest of about five per cent. As per the findings of the same report, the number of international students from 164 different countries worldwide enrolled in Indian higher education institutes is 47,427, out of which highest number comes from Nepal (26.88 per cent). Afghanistan (9.8 per cent), Bangladesh (4.38 per cent), Sudan (4.02 per cent), Bhutan (3.82 per cent) and Nigeria (3.4 per cent), with their respective shares, constitute the most significant proportion of international students enrolled. As far as programmes are concerned, out of the total, programmes having relatively higher enrolment were studied to see the students' concentration. The findings are:

- Bachelor of Arts (BA) has 93.49 lakh students enrolled in it, which is the highest enrolment in any program;

- Bachelor of Science (B Sc) has 46.80 lakh students enrolled in total;

- 40.30 lakh students enrolled in B.Com;

- B Tech has 21.25 lakh enrolled students, out of which 72 per cent are male whereas the per centage of females is 28 per cent;

- Bachelor of Engineering (BE) has 16.45 lakh students enrolled, out of which 71.14 per cent of students are males.

- Master of Arts (MA) has a 15.12 lakh total number of students enrolled with 61.78 per cent female students.

- BA (Hons) has 16.39 lakh students with 44.79 per cent male and 55.21 per cent female students.

- The highest number of PhD students come from the Science section, followed by Engineering and Technology.

In the light of the 2018-19 AISHE report, nearly 80 per cent of the colleges are operating privately – both partially aided and unaided – but they provide for only 66.4 per cent of the total students enrolled. Whereas, more than 33 per cent of students come from government educational institutions. The number of universities and similar institutions listed on AISHE portal has increased from 760 in 2014-15 to 993 in 2018-19, which is almost 30.7 per cent, as demonstrated in Fig. 1. Whereas, the number of colleges has gone up from 38,498 in 2014-15 to 39,931 in 2018-19 by more than 3.5 per cent as shown in Fig. 2.
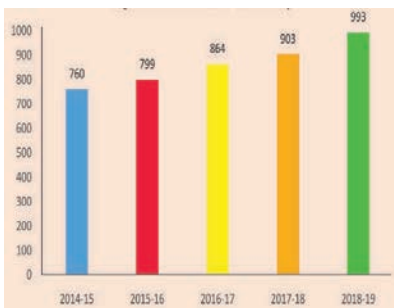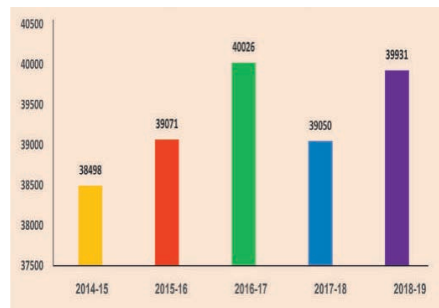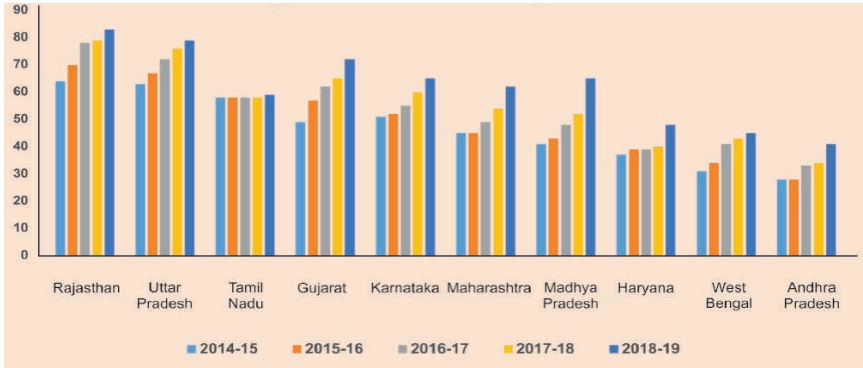
FIG. 1: NUMBER OF UNIVERSITIES

FIG. 2: NUMBER OF COLLEGES

In larger states such as Rajasthan, Uttar Pradesh, Tamil Nadu and West Bengal, very few universities have come up during the period 2018-19 as compared to the previous year (Fig. 3).

FIG. 3: NUMBER OF UNIVERSITIES IN MAJOR STATES

Enrolment in various universities and other higher education institutions is given in Fig. 4. Enrolment at all the levels has increased over the years. The Compound Annual Growth Rate (CAGR) is 1.8 during the last five years, but in case of integrated courses, the CAGR is 11.2.

FIG. 4: ENROLMENT IN VARIOUS UNIVERSITIES & ITS CONSTITUENT UNITS
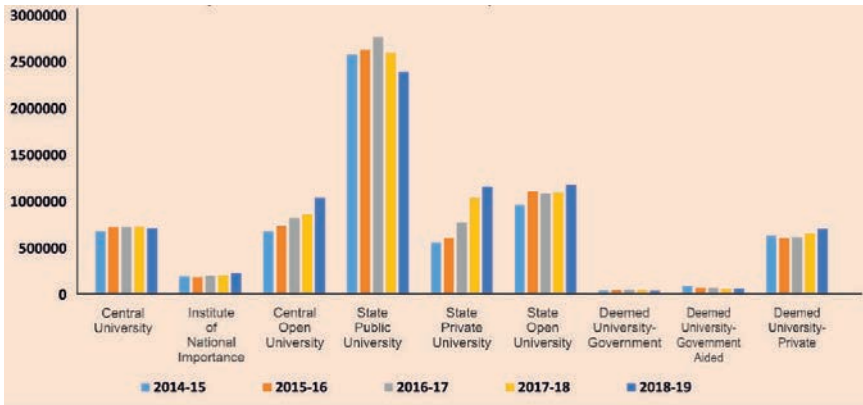
Gross Enrolment Ratio (GER) has increased during the last five years, from 24.3 in 2014-15 to 26.3 in 2018-19. The increase is more under SC category, which has increased from 19.1 in 2014-15 to 23 in 2018-19. In the case of ST category, the GER has increased from 13.7 to 17.2 during this period. In comparison to males, the increase in GER is higher for females.

PRIVATE HIGHER EDUCATION SYSTEM IN INDIA

The Indian private higher education sector is getting more competitive with a remarkable increase in the number of academic institutions in the country. Despite the concerted and continuous efforts by private educational institutions, quality has not yet reached the desired level. The rising costs of private education also needs due consideration, and efforts need to be put in order to make it affordable. The goal of higher education is not only to create new knowledge, but also to create skilled forces for the country to face developmental challenges. Maintaining quality and balance in the education system is integral to this. Unfortunately, many of the private universities are not research-oriented. The industry has mapped most of the universities in terms of employability skills of graduates. Thus, the job market makes clear distinctions among various university graduates. But products from all universities do not have the same skill sets; only a few universities have the goodwill and high demand in the job market and are capable enough to pursue global job markets. Many private universities of India have gained both national and international reputation; unfortunately, a majority of them are not functioning with the same level of efficiency (Table 1).

Looking at the size of the country, the number of satisfactory private higher education institutions are very less. Until recently, the funding and provision of higher education in the Indian subcontinent was primarily under government administration. With the advent of the millennium, it became apparent that government institutions were incapable of adequately meeting the ever-increasing demand for higher education, and so private establishments came into the picture. This was seen as a landmark move for the advancement of the higher education sector. Primarily, the current Indian private universities are established by humanitarians, religious trusts, private corporations and associations, and by NPOs. Many of the private universities in India are renowned for providing world-class education and have created a reasonably competent scenario and enhanced the quality of education they are providing. These universities are playing an essential role in promoting higher education in India. However, in recent years, the high amount of fees charged and a compromised education system have become victims of a significant backlash.

While many of the highest-ranked universities in US are private universities, including Harvard University, Massachusetts Institute of Technology, Stanford University and Yale University, the story in India

TABLE 1: LIST OF BEST EDUCATIONAL INSTITUTIONS OF INDIA
UNDER PUBLIC AND PRIVATE CATEGORY

S. No.	Public Universities (as per IoE, Government of India)	Private Universities (as per IoE, Government of India)	Private Colleges (as per NIRF, 2018- 2019)
1.	IIT Bombay	BITS Pilani	Miranda House, Delhi
2.	IIT Delhi	Manipal Academy of Higher Education, Karnataka	Hindu College, Delhi
3.	IISc Bangalore	Jio Institute, Maharashtra	Presidency College, Chennai
4.	IIT Madras	Amrita Vishwa Vidyapeetham, Karnataka	St. Stephens College, Delhi
5.	IIT Kharagpur	VIT Vellore, Tamil Nadu	Lady Sriram College for Women, Delhi
6.	Delhi University, Delhi	Jamia Hamdard, New Delhi	Loyola College, Chennai
7.	University of Hyderabad, Hyderabad	Kalinga Instt. of Industrial Technology, Bhubaneswar	Shri Ram College of Commerce, Delhi
8.	Jadavpur University, Kolkata	O.P Jindal University, Haryana	Rama Krishna Mission Vivekananda Centenary College, Rahara, WB
9.	Anna University, Chennai (Conditional)	Shiv Nadar University, Uttar Pradesh	Hansraj College, Delhi
10.	BHU, Varanasi	Bharti (Satya Bharti Foundation), Delhi	St. Xavier's College, Kolkata

is just the opposite. The American universities are funded primarily through student tuition fees. Private universities also dominated the top 100 of the overall ranking by various ranking bodies. In India, only a few universities like the Vellore Institute of Technology (VIT), Vellore; Manipal University, Mangalore; Birla Institute of Technology & Science, Pilani; Jamia Hamdard University, Delhi; and SRM Institute of Science and Technology, Chennai are ranked highly by national ranking agencies. Government's financial assistance to these universities is negligible, and there aren't many good quality private universities in India. Majority of the private universities are providing substandard education and earning revenue.

UNIVERSITY RANKING SYSTEM

Ranking and evaluation of higher education are two of the main pillars that support the development process of universities, institutes of higher education, R&D facilities, scientific institutes, and all institutions that aim at providing higher education. The universities, up to a great extent, rely on these measures to determine their progress concerning the criteria set by the academic classification bodies. In the case of European universities, in particular, the ranking of universities is of great importance and is also taken into account by students during the admission process.

University rankings have gained much importance across the world. At the national level, Ministry of Human Resource Department, through UGC, has been assessing Indian universities through the National Assessment and Accreditation Council (NAAC). NAAC, a Central government-sponsored council established to assess and grade 'participating' universities, colleges and professional education institutions, often possibly awards higher rankings to central higher education institutions due to an *ex-facie bias* within the council. There are different criteria based on which every university is evaluated. The ranking bodies also contact its two significant stakeholders—alumni and the recruiters, for their perception about the university.

Finally, every university is scored on the overall performance. The score is valid for five years after which re-assessment must be sought. Another body, National Institutional Ranking Framework (NIRF), ranks every university and their different schools each year. NIRF rankings methodology is based on self-declarations. As far as global ranking are concerned, it went legitimately international in 2003 when Shangai Jiao Tong University published results of the first global university ranking. The importance of rankings seems to have grown exponentially since then. Various higher education policy-makers increasingly consult ranking results when deciding on the allocation of the resources or the structure of higher education. These rankings strengthen competition and often bring policy changes in the higher education system, which strives to improve their standing among other prominent universities.

Higher education institutions are ranked globally to assess their competitive nature in terms of research, innovation, employability, alumni, perception, and so on. The key stakes for global universities despite their ranking are their teaching, curriculum, research

orientation, knowledge transfer and global outlook. The global ranking at present covers only a small percentage of around 2-3 per cent of the total global universities. There are numerous reasons for using a ranking system in global higher education organisations, such as the internationalisation of higher education, which means a large number of students enrolled in global higher education institutes outside their country of origin. This number is increasing continuously. Also, other factors are being added such as encouraging global institutions to partake in national and international discussions to nurture student and faculty exchange programmes, and increase research partnerships.

There are three influential and widely observed global ranking systems that have some standing today. The first world-known university ranking is the Academic Ranking for World Universities (ARWU), also known as the Shanghai University Ranking. It started in the year 2003; was compiled by the Centre for World-Class Universities at Shanghai Jiao Tong University; financially supported by the Chinese government; and operated by the Shanghai Ranking Consultancy. This ranking uses six important indicators to rank universities globally that are:

1. Staff awards winning Nobel prizes in their respective areas – 20 per cent;

2. Highly cited researchers – 20 per cent;

3. Research papers published in reputed journals like *Nature* and *Science* – 20 per cent;

4. Papers indexed in science index-expanded and social science citation index – 20 per cent;

5. Quality of education (alumni winning Nobel prizes or medals) – 10 per cent; and

6. Per capita performance of an institution – 10 per cent.

As per the latest ARWU results, the highest number of universities from the topmost 20 universities in the world are from the US and Europe. Out of the best 500 universities, the majority of universities are from Europe, followed by universities from America, Asia and then Africa.

The other renowned methodology is the QS World University Rankings produced by the British Quacquarelli Symonds, which is

being published for the last 16 years. Presently, it considers over 3,000 institutions and ranks more than 800. Its methodology is spread over four spectrums—research, teaching, employability, and international outlook. The same is based on six indicators, wherein a weightage of:

- 40 per cent is given to Academic Reputation;

- 10 per cent to Employer Reputation;

- 20 per cent to Faculty/Student Ratio;

- 20 per cent to Citations per Faculty; and

- five per cent each to both International Student Ratio and International Staff Ratio.

The most significant percentage in this ranking is for academic reputation, i.e. 40 per cent. Furthermore, it is measured based on a global survey of academics, which asks select academicians all over the world about the top universities in their respective fields. QS uses citations from Scopus databases.

Another renowned world ranking is Times Higher Education. The methodology for Times Higher Education contains 13 performance indicators, which cover five key areas as follows:

1. teaching (30 per cent);

2. research (30 per cent);

3. citations (30 per cent);

4. industry income (2.5 per cent);

5. and international outlook (7.5 per cent).

To calculate the overall rankings, Z-scores are created for all data sets.

Based on the above three ranking processes, US universities dominate the Top 50 Universities' list, followed by Europe. Some of the world's best universities, which are common in all three ranking process are listed below:

- Harvard University, USA

- Stanford University, USA

- Massachusetts Institute of Technology, USA
- University of California - Berkeley, USA
- California Institute of Technology, USA
- University of Cambridge, UK
- University of Oxford, UK
- Imperial College London, UK
- University College of London

Globally, many highly ranked universities fall under the category of Private Universities. These universities thrive on the shoulders of their faculty, research & innovation profile, corpus fund, consultancy projects, international students, reputation, and so on. Indian higher education institutions have not been able to reach to the top 100 universities of the world primarily due to social balancing provisions and obligations towards the Constitution of India.

Government of India has taken the initiative to promote a few good universities to compete with world best universities. Though slightly delayed, this opportunity has been keenly welcomed. Accordingly, Ministry of Education (MoE) erstwhile Ministry of Human Resource Development (MHRD) identified ten institutions each from the government and private sectors and recommended them as 'Institution of Eminence' to enable them to break into the world's top 500 in a decade and eventually into the top 100. The then Ministry of HRD has taken various steps to implement the scheme of Institutions of Eminence (IoEs). These institutions will be permitted to admit 30 per cent of international students with no restrictions levied on the fee charged from them, and hire foreign faculty to the tune of 25 per cent out of the total faculty. They can enter into academic collaborations with the top 500 global universities without requiring UGC approval. They will also enjoy full flexibility in bringing the evolution in the curricula and syllabi. Public institutions will get the assistance of up to Rs.1000 crore over five years, but private universities will not get any financial assistance. 'Institution of Eminence' tag frees universities from government interference. The Institutes of Eminence will have added funds for the state-run institutions, and more collaboration opportunities with top global universities, which can revolutionise the higher education sector and build a stronger foundation for a knowledge economy. Universities can focus entirely on their students, faculty, research, and social outreach.

THE WAY FORWARD

The rapidly increasing young population of India poses a demand for higher education after finishing their higher secondary education, but the resources in this sector are scarce. Though India has progressed tremendously in the arena of higher education, there are still numerous colleges, institutions and universities which lack even the necessary facilities and provisions. Another serious challenge to the higher education system is the lack of skilled faculty members. Without the presence of appropriate facilitators, apt knowledge cannot be delivered, and the intended learning outcomes cannot be achieved. The massive demands posed by the ever-growing young population of India towards the higher education sector, need to be urgently fulfilled. To resolve this issue, the existing educational institutions need to be empowered, and new facilities need to be established. At all levels of quality improvement, upgradation of the infrastructure plays a crucial role. The government needs to make sure these institutions are physically accessible to all the communities.

Over the past five years, India has become not only the world's second-largest student exporting country after China, but also one of the fastest-growing sources of outbound students. Newly released data from the Indian Ministry of External Affairs reveals that nearly 753,000 Indian students were studying abroad as of July 2018. As per the latest trend, the number of undergraduate students going abroad has shown an increase, in contrast to the earlier trend where students only went abroad to pursue post-graduation and PhDs; and that many students are going abroad straight after secondary school, which shows that there is money, there is demand, and there is the market available. What we need to do is raise the bar of higher education in the country and also create more educational opportunities so that we can retain those who go abroad for higher education. The steep demand-supply gap for quality education is also another hurdle faced by the Indian education sector. Most Indian colleges only have limited learning resources to offer without much focus on innovation. Poorly maintained libraries, also in terms of the number of books, and lack of educational magazines and specialised journals that are valuable resources for the upgradation and advancement of knowledge are issues that need to be addressed.

Indian government's education expenditure is minuscule compared to other developed countries. Though the government has adopted measures to bridge this gap through the funding of its selected

Institutions of Eminence, unfortunately, the funding is only granted to public universities, which is quite unfair. The government should provide some financial support to private universities to recommended as Institution of Eminence for them to flourish as per the criteria of top-ranked global universities. Those universities spend a substantial portion of their budget on research and innovation alone. Such grants would allow private universities to establish and compete with the best universities by providing substantial financial support, of course, with certain conditions. The current trend of globalisation directly impacts higher education. Hence, the curriculum must be framed, keeping both domestic and global perspectives in mind. Privatisation, to some extent, has contributed significantly to the quality of higher education. Formulation of stable, long-term and robust policies and regulatory pathways needs to be undertaken by the government. This will help in the establishment of the trust of various stakeholders in the educational system.

Universities, teachers and students need to create more forums to widen their interaction. Such interactions would lead to the generation of practically implementable and lucrative ideas and courses. Internship programs for students help in getting hands-on experience in tackling real-world problems and developing knowledge databases that could be useful for breakthroughs in artificial intelligence. Universities need to set up structures to bring out the people who have the capability and devotion to handle real-world problems and improving productivity. The major R&D facilities of the country can be linked with higher education institutions, to encourage the inclusion of students in research initiatives in the country which will ensure ease in the movement of personnel between universities and industry. For example, the apprenticeship system in Germany has produced excellent results in the existence of a curriculum developed by educational institutions in collaboration with business groups and employees. Collection of data on job market trends, their analysis and dissemination are essential to improve the employability skills of the graduates.

CONCLUSION

Thus, it can be concluded that education is the key to progress, especially higher education, which provides the cutting edge and skilled workforce as per the market and societal demands and needs. This can be achieved by having a proper mix of public and private, formal

and non-formal institutions. Online programs offered by professional agencies such as Coursera, UpGrad, etc. can make a big difference in terms of quality and also inclusivity. Special initiatives are required to enhance employability. Curriculum and content have to be continually renewed through teaching, for which learning support and specific skill development networks should be set up. Drawbacks mentioned above need to be transformed into the strength of the Indian higher education system, but this can only be done with a strong willpower, determination and readiness to change.

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EMPLOYABILITY AND ENTREPRENEURSHIP

EMPLOYABILITY AND ENTREPRENEURSHIP
CRITICAL TWIN FACTORS FOR INDIAN HIGHER EDUCATION

M ANANDAKRISHNAN

Universities are recognised as knowledge-intensive institutions and environments that foster human capital development by developing employment and entrepreneurship skills in students. Employment is about getting a job and employability is about having a good mix of skills, competencies, and attitudes to successfully perform on the job. Increasingly, it is becoming necessary for students to gain those skills, which will enhance their prospects of employment. Given the present economic situation, it is no longer sufficient for a new graduate to have knowledge of an academic subject so the recent education reforms emphasise on the importance of developing employability and entrepreneurship skills among students by institutions of education. There is an increased demand for higher education but limited supply of job opportunities. Therefore, fostering entrepreneurship has become a core component of economic development in cities and countries around the world. Overall, employability and entrepreneurship are critical factors for Indian higher education and the higher education institutions have a pivotal role to play in fostering employment skills and entrepreneurial behaviour and mindset in the students.

PRELUDE

Human capital is the most important resource or asset any nation can boast of in the 21st century because it is vital for future technological breakthrough, international competitiveness and sustainable economic development. Building the requisite human capital for the attainment of sustainable development requires both – a new ideology of life and innovative approach to education – if the nation is to overcome the global socio-economic and ecological crisis that have the potential to endanger our individual and collective existence, as well as rob future generations of their well-being.

Universities are recognised as knowledge-intensive institutions and environments that foster human capital development by developing

employment and entrepreneurship skill in students. Given the present economic situation, it is no longer sufficient for a new graduate to have knowledge of an academic subject. Increasingly, it is becoming necessary for students to gain those skills, which will enhance their prospects of employment and entrepreneurship. According to the current practice, universities include in their mission not only a generalised transfer of know-how, but also the promotion of business thinking and entrepreneurial culture, the establishment of institutions, actions as well as the creation of venture capital, thus contributing further to the promotion of regional entrepreneurial ecosystems (Lerapetritis, 2019).

HUMAN CAPITAL

The availability of employable persons in a nation is indicated as its human capital. A nation's human capital endowment – the knowledge and skills embodied in individuals that enable them to create economic value – can be a more important determinant of its long-term success than virtually any other resource. This resource must be invested in and leveraged efficiently in order for it to generate returns, both for the individuals involved as well as an economy as a whole. Because human capital is critical not only to the productivity of society but also the functioning of its political, social and civic institutions, understanding its current state and capacity is valuable to a wide variety of stakeholders (Schwab, 2016).

In order to assist those seeking employment or wanting to become entrepreneurs, the National Skill Development Corporation (NSDC) has brought out a valuable handbook on transforming the skill landscape. It deals with the employability and entrepreneurial skills in great detail under the following topics: (i) Personal strength and value system; (ii) Digital literacy; (iii) Money matters; (iv) Preparing for employment and self-employment; (v) Understanding entrepreneurship; and (vi) Preparing to be an entrepreneur (NSDC, 2019).

EMPLOYMENT AND EMPLOYABILITY

Employment is about getting a job and employability is about having a good mix of skills, competencies, and attitudes to successfully perform on the job. Employability is a necessary attribute; employers look for those skills while recruiting candidates for jobs. The recent education reforms emphasise on the importance of developing employability skills among students by schools and institutions of higher education.

Youth unemployment is on the rise across the world. The global unemployment among youth is more than 200 million and is expected to increase to 212 million by 2019. According to International Labour Organization (ILO) estimates, which take into account new labour market entrants, an additional 280 million jobs need to be created to close the global employment gap by the end of this decade. More importantly, a good share (45 per cent) of the additional job seekers in this decade may be in the East and South Asia regions.

In India, increasing unemployment of the educated is accompanied by a widening job-skill mismatch and declining labour force participation rates, especially among women. The youth population in India is expected to increase to 350 million by 2022. According to the latest National Sample Survey Organization (NSSO) data, the unemployment rate increases with increasing levels of education till the postgraduate level. The peak point in unemployment rates has been shifted from the secondary level to the university degree level.

Given the complexities of skills and their classifications that have been forwarded by different organisations and studies, a new term 'employability skills' (combining knowledge, aptitude, attitude and skills) became popular in education-employment debates. With the fourth industrial revolution, the employability skills came to emphasise upon lifelong learning, upskilling and reskilling to sustain oneself in the highly dynamic job market. In an expanding higher education sector, there are new entrants and with it come enormous dissatisfaction in terms of learning and employment outcomes.

Inferences

(a) Earlier, there existed a close association between higher education, better employment opportunities and higher salaries. In recent times, this association is at risk. A reliance on technology-led industrial development and the emergence of knowledge economy are changing the nature of skills demanded in the labour market and challenging the role of higher education institutions.

(b) Serious efforts are being made by the ministries of education and industries, and by higher education institutions to link their engagements more closely.

(c) It is increasingly realised that employability of individuals does not depend only on technical/generic skills but also on social skills, communication skills and team work, etc. These skills should become part and parcel of curricular and extra-curricular learning.

(d) In a system offering courses to adult students, curricular changes should not be based solely on the demand of industries' needs; it should also look into what the students need as well.

(e) In an age where employment generation is limited, especially in the context of jobless growth, entrepreneurship education may be encouraged to promote startups and self-employment opportunities. The industrial groups should come forward to help people start such programmes. of the model of business incubation centers as in the UK, where handholding and guidance, along with nurturing support to business ideas are given, has been replicated by the Government of Telangana in India, are examples of industry support.

(f) Regional cooperation and role of regional bodies in South Asia, South East Asia as in Europe, and of bodies like the UNESCO in skill certification and mutual recognition of degrees, and in accreditation, will promote global mobility and better linkages between skill formation and jobs.

The bottom-line message is that there is an increased demand for higher education but limited supply of job opportunities. We need to produce quality graduates, but the difficulties of fast paced technological shifts and financial constraints do not make this easy. Employment generation is certainly outside the purview of higher education and generation of employability and entrepreneurial skills among the youth cannot be the sole responsibility of the higher education sector (Varghese and Khare, 2019).

Employability Skills

Employability skills include abilities such as the retrieval and handling of information; communication and presentation; planning and problem solving; and social interaction. Employers value employability skills because they are linked to how you get along with coworkers and customers, your job performance, and your career success. The key employability skills are:

1. *Foundational Skills*, which include basic reliable attitudes and behavior such as punctuality, dependability;

2. *Interpersonal Skills*, such as friendliness, politeness, ability for conflict resolution;

3. *Communication Skills*, such as ability to read and understand written material, express ideas clearly;

4. ***Problem Solving and Critical Thinking***, such as asking questions to solve problems;

5. ***Teamwork***, such as being comfortable working with people of diverse backgrounds and contributing to team goals;

6. ***Ethics and Legal Responsibilities***, such as taking responsibility for own decisions and actions, and being honest and trustworthy (Anandakrishnan, 2019).

Professional Skills

Anyone who wants to advance in their careers and people working in higher-level jobs should have the following professional skills:

Career Development

- Learn new skills and take on different projects;
- Serve on work committees;
- Take initiative and work with little supervision;
- Understand industry and common business practices;
- Align work goals with the mission and vision of employer; and
- Understand the different roles of co-workers.

Leadership

- Coach and mentor others;
- Be willing to take risks;
- Be able to negotiate;
- Motivate and direct people as they work;
- Demonstrate efficiency;
- Seek to simplify processes;
- Save time or money for the company by analysing business needs; and
- Build partnerships and teams with co-workers.

ENTREPRENEURSHIP

The word 'entrepreneur' comes from the French verb *entreprendre*, meaning, 'to undertake'. Entrepreneurship is the process of designing, launching and running a new business. It is the capacity and willingness to develop, organise and manage a business venture along with any of its risks to make a profit. Definitions of entrepreneurship typically focus on the launching and running of businesses. Due to the high risks

involved in launching a startup company, a significant proportion of startup businesses have to close due to lack of funding, bad business decisions, an economic crisis, lack of market demand, or a combination of all of these. An entrepreneur has the ability to find and act upon opportunities to translate inventions or technologies into products and services. The entrepreneur is able to recognise the commercial potential of the invention and organise the capital, talent, and other resources that turn an invention into a commercially viable innovation. In this sense, the term 'Entrepreneurship' also captures innovative activities on the part of established firms, in addition to similar activities on the part of new businesses (Shaik, 2019).

An Entrepreneur

An entrepreneur is an individual who creates a new business, bearing most of the risks and enjoying most of the rewards. The entrepreneur is commonly seen as an innovator, a source of new ideas, goods, services, and/or business/procedures. Entrepreneurs play a key role in any economy, using the skills and initiative necessary to anticipate needs and bring good new ideas to market. Entrepreneurship is one of the resources economists categorise as integral to production, the other three being land/natural resources, labour, and capital. An entrepreneur combines the first three of these to manufacture goods or provide services. Entrepreneurship is high-risk, but it also can be high reward as it serves to generate economic wealth, growth, and innovation.

Entrepreneurs create social change. They break tradition with unique inventions that reduce dependence on existing methods and systems, sometimes rendering them obsolete. Smartphones and their apps, for example, have revolutionised work and play across the globe. Entrepreneurs commonly face many obstacles when building their companies. The three that many of them cite as the most challenging are: overcoming bureaucracy; hiring talent; and obtaining finance (Hayes, 2019).

Types of Entrepreneurs

According to Business Jargons (www.businessjargons.com), there are six types of entrepreneurs as listed below:

Innovative Entrepreneurs

These entrepreneurs have the ability to think newer, better and more economical ideas of business organisation and management. They are the business leaders and contributors to the economic development

of a country. Take for example, the introduction of a small car 'Nano' by Ratan Tata, or organised retailing by Kishore Biyani. These are the works of innovative entrepreneurs.

Imitating Entrepreneurs

These entrepreneurs are people who follow the path shown by innovative entrepreneurs. They imitate innovative entrepreneurs because the environment in which they operate is such that it does not permit them to have creative and innovative ideas on their own. Such entrepreneurs are found in countries and situations marked with weak industrial and institutional base, which creates difficulties in initiating innovative ideas. In our country also, a large number of such entrepreneurs are found in every field of business activity and they fulfill their need for achievement by imitating the ideas introduced by innovative entrepreneurs. Development of small shopping complexes is the work of imitating entrepreneurs. All the small car manufacturers now are the imitating entrepreneurs.

Fabian Entrepreneurs

The dictionary meaning of the term 'fabian' is "a person seeking victory by delay rather than by a decisive battle". Fabian entrepreneurs are those individuals who do not show initiative in visualising and implementing new ideas and innovations, but wait for some development which would motivate them to initiate unless there is an imminent threat to their very existence.

Drone Entrepreneurs

The dictionary meaning of the term 'drone' is "a person who lives on the labour of others". Drone entrepreneurs are those individuals who are satisfied with the existing mode and speed of business activity and show no inclination in gaining market leadership. In other words, drone entrepreneurs are die-hard conservatives and even ready to suffer the loss of business.

Social Entrepreneur

Social entrepreneurs drive social innovation and transformation in various fields including education, health, human rights, workers' rights, environment and enterprise development. They undertake poverty alleviation objectives with the zeal of an entrepreneur, business practices and dare to overcome traditional practices and to innovate.

Dr. Mohammed Yunus of Bangladesh who started Gramin Bank is an example of one such social entrepreneur.

Entrepreneurial Ecosystem

Fostering entrepreneurship has become a core component of economic development in cities and countries around the world. The predominant metaphor for fostering entrepreneurship as an economic development strategy is the 'entrepreneurship ecosystem'. There is no evidence that increasing the number of startups *per se* or new businesses formation stimulates economic development. There is some evidence that it goes the other way around, that is, economic growth stimulates new business creation and startups. Similarly, offering financial incentives for early stage, risky investments in entrepreneurs does not stimulate the entrepreneurship ecosystem.

Job creation is not the primary objective of fostering an entrepreneurship ecosystem. The motivation for fostering entrepreneurship entirely depends on who the actor or stakeholder is. For public officials, job creation and tax revenues may be the primary objectives. For banks, a larger and more profitable loan portfolio may be the benefit. For universities, knowledge generation, reputation, and endowments from donations may be the benefits. For entrepreneurs and investors, wealth creation may be the benefit. For corporations, innovation, product acquisition, talent retention, and supply change development may be the benefits. Many stakeholders must benefit for an entrepreneurship ecosystem to become self-sustaining.

Strong entrepreneurship education is not essential to create strong entrepreneurship ecosystems. There is no reason to believe that formal education in entrepreneurship leads to more, or more successful, entrepreneurship. Well-known entrepreneurial hotspots such as Israel, Route 128, Silicon Valley, Austin, Iceland, and others, had significant entrepreneurship long before there were academic courses in it. These rose organically, first and foremost due to access to customers and employable talent, as well as access to capital (Isenberg, 2014).

Other important factors of a regional ecosystem are: a strong business culture that encourages a second attempt after a failure; knowledge bonds among entities both within the region and outside of it; high-quality skilled outflows (skilled human resources, information, infrastructures, etc.); easy access to the results of research conducted by universities; a friendly financing and investing system (credits, state

subsidies, networks with high risk venture capital funds and "business angels", crowd-funding, microcredits, etc.); powerful networks of social and venture capital; strong national demand; regional and local supporting structures that favor investment and upgrading processes (of both products and procedures); regional policy that promotes competition, cooperation as well as knowledge diffusion; and inter-industry merging of businesses.

Factors for Success as an Entrepreneur

There are five general factors that most, if not all, successful entrepreneurs have followed: (*i*) ensure financial stability; (*ii*) build a diverse skill set; (*iii*) consume content across multiple channels; (*iv*) identify a problem to solve; and (*v*) solve that problem.

One of the important characteristics of entrepreneurs is honesty. When entrepreneurs are honest with their customers, employees and investors, it shows that they respect those they work with. It is also important that entrepreneurs remain honest to themselves. When entrepreneurs are honest with their customers it leads to stronger relationships, which in turn results in business growth and a stronger customer network. When entrepreneurs build honest relationships with their employees, it leads to more transparency in the workplace, which results in higher work performance and better results. Being honest with investors means not only sharing strengths but also candidly disclosing current and potential weaknesses, and problem areas. For entrepreneurs to succeed, it is critical that they remain realistic about their situation at all times, and accurately judge every aspect of their enterprise for what it truly is. An entrepreneur must display strong work ethics, as well as hire only those individuals who believe in and display the same level of ethical behavior in the workplace.

Entrepreneurship Education

Nowadays, both scholars and policy makers are becoming aware of the importance of entrepreneurship education and its role in fostering entrepreneurial behaviour and mindset for the economic development of the country. In spite of such global recognition, entrepreneurship remains limited in developing countries. Such attitude towards entrepreneurship has affected the entrepreneurial behavior. Most of the developing countries consider entrepreneurship imperative for enhancing employment opportunities. In developing countries, every year, thousands of school leavers, university graduates and

graduates from vocational education and training institutes enter the job market searching for their first jobs. For this large youthful population, formal job creation opportunities are not sufficient to absorb the growth in labour force. For many, entrepreneurship can be an alternative career choice, provided that prior intention exists. This requires a gradual shift from the existing model to a new model in which entrepreneurship, innovation and creativity are a primary focus. The potential impacts of entrepreneurship education on students include three aspects: (1) personal development of students, including changes in attitudes and values; (2) changes in student's abilities; and (3) possible social impacts (Ali, 2019).

Higher education institutions have a pivotal role to play in fostering entrepreneurial behaviour and mindset. Entrepreneurial education should:

- First, create the ground for entrepreneurial thinking. Train and encourage students to take risks, build self-confidence, and instill leadership attitude.
- Make students innovation ready. Along with giving them formal insight into academics, enable them to think critically, and enhance their communication and collaboration skills, which will help them invent their careers.
- Provide tools and techniques to understand business literacy. Combine traditional economic and business principles with real world, practical experiences and operational challenges to prepare them for a self-reliant future.
- Present real-life success stories of achievers. Business case studies should be a part of the curriculum at the graduate level. Alumni of an institution who are self-reliant serve as a great source of inspiration.
- Partner with businesses for hands-on experience. Entrepreneurship-in-residence programs help students work with successful entrepreneurs and startup founders to understand the nuances of businesses better. It will be essential to introduce these programs at the undergraduate level (Igauge Blog, 2019).

Role of Universities in Imparting Entrepreneurship Education

Universities all across the world are increasingly trying to become more entrepreneurial, in order to stay competitive. Educational

institutions have a key role to play, both through training entrepreneurs and knowledge transfer to industry. One of the entrepreneurial activities is the fostering of entrepreneurship among students through entrepreneurship education. Today's educational institutions are adding economic development to their more traditional mandates of teaching and research. Accordingly, the need to foster entrepreneurship has become increasingly important in the 21st century. In fact, successful universities in the US underline the important role of academic institutions as catalysts for high-technology startups. Stanford University is related with many of the cutting-edge companies in Sillicon Valley. In developed countries, many entrepreneurs start their companies at their universities precisely because they can have continued access to knowledge and talent. In addition, many universities have restructured their research capabilities to be more responsive to local industries, setting up specialised research units, joint cooperative ventures, or interdisciplinary projects.

Role of Alumni

Alumni of universities are seen as an important connection for future entrepreneurs in dynamic and innovative areas, such as information technology and biotechnology. Considerable attention has therefore been paid to formal entrepreneurship education at the university level. Public authorities and economic experts stress the importance of promoting aspirations for entrepreneurship among young and highly-educated people. If the business birth rate in any nation can be enhanced by supporting students and graduates in their entrepreneurial activities, it is worthwhile to examine the current status of entrepreneurship education (Lüthje and Franke, 2003).

CONCLUSION

More than ever, issues of employability and entrepreneurship are gaining importance across the world, similar to the international trends. They are the critical twin factors for Indian higher education. The traditional roles of higher educational are due for major revamp to accommodate these concerns in addition to their traditional roles in knowledge generation and dissemination. Higher education institutions have a pivotal role to play in fostering employment skills and entrepreneurial behaviour and mindset in the students to make them self-sufficient and future ready.

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UNIVERSITIES FOR FUTURE JOBS AND HUMAN EXCELLENCE

PB SHARMA AND SANJNA VIJ

Universities for future jobs, supporting the creation of a knowledge society tuned to the noble objective of human excellence are a matter of great interest in higher education around the globe. The power of innovation to create has now become increasingly clear as also its enormous power to cause disruption in all spheres of human activity, industrial, economic and social included. In this context, universities of future are to be reconfigured and restructured to unleash the enormous power of creativity and innovativeness of Young India as also to nurture peace, harmony and happiness of the enlightened human society that the object of university ordains. The universities of the future shall undoubtedly focus on knowledge creation though industry and society relevant Research and Development and shall be a major support system for local and global industrial growth. Employability, Entrepreneurship, Technology Incubation, IPR commercialisation and Community Outreach shall form the Panchtatvvas of universities of tomorrow that shall in true sense be UNI3 universities of the third millennium.

PRELUDE

"Education is the passport to the future, for tomorrow belongs to those who prepare for it today".
                                                              — Malcolm X

Education earlier was conceived to be a valid means for enlightenment—a pathway for scholastic pursuit and an assurance of attaining glory (*Yasha*). In the *Taittiriya Upanishad*, the *Deekshant Upadesha* ordains the graduates of the university (*Gurukul*) to practice the knowledge acquired with a conduct and character akin to the righteous way of living with strict adherence to truth and humility, and working not just for self-glory but the welfare and wellbeing of the society at large. *Sahno Yasha, Sahno Bhamnvarchsam*, is the command of the *Upanishadic deeksha* (Taittiriya Upanishad, 1.11.2). Today, of course, education cannot remain confined to enlightenment and scholastic pursuits, as education is not just about learning; it is about 'learning for creating

a better world', and about 'learning to learn'. Further, the learning should pave the way to solve the problems at hand and that too with a scientific bent of mind to provide not just a unique solution, but one that is the very best under the given conditions. Learning should also empower us to envision a future with as much clarity as possible and enable us to achieve the goals and targets by employing the collective genius of the team. Education therefore is to be seen as a privilege to serve and excel alongside with attaining enlightenment and glory. It is also increasingly being asked if there is or would ever be an end to learning. These are some of the basic questions that need to be answered as we design the learning systems for meeting the contemporary and future needs of the knowledge society of the 21st century.

The UNESCO report on Rethinking Education Towards a Global Common Good (UNESCO, 2015) envisaged education for the third millennium to address these basic questions. It came out with the declaration that prompts rethinking on the education system from the point of view of making education more relevant to meet the aspirations of a knowledge society. Education for 'learning to know' is not enough. We need to also address the need for 'learning to do'. In fact, 'learning to know' and 'learning to do' have to ultimately help create a human society that cultivates peace and harmony, and discovers a more profound purpose and meaning of life. Hence, the UNESCO Commission has also advocated to target education outcomes to include 'learning to live together' in peace and harmony as an essential component of the education system. The most influential concepts of the Delors Report-1996 UNESCO are the four pillars of learning. Formal education, the report argued, tends to emphasise certain types of knowledge that are essential to sustaining human development. It affirmed that equal attention should be paid to each of the four pillars in all organised learning (Delors, 1996):

- *Learning to know* – a broad general knowledge with the opportunity to work in depth on a small number of subjects.

- *Learning to do* – to acquire not only occupational skills but also the competence to deal with many situations and to work in teams.

- *Learning to be* – to develop one's personality and to be able to act with growing autonomy, judgment and personal responsibility.

- ***Learning to live together*** – to develop an understanding of other people and an appreciation of interdependence.

The above mentioned four main pillars that was presented in Delors Report-1996 UNESCO are from the foundation of university education that creates the work force of tomorrow, with human instinct embedded in their DNA. 'Learning to live together' is one of the most essential pillars that is needed to build a true and lifelong culture of peace through which respect, understanding, care, compassion, kindness and acceptance can be practiced to bring human excellence throughout the world. 'Human excellence' is also an important aspect which needs to be catered to while delivering quality education at the higher education level. In order to promote human excellence at the education level, we must first understand the meaning of human excellence. In simple words, it emphasises the awakening of human conscience, which is purely based on the purity of thought and character practiced with a righteous way of life. Some components that are an integral part of the righteous living are: purity of mind; *sattvik* and simple living; positive attitude; a caring concern for nature religious harmony; respect for life empathy; truthfulness; and fairness. These aspects of human life are to be carefully nurtured during higher education in a university so that work ethics, professional morality, and personal integrity become the hallmarks of a graduate and are reflected in the educational outcomes of universities for future jobs.

The Future of Job report from the World Economic Forum, 2018, clearly identifies the enormous skill gap that is created due to new and emerging technologies powered by the power of connectivity and networking. This is further enhanced by the power of innovation fuelling the growth of automated, connected and network systems, supported by machine learning and artificial intelligence, creating a new environment for industries in which innovative minds of humans and robotic co-workers jointly move the layers of quality and productivity in both manufacturing as well as in service sectors. The report provides a better understanding of the potential of new technologies – including automation and algorithms – to create new high-quality jobs, and also improve the job quality and productivity of the existing workforce vastly.

The universities of future jobs thus have a twin challenge of meeting the contemporary and future needs of the industries and creating a knowledge society that glows human excellence, work ethics, and professional integrity that are mandated in the digital era.

EDUCATION AS A RIGHT

Education today has transformed a lot from what it used to be before. It is now an indispensable part of our society. Education is a 'right', which then also becomes the responsibility of the society to ensure that no individual is deprived of this 'right'. For individuals, education not only paves a way for their bright future, but also helps develop their beliefs which form the basis of their actions. Universities are drastically transforming in the way they are functioning these days and the quality of education being imparted is now increasingly focused on the requirements of the industry. There has been a drastic increase: both in the number of higher education institutes, as well as in the number of students enrolling in these institutions. Figures 1- 3 from University Grants Commission (UGC) Statistics will depict the scenario.

The Gross Enrolment Ratio (GER) has been a major parameter for planning for growth of higher education in India and has been greatly improved from 11 per cent in 2005-06 to 26.30 per cent in 2018-19 as can be seen from Table 1.

FIG. 1: STUDENTS ENROLMENT (BOTH THE TOTAL NUMBER OF STUDENTS AND THAT OF THE GIRLS) (1950-51 TO 2016-17)
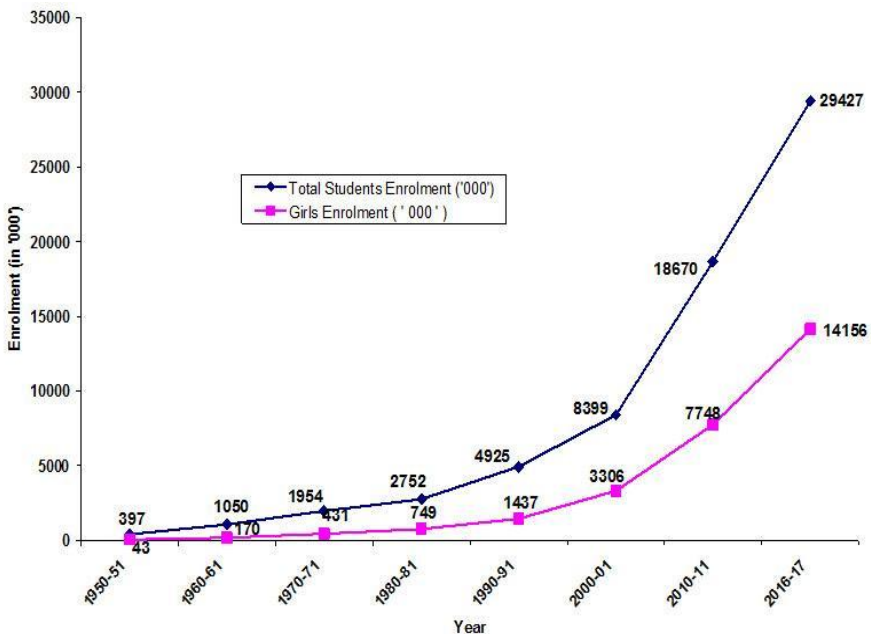
The increase in GER is also clearly reflected in the increase in enrolment in higher education in India, as can be seen from Figure 4. India today has 1040 universities (50 Central Universities, 409 State Universities, 127 Deemed Universities and 349 Private Universities

FIG. 2: INCREASE IN THE NUMBER OF COLLEGES AND DEGREE AWARDING UNIVERSITIES (1950-51 TO 2016-17)
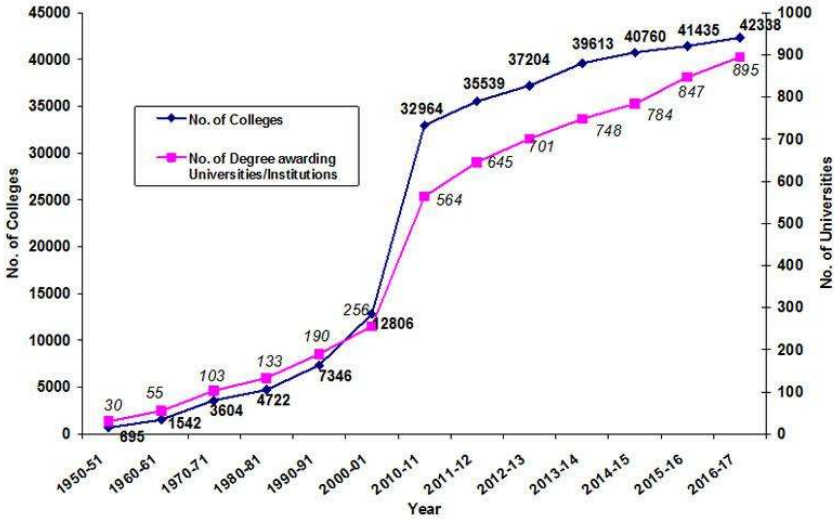
FIG. 3: INCREASE IN THE AMOUNT OF EXPENDITURE BOTH IN THE EDUCATION INDUSTRY AND HIGHER EDUCATION (2006-07 TO 2013-14)
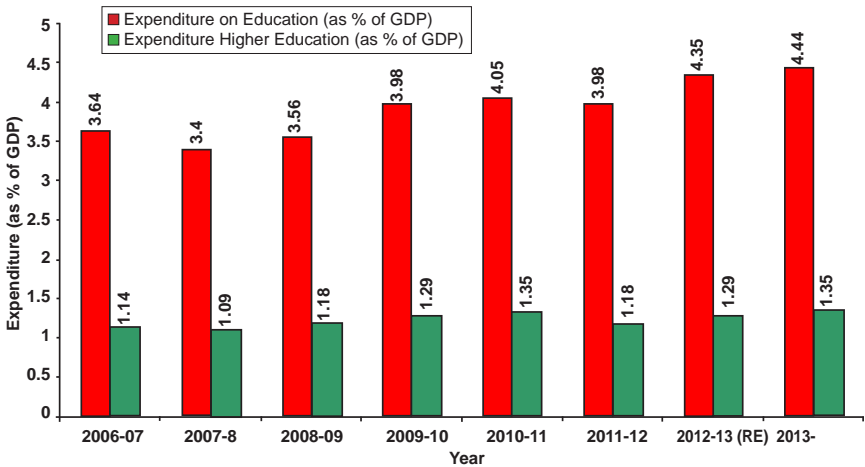
Source: UGC statistics

TABLE 1: GROSS ENROLMENT RATIO IN
HIGHER EDUCATION

Year	GER
2005-06	11.0
2011-12	15.0
2012-13	21.50
2013-14	23.00
2014-15	24.30
2015-16	24.50
2016-17	25.20
2017-18	25.80
2018-19	26.30
NEP-2019 proposes GER of 50 per cent by 2035	

Source: UGC Annual Report (2020).

FIG. 4: YEARWISE GROWTH OF STUDENT'S ENROLMENT IN
HIGHER EDUCATION 2010-11 TO 2017-18
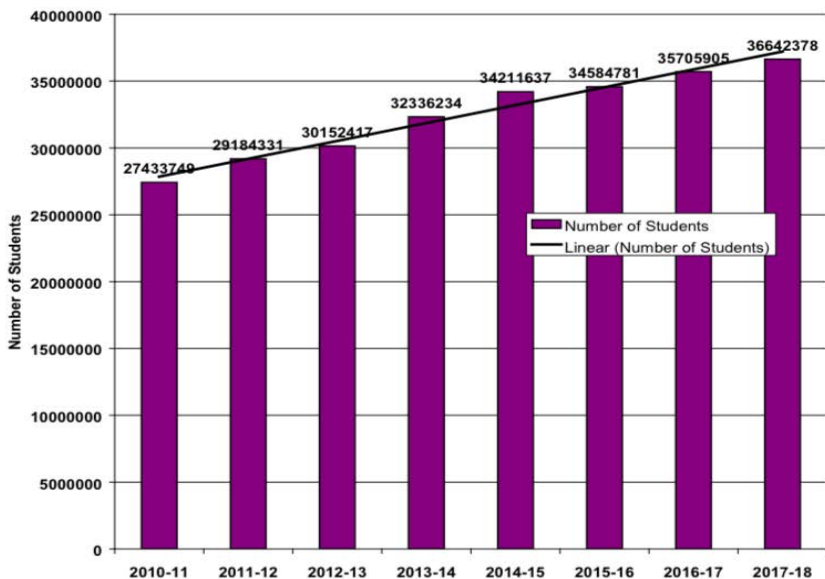
Source: UGC Annual Report 2018

as on 1st February, 2020 and 39,701 colleges together enrolling
3,66,42,378 students) of which almost 47.3 per cent comprises of
female students in higher education.

Thus, it can be clearly seen that the number of higher education institutes as well as the number of students enrolling are on a continuous rise since the time of independence which puts forth the importance of emphasising on quality education. The education as a right has undoubtedly resulted into a positive impact accelerating Gross Enrolment Ratio on one hand and the increased mobility of girl child to higher education on the other. However, as we move forward with higher quality and relevance of education, the healthier and positive the lifestyles of citizens of the country will be.

QUALITY AND RELEVANCE FOR FUTURE OF JOBS

We need to introspect whether the growth in the number of higher education institutions and increase in the number of universities, have been able to cope with the changing needs of the industry, and meet the aspirations of the society? As per the World Economic Forum 2016 report, *The Future of Jobs*, 65 per cent of children entering primary schools today will be employed in jobs that do not exist today. Some of these may include professions like data ecologists, gamification consultants, virtual environment engineers, and so on. The report clearly emphasises the importance of providing the students with not only quality education to meet the current and contemporary needs of the industries and corporates of today, but also to foresee the future needs, now that the pace of technology innovations has accelerated to unprecedented levels that is further fuelled by the creative power of innovation infinite.

The future of jobs in the coming days shall be dependent upon how the universities of tomorrow are able to transform their higher education system to be in tune with the requirements of knowledge and skills of the industries of tomorrow. A rapid paradigm shift is advocated to create a greater space for learning by doing, making autonomy of learning a reality in the educational system and empowering students and faculty with ample opportunities for collaborative learning and nurture imaginative and intuitive faculty to capture new ideas and thus make innovation a habit. Various modern techniques in teaching-learning such as digital education, ICT in teaching-learning, innovations, startups, e-governance, autonomy, MOOCs, flip classrooms and virtual realities should be implemented across the universities and institutions in India. On a positive note, with different kinds of support being made available and implemented by the government and with the adoption of various innovations in higher

education by the universities, higher education may soon become more 'revolutionary'. Some of the important ways to attain it are:

- Curriculum innovation;
- Tech-savvy teaching-learning environment;
- Academia, industry and society integration;
- Connect to global knowledge network;
- Global outlook, local and regional aspirations and focus on ground realities;
- Focus on relevance driven educational and research excellence; and
- Creating abilities to remain agile rather than just enlightened.

Some of the strengths of Indian education system in this context are (Figure 5):

- ***Robust Demand*** – India has the largest population in the world in the age bracket of 5-24 years, thereby increasing the opportunities in this sector.
- ***Competitive Advantage*** – India has a huge 'English' speaking population with a rank of 27 out of 80 countries in English Proficiency Index 2017.
- ***Policy Support*** – 100 per cent FDI is allowed in the education sector in India.

FIG. 5: EDUCATION AND TRAINING INDUSTRY IN INDIA—
DECEMBER, 2019
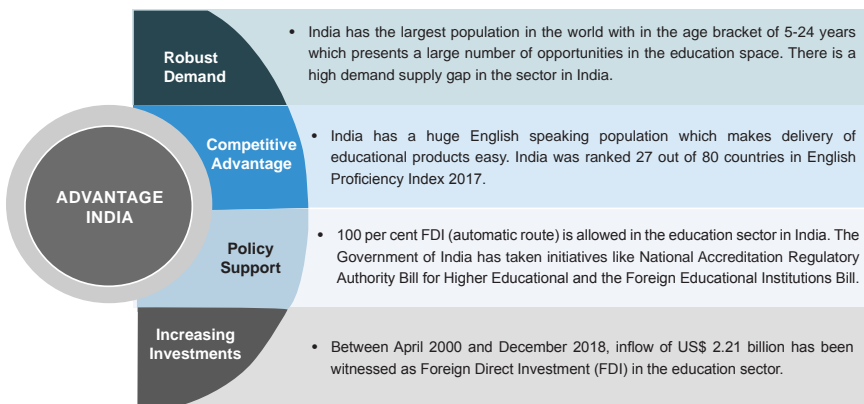
Source: IBEF (2020)

- ***Increasing Investments*** – Between April, 2000 and December, 2018, inflow of US$ 2.21 Billion has been witnessed as 'Foreign Direct Investment (FDI) in the education sector.

According to The Future of Work - OECD Employment Outlook 2019, various points that need to be considered include looking at how education is related with future jobs. These points have been elaborately covered in the report under the column 'A transition agenda for a Future that works for all'. These include:

- Times are changing as uncertainty and disruption is the way of life.
- More people of working age are at work than in the past decades.
- Technological changes and globalisation hold great promise for further improvements in workforce performance.
- A better world of work is not guaranteed – much will depend on having the right policies and institutions in place.
- One thing is clear: action on the margin will not do. Change is required in the well-ingrained behaviour of individual workers, companies, social partners and, above all, in policies.
- Countries should assess how well current policies match the priorities and prevent the most vulnerable workers from being left behind.
- Shaping a future of work that is more inclusive and rewarding calls for a 'transition agenda' for a future that 'works for all' – a government approach that targets interventions on those who need it most.
- This requires a paradigm shift in the way our workforce is prepared in the universities and institutions of higher learning.

GROWING SKILL GAP FOR INDUSTRY 4.0 OF TODAY AND INDUSTRY 5.0 OF TOMORROW

We cannot ignore the fact that there still exists a huge gap between the skills that are being taught in the education institutes as compared to what is actually required in the job market. With 15 million youngsters entering the workforce in India each year, there is a common agreement that 65-75 per cent of them are not job ready or

are almost unemployable. With such a huge redundancy of education for future jobs, it becomes highly demanding that a serious exercise of rethinking universities of tomorrow is carried out to assure the impact and importance of higher education for tomorrow's knowledge society increasingly being impacted by the power of innovations in the digital era.

Some of the major concerns of the digital age are: loss of privacy; risk to cyber security; lack of information integrity; loss of employment in traditional sectors; major disruption of assembly lines and supply chain; and, above all, increasing levels of anxiety and mental stress at this age of uncertainty that has descended in all nations. Figure 6 puts forth the expected shortfall of skilled workforce for the industries in 2022.

On the other hand, from the Future of Job Report, 2016, it can also be seen how the top skills will be redefined by 2020 and will give a new perspective to jobs in India as can be seen from Figure 6.

Figure 7 depicts how the top skills will be shifting to critical thinking, creativity and emotional intelligence by 2020. While talking about working on making our universities more futuristic and students more job ready, it's imperative to find solutions to some of the major challenges present in our higher education system like:

1. Lack of a robust regulatory system that pays greatest attention to quality of faculty and outcome of academic and research programs;

FIG. 6: THE EXPECTED SHORTFALL IN INDUSTRIES—2022

CROWING SKILL GAP The expected shortfall in industries in 2022

Infrastructure	Auto & Auto Componects	Building & Construction	Textile & Clothing	Transport & Logistics
103mn	35mn	33mn	26.2mn	17.7mm

Organised retail	Real State Services	Health Care	Food Processing	Education & Skill Development Services
17.3mn	14mn	12.7mn	9.3mn	5.8mm

Source: Info graphics, skills development

FIG. 7: FUTURE OF JOBS REPORT

**Top Skills in 2020 shift to Critical Thinking,
Creativity and Emotional Intelligence**

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

Source: World Economic Forum, 2016

2. Lack of knowledge infrastructure and research facilities in great many universities, especially state funded and private universities;

3. Lack of research relevance;

4. Lack of qualified and trained teachers;

5. Lack of facilities for Innovation Incubation and entrepreneurship; and

6. Lack of collaborative environment between U&U, U&I and I&I.

Because of the rapidly changing demands of job markets, it is no longer possible to educate, upskill or reskill through traditional university systems alone. A more open system that harnesses the power of collaborative learning utilising a hybrid approach to imparting education would prove more effective, now that the knowledge warehouses are at a hand's reach.
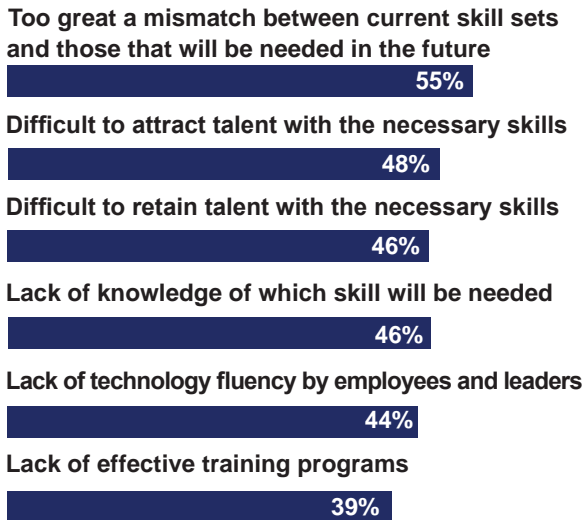
A MIX OF HOPE AND AMBIGUITY

The Deloitte Global's Readiness Report, January 2019, finds executives confronting a widening disparity between the technology and talent

they have and what they will need to compete in the Fifth Industrial Revolution (Deloitte, 2019). It goes on to identify the mismatch as given in Figure 8.

FIG. 8: SUCCESS PERSONIFIED IN THE FOURTH INDUSTRIAL REVOLUTION

Executives report a mismatch between the skills their workers have now and the ones they'll need in the future

Top challenges in preparing the workforce (Respondents were asked to rank top three challenges)

Too great a mismatch between current skill sets and those that will be needed in the future
55%

Difficult to attract talent with the necessary skills
48%

Difficult to retain talent with the necessary skills
46%

Lack of knowledge of which skill will be needed
46%

Lack of technology fluency by employees and leaders
44%

**Lack of effective training programs**
39%

Source: Deloitte (2019)

The report further highlights the complexity of evaluating future talent needs accurately, which is reflected in the fact that 46 per cent of executives cited a lack of what comprehension skills will be needed among their top challenges. So, undoubtedly there are many challenges and opportunities available in higher education, but to overcome these challenges and get benefits from these opportunities, is the need of the hour. It would therefore be absolutely essential to bring about various changes in the education system, which will not only help in providing quality education but also create a fertile ground for greeting the fifth industrial revolution that would address the challenge of sustainability along with increasing technology integration, for ease of work.

Figure 9 depicts a conceptual framework of the 21st century learning, which focuses on all-round development of the students and help inculcate the skills required for future jobs and achieving excellence. It would not be wrong to say that, "true education should not only focus towards imparting knowledge, but should also lead to the overall human development and human excellence."

FIG. 9: SOURCE: P21's FRAMEWORK FOR
21ST CENTURY LEARNING
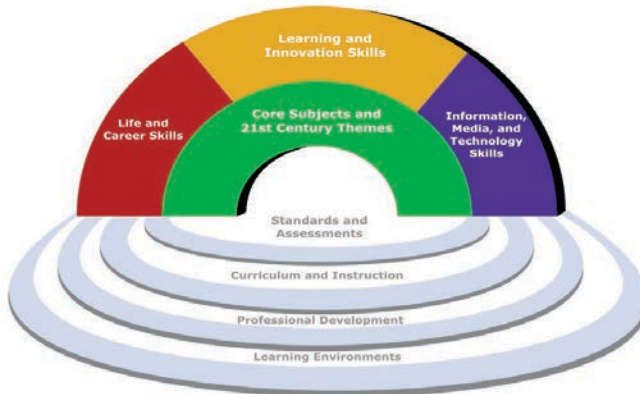
Source: OECD (2020)

The universities for future jobs thus have a mandate to adopt the *mantra* of 'Knowledge to Prosperity and Human Excellence'. Towards the end, it would be mandatory for all universities and institutions of higher learning to establish Knowledge and Innovation Incubation Centres and Knowledge Parks that shall facilitate startups and enterprise development, along with Skill Towers that shall provide ample opportunities to integrate knowledge and skill development for university graduates. The universities of the future shall undoubtedly focus on knowledge creation though industry and society relevant Research and Development and shall be a major support system for local and global industrial growth. Employability, Entrepreneurship, Technology Incubation, IPR commercialisation and Community Outreach shall form the *Panchtatvvas* of universities of tomorrow that shall in true sense be UNI3 universities of the third millennium.

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EMPLOYABILITY AND ENTREPRENEURSHIP IN INDIAN UNIVERSITIES
CHALLENGES AND REFORMS

NEELIMA GUPTA

The Indian higher education system is one of the largest systems in the world. There is a growing challenge of providing equal opportunities for quality higher education to ever-growing number of students, correcting sectoral and social imbalances, reviving institutions, crossing international benchmarks of excellence and extending the frontiers of knowledge. India Skill Report (2020) provides a preview of talent landscape in the country stating 47 per cent current employability, which is affected by changes in the demand for skills and changing nature of jobs. The problem of unemployability is related to the poor skills that our students possess even after pursuing higher education. Many students joined those courses just because others were opting for them. The 21st century Indian workers also needs transferable skills. Above all, India needs to create an agile workforce that can anticipate and adapt to changes in technology, automation and digitisation. A partnership between all the stakeholders of universities – students, teachers, parents, alumni, employer, regulatory agencies and the government – is the need of the hour for innovation in higher education.

PRELUDE

The Indian higher education system is one of the largest systems in the world. There are new challenges and regulations from the management being faced by these institutions – both in the public and private sectors – which are now growing at a fast pace. As a result, the old structures of management are now required to undergo drastic changes to satisfy the expectations of their students and the market. There is absolutely no substitute to quality of higher education and the country should prepare itself to export the Indian brand of education to foreign countries.

Higher education in India is passing through a phase of unprecedented expansion, marked by an explosion in the volume of

students, a substantial expansion in the number of institutions, and a quantum jump in the level of public funding. There is a growing challenge of providing equal opportunities for quality higher education to ever-growing number of students, correcting sectoral and social imbalances, reviving institutions, crossing international benchmarks of excellence and extending the frontiers of knowledge (Saini, 2015).

The emergence of a global economy has forced nations to adapt their systems of higher education to the changed global realities. Rather than continuing with their inward-looking policies, several countries are reshaping their systems of higher education for making them globally competitive. Pragmatism rather than ideology is driving this change. The United States of America has major plans for investment in higher education. The United Kingdom has injected new dynamism in the higher education sector through competition and incentives. China has undertaken a package of comprehensive reforms in higher education for over the past two decades. The government in China has declared education, science and technology to be the strategic driving forces of sustainable economic growth. Education, being one of the basic human rights, is gaining attention around the world, obviously for valid reasons (The Global Talent Competitiveness Index, 2019).

The institutional framework of universities in India consists of: universities established by an Act of Parliament (Central universities) or of a State Legislature (State universities); Deemed Universities (institutions which have been accorded the status of a university with authority to award their own degrees through central government notification); Institutes of National Importance (prestigious institutions awarded the said status by the Parliament); and institutions established by State Legislative Act and colleges affiliated to the University (both government-aided and unaided). India's higher education system is under pressure from the state to achieve multiple objectives, such as growth, quality and equitable access. As per a study published by Ernst & Young (2018), India is reported to have 140 million young college goers before 2030. And thus the country should pursue massive structural and systemic changes to produce better results in the field of higher education and distance learning, specifically (Brookings India, 2018). Apart from having the best-in-class post-secondary education system, by 2030, India will have the largest population in the world, resulting in an increased bracket of students eligible for higher learning and educational courses. To reach these targets, national and state policymakers are actively engaged in providing adequate resources, enabling private provision of

higher education, and so forth. Government of India (2019) has set a target of increasing the Gross Enrolment Ratio (GER) from the present level of about 23 per cent to 30 per cent as per All India Statistics of Higher Education (AISHE, 2018-19). Various new initiatives are being taken by the government to increase the GER. To manage the future of higher education, there is a need for effective governance of higher education internally and externally.

BROAD CHALLENGES IN THE INDIAN HIGHER EDUCATION SYSTEM

The system has many problems like a chronic shortage of faculty, poor quality teaching, outdated and rigid curricula and pedagogy, lack of accountability and low employability of students. Some of the most important amogst them are discussed here.

Poor Research Capacity

India has a very low level of PhD enrolment, poor quality research, lack of opportunities for interdisciplinary and multidisciplinary collaboration, and low levels of industry partnership.

Uneven Access to Higher Education

Due to social divisions and multidimensional inequalities in enrolment across population and geographies, access to higher education is uneven in India.

Outflow of Indian Students

A steady increase in disposable income of the Indian middle class is leading to growth in the education market in other countries. USA is the most popular study destination for Indians. Australia has become the second most popular study destination for Indian students who want to pursue higher education, since it has gained from its liberalised visa norms and post-study visa options. UK, Canada, France, Singapore and Germany are other popular destinations for higher studies.

Limited Focus on Entrepreneurship

There are a few institutes that offer programs in entrepreneurship and have active incubation/entrepreneurship cells on campus to reflect the importance of self-employment and entrepreneurship in an economy.

There is a need for building a culture of research, innovation, and entrepreneurship that can build high economic growth in the country.

Lack of Gender Parity in Education

Cultural and social beliefs create multiple disparities that debar girls from their right to education. India has witnessed many gender focused initiatives to remove gender inequality in education with considerable success, although a lot still needs to be done.

Signs of Stress in Higher Education

The premier institutes across India have been plagued by a number of problems, which are adding to the stress level of students. Some students are not exactly able to cope with the pressure. Institutes must take wiser measures to deal with this issue.

India's Skilling Challenge: A Snapshot

- Nearly 1.25 million new workers aged 15-29 are projected to join the workforce every month through 2022.

- By 2022, India will have about 47 million more people between the working ages of 19 to 59 than younger or older people. This demographic dividend will reach peak in about 2040.

- The roughly 70 million workers entering the workforce between 2018 and 2022 will need to be skilled for 21st century economy if India is to keep pace with technological change.

- Many of the roughly 468 million now in the workforce could be upskilled and reskilled, though it is not easy because 92 per cent are in the informal sector.

- Slightly more than half of India's workers have school attainment below secondary school with no vocational training.

- The unemployment rate for graduates aged 20-24 was 29 per cent, for those 25-29, 12 per cent, and for those 30-34, four per cent.

- Three hundred million Indians are currently in educational institutions or acquiring vocational skills and will be eventually looking for work (NCAER, 2018).

- Poor opportunities for vocational training and skill development.

DEVELOPING EMPLOYABILITY AND ENTREPRENEURSHIP

India Skill Report (Wheebox, 2020) provides a preview of talent landscape in the country stating 47 per cent current employability, which is affected by changes in the demand for skills and changing nature of jobs. The digital transformation of industrial organisations has created demand for tech-savvy professionals having first-hand knowledge of Artificial Intelligence and Robotics. Various stakeholders of higher education have made a beginning in implementing new initiatives for creating future ready workforce and positive outcomes are expected to be observed in the near future. The report also shows a slight improvement in employability of engineering students and a downfall in employability of management graduates.

The understanding of how structural and technological changes in this 21st century are radically altering today's workplace and the nature of work, is imperative. While India must deal with its large and persistent backlog of unskilled informal workers, it must also provide for its future to sustain rapid progress. Firms of different sizes are already placing different skill requirements on individuals—large firms need formal business and accounting skills and high technological skills, and smaller firms need multitasking and adaptability to business practices. The 21st century Indian worker also needs transferable skills. Above all, India needs to create an agile workforce that can anticipate and adapt to changes in technology, automation and digitisation (Deloitte Insights, 2019).

The new Annual Employability Survey 2019 report by Aspiring Minds reveals that 80 per cent of Indian engineers are not fit for any job in the knowledge economy and only 2.5 per cent of them possess tech skills in Artificial Intelligence (AI) that the industry requires. The report highlights that ad-hoc changes in the Indian higher education system would not help address the problem, it rather needs a systematic and fundamental change to deal with high unemployability rate.

Problem of Unemployability

The problem of unemployability is related to the poor skills that our students possess even after pursuing higher education. This problem is connected to mismatch between personality and the job requirement. Students need counselling to understand the kinds of jobs that are available; the job profiles; whether the job profiles match their interests

and skills; the skill gaps that may disqualify them; and how to address those skill gaps. Many students pursuing higher education do not have the aptitude for those courses; they have joined those courses just because others were opting for them. Personality tests during secondary education could help them identify their aptitudes. Experts have mentioned various reasons attributing to poor employability ranging from selection procedure in our graduate colleges, curriculum and quality of teaching, student interest and lack of corporate involvement (India Skills Report Wheebox, 2020).

Blended Learning to Improve Comprehension

The blended education and 'made for me' models improve comprehension of knowledge by students. Flipped classrooms are becoming more popular as a means to support student learning in HE by requiring students to prepare before lectures and actively engaging during lectures. These models are based on self-paced learning. Students receive notifications about how they are performing in a course as they progress through it. Traditional lecture hall teaching is serving to be less effective than personalised learning models. Oral and rote learning is now outdated (India Today, 2018). The need of the hour is for students to remain relevant despite the increasing number of pass-outs and it is crucial for HEIs to match the students' learning with what the industry demands.

Ensuring Sustainable Education through Information and Communication Technology

There is a need to establish sustainable education systems using Information and Communication Technology (ICT) for rapid capacity building and to develop e-resources/libraries as repositories of knowledge by the country. The integration of technology in teaching-learning and the digital revolution is bringing in sweeping changes in the higher education landscape. Every institute is taking various initiatives in promoting digital education. MHRD has taken up novel initiatives like SWAYAM (India's own MOOCs), Swayam Prabha, National Digital Library (containing 6.5 million books), and National Academic Depository. The technology of online education and all the digital initiatives have the possibility to revolutionise higher education scenario in the near future and address the twin concerns of enhancing access and quality. Digitisation in education also helps in saving resources.

Need for Interdisciplinary Learning

There is a need for interdisciplinary learning. This can help students to widen their knowledge beyond a single domain. For instance, Dr Homi Bhabha State University (HBSU) has created the state's first cluster university that will provide students access to subjects across disciplines and campuses. In 2015, University Grants Commission (UGC) approved the implementation of CBCS by all central and state universities to allow interdisciplinary learning. UGC had developed detailed syllabi in consultation with various stakeholders in as many as 109 undergraduate courses as a template. All the universities were requested to adopt the CBCS and also revise the curriculum. CBCS makes learning system more student-centric as it will allow them to choose inter-disciplinary, intra-disciplinary courses, even from other disciplines according to their learning needs, interests, and aptitude. Credits earned at one institution can be transferred to another institution as well.

Vocational Training/Skill-based Courses for Preparing the Workforce

Vocational training/skill-based courses can give a new direction to the education system. The education policies in India focus on academic progress rather than vocational training. Moreover, vocational education is not built-in into the education system in India. Countries such as Germany, Switzerland, Austria and the Netherlands emphasise on vocational education in their curriculum. Germany's dual-track vocational training program, known as the VET, is the route that around half a million apprentices in Germany take to a skilled profession every year. Under this system, there are two components: classroom study in specialised trade schools; and supervised, on-the-job work experience. In their classes, students learn job-specific as well as general education subjects. Germany's vocational schools partner with around 430,000 companies, and more than 80 per cent of large companies hire apprentices (Clean Energy Wire, 2018). The Swiss Vocational Education and Training (VET) system is strongly employer and market-driven and yields good labour market outcomes. The government of Mexico has strengthened its Vocational Education and Training (VET) through greater involvement of the private sector and increasing apprenticeship training programmes. There is a growing realisation of the important role of TVE Training (TVET) in the development of individuals and preparation of the workforce in the 21st century.

Vocational education is less valued in comparison to academic education in India. There is a growing need for skilled labour and well-designed labour training programmes. India will have the youngest workforce in the coming years and it therefore holds a huge opportunity for economic growth. There is a need for expanding opportunities for skill development and revitalising the higher education system in India. A component of industrial training must be inbuilt in the curriculum at secondary education level to promote understanding of work environment and awareness on important skills to be learnt. The new National Skill Qualification Framework seeks to promote vocational education and training by facilitating seamless mobility between general and vocational streams. New B.Voc (Bachelors of Vocational Studies) courses are being designed and delivered under the NSQF and National Vocational Education Qualification Framework (NVEQF) schemes.

Striking a Balance Between Learning, Skilling and Job Opportunities

Universities need to strike a balance between learning and availability of job opportunities. Focus on generating key employment skills like problem solving, critical thinking, communication and entrepreneurial abilities must find place in the curriculum across all disciplines (NCAER, 2018). The employment generation can be enhanced keeping in mind the demand of skills. Teaching models need to shift to learning by doing. According to the World Economic Forum, there is an urgent need for developing social and emotional skills in addition to technological skills to add value to individuals. These kinds of skills can be said to be broader employability skills required to succeed across all jobs. Developing Emotional Intelligence from preschool to higher education has to be given importance as it leads to better psychological development as adults and the capacity to cope with stress.

Entrepreneurship Courses and Self Employment Training

Universities can offer several entrepreneurship courses at the undergraduate level, such as Financing of Business, Managing Family Business, and Setting Up a Business in Growing Economies. Entrepreneurial training should be mandatory across all disciplines and students in higher education must be provided with incubation opportunities to develop business ideas. In India, where over 300 million people are living below the poverty line, it is simply impossible for any government to provide means of livelihood to everyone

(GoI, 2006). Such situations surely demand for a continuous effort from the society, where people are encouraged to come up with their entrepreneurial initiative.

Working towards entrepreneurship, every year, the National University of Singapore sends 200 of its most entrepreneurial students to spend six months or a year abroad. These students work at startup firms across the Silicon Valley, New York, Stockholm, Beijing, Shanghai, or Israel and attend classes in technology entrepreneurship in the evening. Upon their return to the NUS, the students are accommodated in an entrepreneurial-themed campus residence where they share their experiences and create their own businesses and products. These NUS students are said to have founded 350 companies since 2001.

India has also moved on the path of self-employment rather than merely expecting the large number of students to be absorbed by the industry. This is also reflected in the Budget 2020 which is a budget for entrepreneurs and MSMEs. When it comes to budgetary allocation for the MSME Ministry, the allocation this year stands at an all-time high of Rs 7572 crore – an increase of eight per cent from the FY 2019-20.

We should be aware of the fact that, as per the 'MSME at a Glance' Report of the Ministry of MSMEs, the sector consists of 36 million units and provides employment to over 80 million persons in India. Overall, SMEs are seen as the backbone of any economy as they constitute more than 90 per cent of the formal economy worldwide (World Bank). Hon'ble Finance Minister, Ms Nirmala Sitharaman in her second budget speech hailed the entrepreneurship mindset of Indians, saying, "Entrepreneurship has always been the strength of India," and pushed the total allocation for 'Entrepreneurship and Skill Development' from Rs 479.91 crore to Rs 556.47 crore. Thus, the focus is on MSMEs and entrepreneurship which by itself is the best means for creating employment. It is now upto secondary schools and universities to generate awareness among students even if it means introducing compulsory entrepreneurial education.

CONCLUSION

Quality is a challenge in higher education in India. Few Indian institutions feature in the top 200 in world rankings. The Indian Government is striving to put Indian higher education on the global map in research, innovation and teaching. There are a growing number

of innovative reforms being designed at the central and state levels to enable Indian institutions to get into the list of world class institutions. The reforms in higher education are helping states to receive more autonomy, provide fresh opportunities for international collaboration with new partners, and to prepare students for becoming self-employed in the next decade as outlined in the SDG 4 that calls for providing all learners the knowledge and skills needed to promote sustainable development.

A partnership between all the stakeholders of universities – students, teachers, parents, alumni, employer, regulatory agencies and the government – is the need of the hour for innovation in higher education. Universities need to work with each other, with open learning platforms, and with industry partners for strategic and collaborative curriculum development. Allowing quality foreign universities to open branch campuses in India would bring in global best practices to the country and enhance its existing knowledge base. Also, instead of a uniform regulatory structure for all higher education institutions, a differentiated structure based on the quality of institutions can be helpful.

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EMPLOYABILITY AND ENTREPRENEURSHIP
ISSUES AND CHALLENGES FOR
INDIAN UNIVERSITIES

K SIVA RAMA KRISHNA

While most of the countries in the developed world are moving towards ageing population, India is privileged to be the youngest country in the world in terms of its demography. This young workforce and demographic dividend, which constitutes nearly 62 per cent of the population of India is our most valuable resource. However, a nation of young people without employment can be a drag for the economy and a threat to the society. Indian universities have largely become teaching and examining bodies without a foolproof system to provide skill base hence they are not effective to cope with the challenges of employment. Most of the time what is taught in the universities is not wanted by the employers and what is wanted is not taught and thus there is a serious mismatch between demand and supply. Some employers place less importance on graduates' actual degree or discipline in comparison to the generic skills for employment which the students must acquire. They also look for graduate's achievements and skills outside the boundaries of the discipline. Skill development is crucial to stimulate the process of economic development. In the backdrop of globalisation and open market economy, it is only through skill development, skill up-gradation and skill updation of the youth that employment can be generated, national productivity improved and sustainability of development ensured. Developing entrepreneurs among students is the answer for tackling the employability problem. Indian universities need to be revamped forthwith in this regard.

PRELUDE

It is well-known that Indian higher education system is the third largest in the world, next only to the United States and China. While most of the developed world is moving towards a nation of ageing population, India is privileged to be the youngest country in the world in terms of its population. This young workforce and demographic dividend, which constitutes nearly 62 per cent of the population of India is

our most valuable resource. Ranking 66th in the Global Innovation Index (GII) list, it is believed that India can become a global driver of innovation because of its potential, talent pool, and culture of innovation. However, in the ultimate analysis, empowering youth is all about gainful employment. A nation of young people without employment can be a drag on the economy and a threat to the society. If we do not provide them the employable skills and the jobs, it might turn out to be a 'demographic disaster'. Therefore, the most crucial problem before the higher education institutions and universities is how to make the youth employable. As the famous British Historian Thomas Carlyle observed, "A man willing to work and unable to find work, is perhaps the saddest sight that fortune's inequality exhibits under this sun."

It is quite disturbing to learn fromthe reports that nearly 80 per cent of engineering graduates and 90 per cent of management graduates of most Indian universities are not fit for jobs. This, of course, does not apply to graduates of Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs) and other premier institutions; reputed deemed to be universities like Manipal, BITS, VIT, Amrita; GITAM, SRM. etc.; and several reputed Central, State and Private universities, which are taking special measures to improve employability skills of students. All these years, we focused on building higher education and little did we think of introducing the employability quotient and produce skilled manpower through skill training interventions. Despite being world's youngest country in terms of demographic dividend, India has only a small percentage of the skilled workforce compared with 96 per cent in South Korea, 45 per cent in China, 50-55 per cent in USA and 74 per cent in Germany. In this paper, an attempt has been made to examine some of these issues and challenges, and suggest measures for improving the situation in so far as universities are concerned. Before we examine the issues, it is in the fitness of purpose to have a proper understanding of the skills that the employers look for.

EMPLOYABILITY

Employment is all about getting a job. Employability refers to a person's capability of gaining employment. This capability is about having an effective mix of knowledge, skills and personal attitudes in order to be employed. A graduate's employability therefore depends on:

- Her/His Knowledge (what she/he knows).

- Her/His Skills (how she/he utilizesthe skills gained).

- Her/His Attitudes (what approach she/he uses to accomplish the tasks).

Employers look for people who are flexible, take initiatives, and have the ability to undertake a variety of tasks in different environments. While certain hard skills are necessary for any position, employers necessarily look for 'soft skills' among job applicants because it easier to train a new employee in hard skills (such as how to use certain computer programmes) than to train in soft skills (leadership or teamwork). Apart from subject domain, employers also demandfor those skills which are outside the area of study.Some employers place less importance on graduates' actual degree or discipline and paymore emphasison generic skills which students must acquire for employment. They also look forthe achievements in extracurricular and co-curricular activities; work experience; volunteering and involvement in social activities, etc., which have equal importance as the knowledge and experience acquired through academic study.

FACTORS INFLUENCING EMPLOYABILITY

Employability Skills

Employability Skills are those skills which are essential in an individual to make them 'employable'. Along with good technical understanding and subject knowledge, employers often outline a set of skills that they want from an employee. These skills are what they believe will equip the employee to carry out their role to the best of their ability. Employability depends on how one presents the knowledge, skills and attitudesto employers.Employability skills are generally divided into following three categories:

- Transferable Skills

- Hard Skills; and

- Soft Skills

Transferable Skills

In order to be flexible, students need a set of transferable skills: skills that are not specific to one particular career path but are generic across all employment sectors. Employers are often looking for skills that go beyond qualifications and experience. Some career paths would

involve higher order thinking skills and a good grounding in a variety of managerial skills. Transferable skills include motivating others, dealing with obstacles and crisis, skills learned from life experience, ability to meet deadlines, multi-tasking, managing staff, problem solving, analytical skills, creative thinking, etc.

Hard Skills

Hard skills are teachable abilities or skill sets that are easy to quantify. Typically, students learn hard skills in the classroom, through books or other training material or on the job. Hard skills include among others:

- Proficiency in a foreign language;

- Machine operation; and

- Computer programming.

Soft Skills

Soft skills, on the other hand, are subjective skills that are much harder to quantify. Also known as 'people skills' or 'interpersonal skills', soft skills reflect the way one relates to and interact with other people. They include: communication, flexibility, leadership, motivation, patience, persuasion, problem solving abilities, teamwork, time management, work ethic, etc. Unlike hard skills, it's not easy to point to specific evidence that onepossesses a soft skill. If an employer is looking for someone who knows a programming language, a student can share her/his grade in a class or point to a programme created using the language. But how can a student show her/his work ethic or any other soft skill?

Application of Employability Skills

Some of the important employability skills and the way they help the graduates for effective functioning in organisations is discussed here.

Willingness to Learn

Willingness to learn is the desire, wish, or readiness to acquire new knowledge and develop. Employers often look for people with this skill because only such employees can produce results. They are ready to solve problems and cope with unexpected difficulties. They are self-confident, more flexible, never give up when they face challenges and always look for more effective ways to combat the difficulties.

Good Business Sense

Business sense, business acumen or being business savvy is keenness and quickness in understanding and dealing with a business situation (risks and opportunities) in a manner that is likely to lead to good outcomes. Someone who always has fresh ideas and can think of creative ways to push the business forward is one step ahead of others. Along with creative thinking, one need to have problem-solving skills also.

Optimism

Optimism keeps one level-headed and positive and can help to get through tough times. Besides having an optimistic approach, one must also be lit with a burning desire to get the things done. This will also help one focus better and motivate people around.

Resilience

This is the ability to consolidatedoneself after some setback and get back quickly to the game. This is one of the most important traits of a successful individual and most employers look for resilience (toughness) when recruiting fresh graduates from campuses.

Ability to Work Under Pressure

This relates to how one responds under stress caused by urgency of matters requiring attention, the burden of physical and mental distress and the constraints of circumstances. One has to maintain self- control and work as efficiently as possible by prioritising and organising one's work. Staying composed demonstrates that one has the ability to take things in stride and complete the tasks even in the face of difficult circumstances.

Adaptability

This is the quality of being able to adjust to new conditions and the willingness to change to suite different situations. Adaptable people cope with unexpected disturbances in the environment. This quality makes the graduates more valuable to an organisation, who can complete important assignments either independently or working well with a team.

Perseverance

Perseverance refers to working hard regardless of any odds or obstacles that may exist. People who persevere show steadfastness in doing things despite hardships.It is what it takes to reach the goal.

Positive Attitude

Positive attitude means being an optimist and looking for the good in things, rather than being a pessimist and cynical about everything and everyone. Positive attitude increases confidence in our abilities and brings hope and expectation of a brighter future. It enhances one's motivation when carrying out difficult tasks and working on achieving goals.

Self-Management

Self-management refers to our abilities to control our feelings, emotions and activities. Self-managed employees are more productive since this skill helps in problem solving, resisting stress, communicating clearly, managing time, and strengthening memory.

Getting the Most from Self and Others

Employers generally want to know if the graduate is committed to his self-development. There are many ways to know this. It might be that the graduate has overcome a difficult obstacle or has gone out way to learn a new skill. What is important is that she/he has pushed himself.

Listen Actively as well as Make Oneself Heard

Employers look for people who know how to put their point across clearly with articulation and professionalism. Just as importantly, one should be a good listener and take other peoples' opinion on board and actively seek out feedback. One also needs to be comfortable talking to groups.

Seeking Newer and Better Ways Forward

Successful organisations are fueled by good ideas. Employers look for the graduatesfull of innovations and ideas who can give interesting suggestions and areusing better ways of doing things. Good ideas come in all sorts – and the best ideas aren't necessarily the biggest.

Support Others to Achieve Success

The ability to get along with others and to lead a team to success is vital to any organisation. This means that the graduate needs to be able to demonstrate that she/he is a natural team player and can adapt his style to accommodate others if need be.

Take Pride in Everything One Does

Employers will expect graduates to be committed to delivering the best standards, adopting the right procedures, and maintaining the highest levels of confidentiality. This means staying motivated for all tasks and upholding complete professionalism even in conflicts or difficult situations.

Fix Priorities and Prepare for the Unexpected

In most jobs, graduates are expected to take responsibility for their own workload. Employers will want to know how the graduate had managed her/his course work and used her/his initiative to deal with the unexpected.

Be Adaptable

As an employee, it is vital that one keeps pace with a constantly evolving workplace. Graduates need to show that they respond to change positively and can adapt quickly while still working productively to achieve high standards. This is also called 'flexibility' which is a required trait for employment.

Know How to Add Value

Whatever sector one wants to work in, it's important that one understands how it operates and the different issues that affect it.

Look at Issues from Different Angles

In the world of work, things don't always go according to plan. That is why employers need to know that the graduates can analyse information, identify the forthcoming problems and come up with effective solutions.

Think Ahead

In any job, one needs to be able to take initiative. Although it's important that graduates follow the right rules and regulations, they should also be confident when it comes to suggesting new or different ways of doing things or anticipating problems and issues before they arise.

Be Able to Use New Technologies

Technology is involved in almost every job. It is the 21st century way of doing things and working, whether it involves keeping records of

information, communicating with others, maintaining accounts or understanding a manufacturing system. Almost every job involves using technology of some sort. It is therefore vital to be savvy withthe technology.

Show Commercial Awareness

Commercial awareness is the ability to understand what makes a business or organisation successful. It is important to know the customers and what's going on in the market sector. It is also important to know the legal or regulatory changes coming in the way and the economic situation that has a larger-than-usual impact. Having commercial awareness is important to any business. All these skills may appear to be simple, but they are very important for any graduate to acquire these skills during his studies in a college or university and improve his prospects of getting a job.

War for Talent

The problem of unemployability is further aggregated by the war for talent among the multinational companies. There is a global war for talent going on at present. This is being fought on one side by multinational companies and on the other side by Higher Education Institutions (HEIs) including universities, business schools, etc. In India, too the war for talent got heated up with the multinational companies like Amazon, Microsoft, Google, Facebook willing to pay lucrative salaries and eye-catching perks to attract talented graduates.

Global multinationals often hunker down on their hiring strategies as they desperately want graduates from Asian universities and business schools for their operations across the world. The reason behind this is the diligence of Asians in their work. The corporate success has been proved repeatedly the perceptions of multinationals that the best brains and hardworking graduates can be found from Asian countries, especially from India. However, the war for talent marks a grim reality that Indian graduates hired in these companies are from top ranking elite institutions and the universities or institutions at the middle and bottom end of the rankings are scarcely able to attract multinationals to hire their students. The fact that many of the multinationals complain that the quality of graduates from the universities in the bottom ranking brackets is so poor as they neither have the required technical knowledge nor the much-needed soft skills for working as professionals. The moot point here is that the combination of skill,

training, attitude and motivation is what sets apart the graduates from high ranked academic institutions and universities with those at the low and middle ranked ones.

This means that the graduates from premier universities who are meritorious and who have the desirable traits are at a premium when compared to other graduates from universities that are in the middle and bottom rungs of rankings.

Students with Innate Talents

Not all of us are born geniuses or are child prodigies. Butmost human beings have some innate talents that need to be catalysed by nurturing, enabling and empowering thereby making us flourish and prosper in our careers and personal lives. Skill development is crucial to stimulate the process of economic development. In the backdrop of globalisation and open market economy, it is only through skill development, skill upgradation and skill updation of the youth that employment can be generated, and national productivity improved and sustainability of development ensured. Indian higher education institutions and universities are producing good soldiers but not captains to lead in industry and economy. To be able to become so, many students are going abroad every year, in increasing numbers, and many do not return—a great brain drain. To prevent this, we should identify and impart the employability skills that we can easily develop in students. Most importantly, positive attitude, good business sense, willingness to learn, resilience, ability to work under pressure, optimism, adaptability, perseverance and motivation, and a host of similar skills.

ENTREPRENEURSHIP

Some scholars suggest that developing entrepreneurs among students is the answer for tackling the employability problem because entrepreneurs are not 'job seekers but job providers. Entrepreneurship is the process of designing, launching and running a new business. People who create these businesses are called entrepreneurs. India has provided for a nurturing ground to numerous startups in the past few years, but they were merely cloning of western ideas. The lack of technical innovation in India has led to venture capitalists restricting funding, resulting in slow decay of entrepreneurship in India and increased unemployment among graduates. Due to high risks involved in launching a startup, a significant proportion of startup business had to close down due to lack of funding, bad business decisions, lack of

market demand or a combination of all these factors. A report by IBM Institute for Business Value and Oxford Economics found that 90 per cent of Indian startups fail within the first five years. Lack of innovation is the main reason for this. According to a study titled 'Entrepreneurial India', 77 per cent of venture capitalists believe that Indian startups don't have unique business models. Since 2015, as many as 1503 startups have closed down in India. Logistics, e-commerce and food technology have seen the greatest number of failures.

Importance of Research for Entrepreneurship

As Naik (2017) rightly pointed out in his article, *Revamping of University Education: A Challenge*, Indian universities still operate on old lines as if they were an extension of high school system, whereas universities in developed countries like USA, Germany and UK are primarily 'Research Universities,' and research output, especially need based, is their main contribution and teaching is only a by-product. He observed that the main output of universities should be research, patents, new technologies, intellectual property rights. A very clear indicator would be the number of international patents India has applied for. In 2018, India applied for 50,000 patents, while China's count stood at 15.4 lakhs; USA at 5.09 lakhs; Japan's 3.13 lakhs; and South Korea stood at 2.09 lakhs.

On the campuses of several western universities, commercial companies are flocking around. Incubators, research parks, innovation centers, patents and intellectual property rights' bureaus are distinctly visible. Venture Capital companies have opened offices in campuses in search of new technological ideas for commercialisation. Universities in developed countries have become like magnets that attract not only scholars but also industry entrepreneurs and Venture Capital Funding (VCF) companies from across the world. It is well realised in those countries that new knowledge and new technologies are the important sources to bring about change.

Indian universities need to be revamped forthwith. Every university should start Technology Parks, Business Incubators, Venture Capital Foundations, which have been existing for more than 50 years in developed countries. It is on account of this that these countries have prospered. Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs), and Indian Institute of Science (IISc) and several progressive deemed to be universities have started such centers in their

campuses. This is good, but not enough. Many universities must also do so and take steps to become enterprising.

An industry, so as to remain competitive globally, needs access to first-class research in universities. So also, the first-class researchers in universities need access to the industry so as to commercialise their research findings. This is equally applicable to Indian universities at this juncture. Almost every western university has a patent and technology licensing department engaged in technology sale. Spin-off of companies from universities is a common phenomenon, just as spin-off of technologies. Yahoo, Google, Cisco and many other multi-national companies were conceived and born in universities. Every year, as many as 15-20 new technology-based firms are born in MIT, Boston. The university gives consultancy on retainer basis to as many as 3,000 companies. This is not unique with MIT only; it is true with almost all universities in the developed economies. They have created technology incubators to enable new project ideas to be innovated to marketable stages. Thereby, they are earning wealth for themselves so also for the university besides credit and satisfaction and large-scale employment.

Universities in advanced countries are involved in research and finding new technologies, while on the other hand most Indian universities are engaged more in teaching as if they were an extension of schools. The vector direction of these universities is wrong. They have largely become teaching and examining bodies without a productive research base and hence they are not effective to cope with the challenges of employment.

Many Indian universities do not yet have patent and technology licensing departments. Technology parks and incubators are far too less. Most Indian universities almost have no connection with the industry and industries have no confidence in many universities. Some universities have become corporate offices—bureaucratic and political in nature. Consequently, what is taught in universities is not wanted and what is wanted is not taught. There is a serious mismatch between demand and supply.

Indian government has launched very ambitious projects like Make in India, Digital India, Startup action plans, etc. These projects require leaders with advanced knowledge in engineering, technology, commerce and industry. Success of these projects depends greatly on research, innovation, entrepreneurship in universities and colleges.

Revamping of Indian university education is a pressing need of today's time. Redefining their scope, missions and visions in the light of worldwide changes ought to be carried out forthwith. Restructuring the organisation, methods, systems and procedures should become the first item on agenda. How fast Indian universities associate with the world's best universities and adopt their policies and practices will decide our future, and in turn the future of Indian youth and the people of India.

MEASURES FOR BUILDING EMPLOYABILITY AND ENTREPRENEURSHIP SKILLS IN STUDENTS

No useful purpose can be served by organising skill-development courses to graduates as short-term modules for imbibing employability and entrepreneurship skills. They at best serve as refresher courses for subject knowledge and for providing theoretical knowledge about soft skills which employers look for, but not the actual soft skills. It is not at all difficult for colleges and universities to impart employability and entrepreneurship skills to students. The day-to-day course-work itself can be so designed as to develop these skills and attributes. There are many role models among Indian universities especially deemed to be universities that have been doing this for decades. The other universities may take them as role models and adopt progressive teaching-learning methods.

Interactive Teaching

A mix of various methodologies can be used for improving employability skills among students. As we know, lectures alone are generally not adequate. They must be made more interactive, providing ample scope for students to interact with the faculty. This will also improve communication skills of students. At the beginning of the session of a particular subject, students must be informed of the knowledge, skills and attitudes that they need to acquire at the end of the subject/course. To make learning student-centric, students are given assignments, case presentations, role-plays, mini-projects, etc. These methods provide holistic education to students, crafting a learning environment in the classroom where trust, initiative and analytical skills can be developed.

Treating Students as Mature Individuals

Faculty should treat their students as mature individuals, even when they are not following instructions. This develops in them a sense of responsibility and accountability.

Student Presentations

Students should be divided into groups and each group should be entrusted to give a classroom presentation on the topic allotted to them. Such activities help students to tailor communication styles for different audiences and also improve their listening skills.

Role-play Exercises

These help students to practice taking on different roles in a company and learn how to react in different situations. Assign such group exercises as frequently as possible. Such exercises give students the opportunity to speak, listen, organise and lead the groups accordingly. Keep an open mind and encourage students to develop new thoughts and ideas in groups.

Outbound Training

Outbound training involves taking a batch of students to a remote village and exposing them to new obstacles and situations. By organising several events their interpersonal skills and leadership skills can be improved.

Resilience Building Exercises

Faculty should emphasise that the same solution doesn't necessarily work every time; they must design opportunities for students to build and demonstrate toughness in odd circumstances and adverse conditions. Faculty should also create opportunities for students to innovate both on their own and in groups and come up with novel ideas and solutions. They also need to frequently reward students who are willing to admit that they need improvement.

Internship in the Industry

By undergoing internship in the industry for at least a period of three months, students are exposed to the working of the industry and the day-to-day problems they face. This helps students to become industry-ready who can be straightaway employed in different roles.

ICT-enabled Flexible Teaching

All faculty members should use 'blended learning' by using a number of e-learning resources, providing e-learning facilities like open source learning platform, etc.

Self-Directed Learning (SDL)

This is a process through which a student takes initiative to diagnose his/her learning needs; formulates learning goals; identifies the resources for learning; chooses and implements appropriate learning strategies; and evaluates the outcomes. Self-improvement, personal development and development of character can be achieved through SDL. Students learn to develop alternative paths to content mastery.

Problem-Based Learning (PBL)

It is a student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem. Problems are identified and allocated to students to work out solutions. This helps students in developing enhanced group collaboration and communication skills. It enhances critical appraisal and encourages ongoing learning within a team environment.

Mini Projects

Students are encouraged to identify topics that are socially and economically relevant in the present-day context. Students then prepare their project reports by collecting the information, designing and making presentations, which are evaluated by the faculty concerned. Further, students are to be provided financial support for attending seminars and conferences.

Major Projects

Student projects must be made an integral part of the curriculum, so that they are deputed to reputed industries/premier research institutes to study various matters, collect information and design their project reports. Faculty members should help students as guides and help them in preparation of project reports. Necessary facilities required by the students need to be provided by the department in consultation with the organisation where the project work is being done.

Continuous Assessment

As a part of continuous assessment, students should be given several activities, such as assignments, presentations, seminars, quizzes, etc., that extend their learning activity beyond the classroom and convert the campus into a 24×7 learning place for students and research scholars. This builds students interpersonal skills and work ethics

through an environment of humility and respect. The faculty should teach the 'whole person' not just the 'student'. This helps students build motivation besides inculcating self-reliance.

Venture Capital Fund

Each university should create a fund to provide venture capital for startups so that students having entrepreneur capabilities are not discouraged for want of capital. They should be actively helped by the faculty in various stages of the startup so that it can be effectively managed and its products reach the market.

CONCLUSION

Training for employability skills should be in-built into the curriculum of the academic programs, and should not be imparted as a separate short-term skill development course after graduation. Such short-term courses may at the best serve as refresher courses, but definitely not help the graduates to acquire those skills in the first place. There are many successful universities in our country as well which must be taken as role models by other universities to improve the employability of graduates in their universities.

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About the Authors

Dr (Mrs) Pankaj Mittal, Secretary General, Association of Indian Universities, is a notable woman academic administrator in the country. In her illustrious career spanning over three decades, she served the Indian Higher Education System at high offices like Vice Chancellor of Bhagat Phool Singh Mahila Vishwavidyalaya and Additional Secretary, University Grants Commission. She is also a Fulbright Scholar. Her areas of expertise include Policy Planning and Management of Higher Education and Human Resource Management. Dr Mittal has made academic visits to USA, Canada, United Kingdom, Australia, South Korea, Spain, Germany, South Africa, Hong Kong, Malaysia, Mauritius and Philippines. She had led a delegation of 15 Vice Chancellors to UK and Mexico for academic collaborations. She is the recipient of the prestigious President of India Award in 2017 for Digital Initiatives in Higher Education; *Honoris Causa* from Karnataka State Women's University, Bijapur; and First Padam Shri Subhashini Devi Award 2018 for contributions in Societal Development and Community Engagement from the Chief Minister of Haryana. Dr Mittal is a member of many high-powered committees of MHRD, Ministry of Youth Affairs and Sports and various other apex bodies in the country. Dr Mittal has widely published in national and international journals including two edited books. Currently, she is also National Commissioner-Rangers at Bharat Scouts and Guides.

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About the Book

The world is today undergoing rapid and concurrent economic, demographic, social and technological changes. The pace of change which is increasing exponentially day by day is outpacing the past and bringing us close to the future prematurely. In this scenario, reimagining the universities is essential to make them effective and future ready.

Reimagining Indian Universities is a collection of essays by some of the greatest thinkers in the field of Indian higher education. Each essay in the book examines one or more of the critical topics and provides solutions and methods to overcome the issues involved in them. The book generates a corpus of new ideas that are significant for the reforming and reimagining the Indian higher education system. The book aims at providing a roadmap to government as well as the universities to gear themselves towards becoming more responsive to the present and future demands of higher education.

The release of the book coincides with the launch of New Education Policy. The writings certainly will enthuse all of us to play a meaningful role in this feat of reimagining and re-shaping Indian universities while implementing the recommendations of the National Education Policy–2020.

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