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ANNOUNCEMENT

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

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

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

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  Rendel, M. (1986). How many women academics 1912-1977? In R. Deem (ed.), *Schooling for Women's Work*. London: Routledge.

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Issues and Challenges in Creating Inclusive Educational Institutions

D Venkateshwarlu*

Inclusion is one of the major challenges faced by education systems worldwide, set within the overall frame work of Education for All, whose aim is the development of institutions that can respond to students' diversity, focusing in particular on groups of students that are vulnerable to marginalization, exclusion and under achievement. The inclusive orientation is a strong feature of Salamanca Statement (1994) on principles, policy, and practice. Arguably the most significant international document that has been ever appeared in the field of education of Students with Special Needs, argues that institutions with an inclusive orientation are the most effective means of combating discriminatory attitudes, building an inclusive society and achieving education for all. It can provide an affective education for most of the students and improve the efficiency and ultimately the cost effectiveness of the entire education system.

The framework for action says, "Inclusion and participation are essential to human dignity and the enjoyment and exercise of human rights." In the field of education this is reflected in bringing about a 'genuine equalization of opportunity'. Education of students with special needs incorporates the proven methods of teaching from which all students can benefit; it assumes human differences are normal and that learning must be adapted to the needs of the student, rather than the student adjusting to the process.

Inclusion implies a radical reform of the institution in terms of conviction and philosophy followed with curriculum, assessment, pedagogy, grouping of students and the institutions environment and ethos. It is based on a value system that welcomes, respects, and celebrates diversity arising from gender, nationality, race, language of origin, social background, religion, class and caste, level of educational achievement, disability, etc.

The fundamental principle of the inclusive institution is that all students should learn together, wherever possible and that regular institutions must recognize and respond to the diverse needs of their students, while also having a continuum of support and services to match these needs.

Inclusive institutions are the 'most effective' at building solidarity between students with special needs and their peers.

All of this requires a major shift in the way we look at education. This shift in thinking is based on the belief that changes made in response to students experiencing difficulties can benefit all students. Within such a formulation, those students who are currently seen

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as having special needs provide the stimulus for thinking about how to improve and support learning environment for everybody within the institution.

An inclusive institution seeks to address the learning needs of all with specific focus on those who are vulnerable to marginalization and exclusion. The learners with special needs form one of the largest groups when compared to other groups among the disadvantaged sections.

Inclusive institution in this sense would mean a place where diversity among learners is appreciated and considered a learning resource rather than a problem; where students from diverse backgrounds are valued for what they are, and are made to feel safe enough to express whatever they know, without fear or discrimination; and where the curriculum, teaching-learning methods and materials are culturally responsive to meet the different learning needs and interests of students from diverse backgrounds.

The aim of creating inclusive institutions is to improve the effectiveness institutions which is measured in terms of equal opportunities for education and equitable learning outcomes. Inclusive education has been one of the major interventions of the Govt of India in recent times. The erstwhile schemes of Sarva Shiksha Abhiyan (SSA) and Rastriya Madhyamik Shiksha Abhiyan (RMSA) and RTE Act and RPwD Acts have paved way for creation of inclusive education system.

Present Samagra Shiksha Abhiyan scheme of Govt of India lays emphasis on improving the quality of education for all students including students with special needs. So, we need to create a positive attitude and awareness about the nature and needs of students with special needs. Creating access to students with special needs into regular institute and diversifying the curriculum and education system to meet the diverse needs of learners with special needs at different stages of education is the need of the hour.

There is a need to create provisions and explore opportunities for student with special needs and to inform and educate all citizens regarding the importance of inclusion. How can we enable learners to realize their potentials, provide them with necessary support system to lead their life independently and participate in the community activities? How do we ensure learning with quality and equity for students with special needs? We need to have strategies and guidelines to focus on creating friendly, safe and positive environment for all learners with special needs, and to encourage learners, teachers, special educators, administrators, professionals, family members, neighborhoods and communities to participate and act as stake holders in the process.

The need to promote inclusion is increasingly being felt all over the world to include student with special needs, at all levels of education as equal partners, to prepare them, and to enable them to face life with courage and confidence. Teachers need to be equipped to bring and include all students in the classroom transaction. It is necessary that teachers who teach and manage the classroom are sensitized and made aware of the philosophy of inclusion and oriented to various kinds of adjustments that institutes should make in terms of infrastructure, curriculum, teaching methods and other practices to relate teaching to the needs of diverse learners. For creating an inclusive institute, teachers need to understand the diverse needs of all the learners.

There is a need to develop an education system that is continuously adapting to the needs of the individual learner rather than the learner adapting to the needs of the institute; and ensuring that all learners are included in the teaching -learning process.

In its broadest and all-encompassing meaning, inclusive education, as an approach, seeks to address the learning needs of all students, youth, and adults with a specific focus on those who are vulnerable to marginalization and exclusion. It implies all learners, young people - with or without disabilities being able to learn together through access to common pre-school provisions, schools, and community educational settings with an appropriate network of support services. This is possible only in a flexible education system that assimilates the needs of a diverse range of learners and adapts itself to meet these needs. It aims at all stakeholders in the system (learners, parents, and community, teachers, and administrators, policy makers) to be comfortable with diversity and see it as a challenge rather than a problem.

Inclusive education, therefore, means much beyond just enrolment of student with special needs to a feeling among all learners of an equal sense of belonging to the institute, irrespective of their backgrounds.

All participants in the education system, including teachers, principals, administrators, counsellors, and students, should be sensitized

about the requirements of all students, the notions of inclusion and equity, and the respect, dignity, and privacy of all persons. Such an educational culture will provide the best pathway to help students become empowered individuals who, in turn, will enable the society to transform into one that is responsible towards its most vulnerable citizens. Inclusion and equity are the key aspects of teacher education (and training for all leadership, administrative and other positions in schools); and efforts should be made to recruit more high-quality teachers and leaders in order to bring in excellent role models for all students.

Students should be sensitized through this new education culture, brought in by teachers, trained social workers and counsellors as well as through corresponding changes to bring in an inclusive education curriculum. The curriculum should include, material on human values such as respect for all persons, empathy, tolerance, human rights, gender equality, non-violence, global citizenship, inclusion, and equity. It should also include more detailed knowledge of various cultures, religions, languages, gender identities, etc. to sensitize and develop respect for diversity. Any biases and stereotypes in the curriculum should be removed, and more material should be included that is relevant and relatable to all communities.

Research has shown that inclusive education results in improved social development and academic outcomes for all learners. It leads to the development of social skills and better social interactions because learners are exposed to real environment in which they must interact with other learners, each one having unique characteristics, interests, and abilities. The non-disabled peers adopt positive attitudes and actions towards learners with disabilities because of learning together in an inclusive classroom. Thus, inclusive education lays the foundation to an inclusive society accepting, respecting, and celebrating diversity.

The global education development agenda reflected in the Goal 4 of the 2030 Agenda for Sustainable Development, adopted by India in 2015-seeks to 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all' by 2030. Such a goal will require the entire education system to be reconfigured to support and foster learning, so that all the critical targets and goals of the 2030 Agenda for Sustainable Development can be achieved.

Achieving inclusive and quality education for all re-affirms the belief that education is one of the most powerful and proven vehicles for sustainable development.

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Attributes of An Ideal Teacher[#]

A Joseph Dorairaj*

Who is an ideal teacher and what are his/her attributes? The teaching fraternity and the general public have been debating these two questions for quite some time now and have also come up with lots of answers. Well, there is no 'finished product' called an ideal teacher who possesses all the qualities attributed to a great teacher. Nor is there any magical formula or algorithm to create one. And there is no academy as such which trains 'trainee-educators' and transforms them into ideal teachers. Learning to teach is a life-time endeavour and even after years of teaching no teacher can claim to have imbibed all the qualities that go into the making of a perfect teacher. In fact, long after retirement many teachers have wondered if they could have done better.

Some of the key attributes of an ideal teacher are discussed in this article. Realistically, it is not fair to expect all teachers to possess all these ten qualities. But the compromise is that it is possible for a good percentage of them to possess all these ten qualities to a good extent or possess in almost full measure many, if not all, of these ten attributes.

Passionate about Knowledge

An ideal teacher is passionate about knowledge. Like Tennyson's Ulysses who wants, "to drink life to the lees" and desires "to follow knowledge like a sinking star/Beyond the utmost bound of human thought," he/she is not satisfied with what he/she has studied and learnt. He/She pursues the holy grail of knowledge throughout his/her life. He/She is impatient with outdated concepts and theories and is on an unsatiate quest for the latest concepts and theories not only in his/her own discipline but also in related domains. He/She wants to constantly update him/herself and wants to be ahead of his/her times. He/She is fully aware that knowledge doesn't have boundaries, for its horizons are constantly pushed further and further away. He/she is not daunted by this realization but takes conscious efforts to be conversant with the latest trends and developments in his/her field.

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An ideal teacher thirsts for knowledge. He/She searches for knowledge and not bits and pieces of information. The bits and pieces of information gleaned from various sources are processed and transformed into knowledge through a hermeneutical process. It needs to be stressed that good teachers do not hanker after bookish and unprocessed knowledge which is not of any use to anyone. On the contrary, they pursue knowledge that is intellectually stimulating and at the same time useful to the society around, especially the disadvantaged sections.

A Multi-disciplinarian

An ideal teacher has a holistic outlook and does not break up knowledge into discrete components such as Mathematics, Economics, Physics and Chemistry and each subject into its constitutive units. Even though he/she has specialized in a particular subject such as Physics or Music or Philosophy, he/she is able integrate different subjects and has a comprehensive outlook of life. This demands and implies that he/she has at least a working knowledge of related subjects and is able to think in a multi-disciplinary manner.

We live in an era of specializations. Experts know more and more about less and less and lack a broad outlook of life. Inter and multi-disciplinarity are alien to them, for they have erected fences around them and their narrow specializations. Against this backdrop, an ideal teacher is one who traverses across disciplines with ease. He/She is able to think and critique from a multi-disciplinary perspective which definitely yields better ideas and insights. And he/she is able to inspire his/her students to think beyond their own subjects and adopt a multi-disciplinary perspective, insisting that knowledge is not fragmented and disjointed but synoptic and whole.

A Theorist

There are different kinds of teachers. There are those who live with traditional concepts and theories and don't bother to conceptualize and theorize on their own. They are content to live on borrowed concepts and theories. There are others who theorize but in a limited manner. They theorize only when the existing concepts and theories have become stale and have

gone out of circulation. They theorize out of necessity. And there are those who try to adapt old concepts and theories to the modern times—sometimes successfully but mostly unsuccessfully.

But an ideal teacher constantly theorizes. He/She reflects on his/her own experiences and the contexts and conditions in which he/lives and theorizes from his/her own experiences. He/She is able to read the signs of the times perceptively and engineer and evolve relevant concepts and theories to address the problems and issues that different ecosystems pose. He/She not only theorizes but also translates theory into action, thus synthesizing theory and praxis.

An Effective Communicator

An ideal teacher is a fantastic communicator in the written as well as spoken modes, and in face-to-face as well as technology-assisted communication. He/She thinks and articulates clearly, critically and creatively. He/She speaks brilliantly and writes with a flair and uses tech tools to communicate confidently. A teacher's precious asset is his/her communication skill and without that he/she would be a misfit, for higher educational institutions promote those who can put their ideas across effectively.

An effective communicator is aided by clear, critical and creative thinking. Where there is no clarity of thought, there will surely be no clarity of expression. An adept communicator expresses his/her ideas, theses and theories clearly and does not bamboozle his/her students with empty rhetoric. He/She is aware that empty rhetoric is only a mask for hiding inane and inept ideas and theories. A powerful communicator will no doubt attract students and will be able to share with them his/her knowledge without much spillage.

Fosters in his/her Students a Spirit of Inquiry

An ideal teacher enjoys a special relationship with his/her students. He guides them, mentors them, comforts them and at the same time challenges them. He guides them when they are novices; comforts them when they are intellectually disoriented and emotionally dispirited; and challenges them when they are stuck in the cesspool of mediocrity and refuse to come out of their *gurus'* shadow. A great teacher wants to see his/her students become intellectually and emotionally independent.

There is a sharp difference in the mentoring system in the West and the East. The West, with its moorings in the Socratic-Platonic tradition, fosters in its students a spirit of inquiry where they are taught to question everything. Nothing is sacrosanct to them and they critique everything. In the Eastern tradition, students are taught to revere their *gurus* and tradition. Against this backdrop, it has to be emphasized that an ideal teacher consciously and carefully encourages and trains his/her students to critique everything and take nothing for granted.

Adaptive and Tech-savvy

Earlier, a teacher was identified with chalk and duster. But today, especially in the context of COVID-19, the definition of a teacher conjures up images of one carrying a laptop strapped to his/her shoulder with headphones and wires dangling around his/her neck. An ideal teacher is open to and welcomes changes in all fields and adapts to the changed scenario, especially in the domain of technology, for the world of teaching-learning is tech-driven these days. Seminars have become Webinars and physical classrooms are converted into virtual classrooms. Against this backdrop, an ideal teacher is one who is tech-savvy and uses technology to further his/her teaching. He/She speaks in a language and idiom that is familiar to his/her students, for the millennials are born with technology and speak a digital language.

Two points need to be clarified in this context. An ideal teacher doesn't brush aside the legacy of face-to-face interaction and traditional pedagogies. At the same time, it should not be construed that he/she embraces technology just to sound modern and thereby appeal to the youth. He/She does everything with a purpose and knows that technology is a medium and, therefore, uses technology to put things across effectively. Ultimately, what matters is the transmission of knowledge and not the mode as such.

An Able Administrator

Today, a teacher has multiple roles to play. Earlier, he/she was seen almost exclusively as an individual who imparts knowledge to his/her students and his/her role was sharply defined. He/She was not mandated to be an administrator, a brand ambassador for his/her institution, and a fund-raiser. But today, his/her role has changed dramatically. He/She has to don several hats and one of them is being an administrator. He/She cannot shy away from organizing and coordinating events and seminars and other programmes.

An ideal teacher is not only a gifted teacher but also an able administrator. He/She organizes seminars and conferences in his/her department and sometimes in collaboration with other departments. He/She conducts alumni meetings and plans and executes several co-curricular and extra-curricular activities and programmes. In other words, he/she performs and juggles multiple roles with relative ease.

A Caring Mentor

Many students come to colleges and universities with an emotional baggage and are distraught. Broken families, alcoholic fathers, fractured relationships, love failures, suicidal tendencies and other emotional problems weigh them down. An ideal teacher doesn't look at a student from a myopic perspective and reduce him/her to his/her register/roll number and books, notes and assignments. He/She is aware of the whole person and the emotional problems that he/she faces.

An ideal teacher doubles up as a mentor. He/She is not only a teacher but also a counsellor, a therapist, a guide, a motivator and a mentor. He/She listens to his/her students' problems non-judgementally and looks beyond academics. He/She offers emotional support and helps his/her students to come out of their problems and face life boldly. He/She gives his/her students the assurance that he/she is always there for them and lends them a helping hand and pulls them out of their emotional problems. In short, an ideal teacher is a mentor who cares for the wellbeing of his/her students.

A Community Builder

Students come from diverse linguistic, cultural, religious and ideological backgrounds. There are social, cultural and economic barriers between them, for our world has been "broken up into fragments/by narrow domestic walls". An ideal teacher reaches out to every student and takes him/her along with him/her. What is torn asunder by fanatics and divisive forces, he/she attempts to put them back brick by brick.

He/She takes a lot of efforts to free minds that have been ghettoized. He/She proclaims the message that humanity is one and inspires students to forget their differences and come together as one community. He/She creates a good rapport among students and builds bridges in the public sphere as well. Both inside the classroom and outside of it, he/she works tirelessly to bring people together and strives to eradicate intolerance and enmity sown by religious bigots. In short, an ideal teacher is a symbol of unity and harmony and is a community builder.

A Committed Intellectual

Gramsci in "The Formation of the Intellectuals" talks of two kinds of intellectuals—traditional intellectuals and organic intellectuals. At the risk of simplifying and summarizing it can be noted that a traditional intellectual does nothing to disturb the status quo whereas an organic intellectual fights against the system. He/She does not parrot or echo the policies of the establishment but opposes it if they are unjust, thereby getting involved in political discourses. Said, in *Representations of the Intellectual*, declares that the intellectuals speak "truth to power" and engage in an oppositional discourse.

An ideal teacher is certainly not an armchair intellectual. He/She is called upon to be a committed intellectual, not necessarily an organic or a public intellectual. He/she has the courage to raise his/her voice against the establishment if it is pedantic, authoritarian and unjust. He/she is a specialist in his/her discipline and has the intellectual acumen as well as commitment to highlight the dialectical relationship between academics and politics. In this process, he/she transcends narrow disciplinary boundaries and talks and writes about issues and problems that impact human societies, especially the vulnerable sections. In this sense, he/she cuts across disciplines and talks about knowledge in general and becomes a spokesperson for humanity.

Conclusion

Is teaching a vocation or a profession? Are great teachers born or made? Is teaching an innate skill or something learnt by rigorous practice? The answers are not 'either/or' but both. Teaching is both a vocation and a profession. Great teachers are born but at the same time march towards perfection every day. Teaching is an innate skill but at the same time can be cultivated through arduous practice. It is abundantly clear that great teachers are gifted intellectuals. They are not esoteric creatures belonging to some "arcane priesthood" but are an integral part of our society and nourish us and our society with their theories, insights and commitment. They are a gift to humankind. ❑

Distance Education in India: Advantages and Emerging Challenges

Kulwant Singh Pathania* and Mahima Rana**

"The chief cause of India's ruin has been the monopoly of its education and grabbing of the land by a handful of men. If we are to rise again, we shall have to do it by spreading education among the masses"

-Swami Vivekanand

On 15th August, 1947, at the stroke of the midnight hour, India awoke to a new dawn of independence. At that time a meager 20 per cent of the total population was literate, of which only 2 per cent was female. Looking and learning from the western developed countries, India realised that a country cannot flourish without an educated mass of citizens. Education had to be spread across the nation. The major obstacle to eradicating poverty would be the lack of spread of education. A large number of higher education institutions were developed to cater to the demand of education. However, still an imbalance remained between the demand and supply of education facilities. Kothari Commission was set up to suggest impending measures to overcome the problem of mismatch between need of education and the current number of institutes set up. The Kothari Commission in its report suggested alternative approach to catering to the educational needs of the people. The system of Correspondence Courses was suggested in the report. Thus, Distance Education in India was started as 'Correspondence Course' for the benefit of those who were unable to utilise the conventional education system and remained excluded from the advantages of literacy.

The present article explores the advantages of Distance Education in India. It studies the issues and emerging challenges to this system and suggests practical measures which can overcome the problems. The objectives of the study are spelled out as under:

- To study the enrolment pattern in higher education under distance education
- To study the need of distance education
- To analyse the advantages and challenges to distance education
- To suggest measures to overcome the emerging challenges

Secondary data was collected for information regarding enrolment under distance mode in higher education. All India Survey of Higher Education reports for five years, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, have been studied and analysed for fulfilling the stated objectives. Previous research papers and articles have been studied for qualitative and quantitative findings. Opinions of students enrolled under distance education and teaching under ODL system have been inculcated in the study in order to make the findings relatable. Various national and international journals have been accessed through academic databases like EBSCO, ProQuest, JSTOR, Scopus, Google Scholar, Research Gate, Elsevier, etc.

Distance Education in India

Distance education or distance learning is the education of students who may not always be physically present at the institute. It is often talked about in conjecture with Open and Distance Learning System (ODL). According to UNESCO, "Although the terms are often used interchangeably, there are important differences. Open learning is an umbrella term for any scheme of education or training that seeks systematically to remove barriers to learning, whether they are concerned with age, time, place or space. With open learning, individuals take responsibility for what they learn, how they learn, where they learn, how quickly they learn, who helps them and when they have their learning assessed. Distance learning, on the other hand, is one particular form of open learning in which tutors and learners are separated by geographical distance. But many modes of communication are used for distance learning, not just postal correspondence. If you stop to think about it, most of us use distance learning techniques in some form in our daily lives: we read books and newspapers, watch programs on television and request information over the telephone. These are all learning experiences which 'educate' in the broadest sense."

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The Ministry of Education, erstwhile Ministry of Human Resource Department (MHRD), Government of India conducts an annual web based All India Survey on Higher Education (AISHE) to study and evaluate the status of higher education in the country. Results of the surveys from the past five years (2014 to 2019) have been shown in Table 1.

Total enrolment has decreased since 2016-17. Ph.D. through distance mode is now not recognized by University Grants Commission (UGC). Enrolment in PG programmes has decreased since 2016-17. Enrolment under UG programmes decreased in 2017-18 since 2016-17 but again increased more than 2016-17 during 2018-19. Enrolment in PG diploma has been increasing throughout the last five years. Enrolment in diploma courses dipped in 2016-17 but again picked up pace since then. Enrolment in certificate courses is declining and in integrated courses is on the rise. The total enrolment shows a decrease since 2016-17. Throughout the above mentioned five years, proportion of enrolment in undergraduate programmes has been the highest. (Fig 1)

Table 1: Total Enrolment and Proportionate Distance Enrolment During the Last Five Years

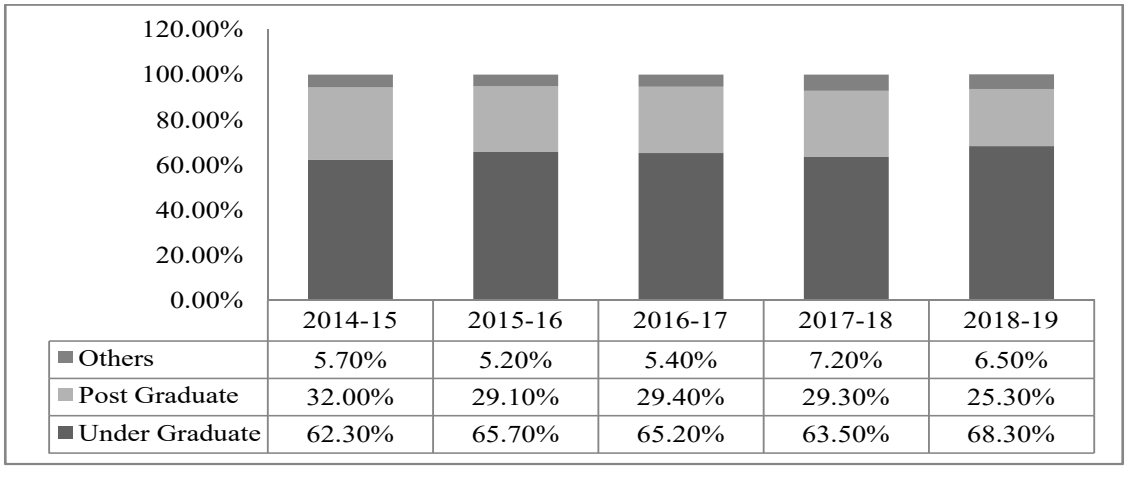
Years	Total Enrolment in Higher Education (in millions)	Distance Enrolment (percentage of total enrolment)	Proportion of Females Enroled in Distance Education (percentage)
2018-19	37.4	10.62	44.15
2017-18	36.6	11.00	41.9
2016-17	35.7	11.45	46.9
2015-16	34.6	11.05	46.3
2014-15	34.2	11.14	46

Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

Fig. 2 shows the number of females enrolled in distance education system is less than the number of males. The number of males declined through 2014 to 2016, increased in 2017-18 and again declined during 2018-19 reaching a number less than that in 2016-17. Female enrolment increased through 2014 to 2916, dipped in 2017-18 and again rose in 2018-19, though remaining less than that in 2016-17.

Out of the total enrolled students under distance learning during 2014-15, 7 states, namely Delhi (15.4 per cent), Tamil Nadu (15.2 per cent), Maharashtra (11.5 per cent), Andhra Pradesh (8.6 per cent) Telangana (5.2 per cent) and West Bengal and Madhya Pradesh (5.1 per cent) were providing education to around 54.5 per cent of the students. In 2015-16, 6 States of India were providing education to around 63 per cent of the students, namely Delhi with 16.7 per cent of students, Maharashtra with 16.5 per cent of students, Tamil Nadu with 12.3 per cent, Andhra Pradesh with 8.3 per cent, West Bengal and Telangana with 4.9 per cent of the share of students enrolled through distance mode. During 2016-17, 6 States of India were providing education to around 62.6 per cent of the students, namely Maharashtra (17.1 per cent), Delhi (15.4 per cent), Tamil Nadu (12.2 per cent), Andhra Pradesh (7.5 per cent), Kerala (5.7 per cent) and West Bengal (4.7 per cent). In the year 2017-18, 6 States accounted for

Fig. 1: Composition of levels under Distance Learning from 2014-15 to 2018-19



	2014-15	2015-16	2016-17	2017-18	2018-19
Others	5.70%	5.20%	5.40%	7.20%	6.50%
Post Graduate	32.00%	29.10%	29.40%	29.30%	25.30%
Under Graduate	62.30%	65.70%	65.20%	63.50%	68.30%

Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

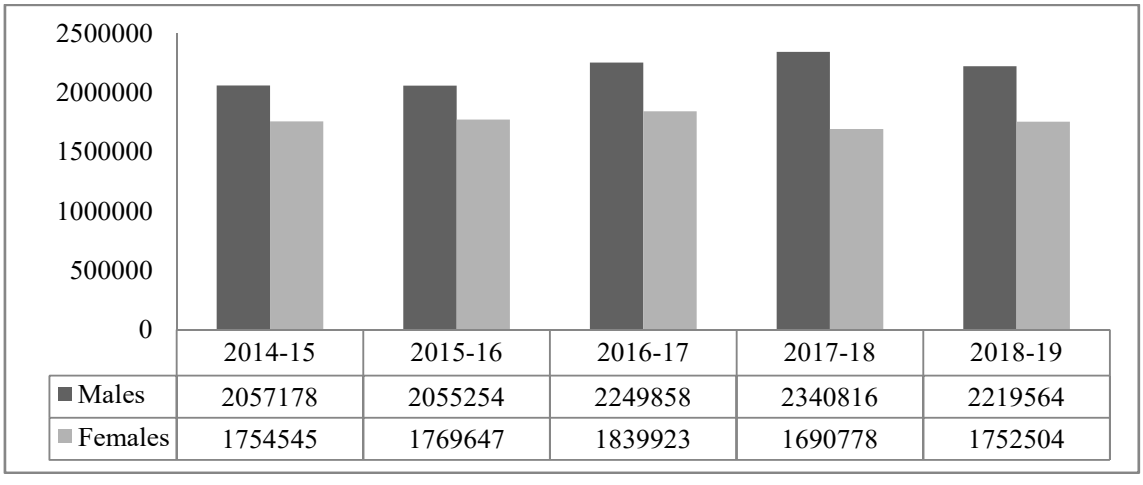
Level-wise distribution of students under distance mode is shown in Table 2

Table 2: Level-wise Distribution under Distance Learning for Last Five Years

LEVEL / YEAR	Ph.D.	POST GRADUATE	UNDER GRADUATE	PG DIPLOMA	DIPLOMA	CERTIFICATE	INTEGRATED	TOTAL
2018-19	53	999087	2700212	99391	130194	42818	313	3972068
2017-18	---------	1178507	2554411	90079	122744	85602	251	4031594
2016-17	---------	1198448	2656625	77782	99116	57568	242	4089781
2015-16	136	1108362	2499390	68635	104228	44149	1	3824901
2014-15	30	1206826	2352422	64030	109819	78595	1	3811723

Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

Fig. 2: Number of Males and Females in Total Enrolment under Distance Education from 2014-15 to 2018-19



	2014-15	2015-16	2016-17	2017-18	2018-19
Males	2057178	2055254	2249858	2340816	2219564
Females	1754545	1769647	1839923	1690778	1752504

Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

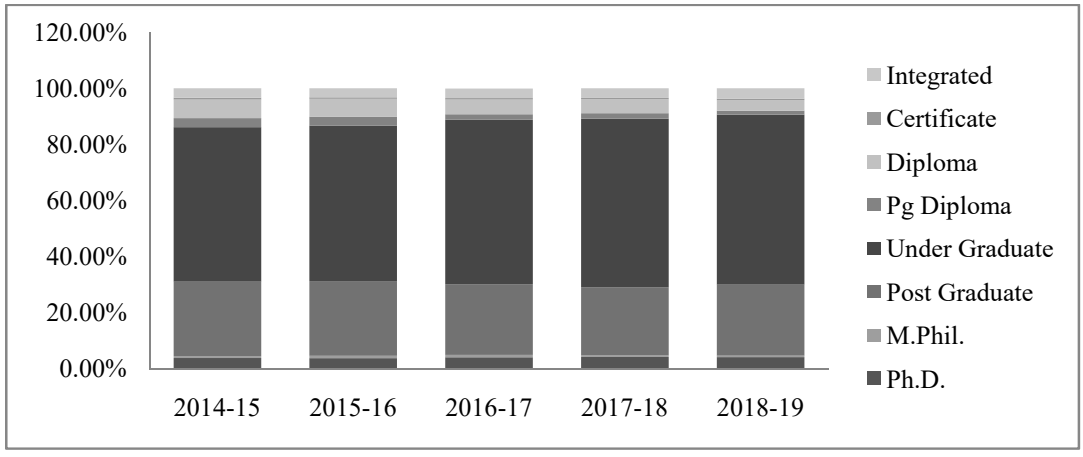
providing education to around 61.3 per cent of the students. These were Maharashtra (17.8 per cent), Delhi (15.8 per cent), Tamil Nadu (11.6 per cent), Kerala (6.2 per cent), West Bengal (5.3 per cent) and Uttar Pradesh (4.6 per cent). During 2018-19, 6 States were providing education to around 59.04 per cent of the students which were 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).

Mostly, universities provide Distance Education mode of learning. Fig. 3 shows the proportions of various levels in universities under regular mode of education. Total enrolment under regular mode in 2014-15 stood at 26,13,728, in 2015-16 at 28,85,279, in 2016-17 at 29,99,447, in 2017-18 at 32,92,377, and in 2018-19 at 35,14,727. During all of the five years, enrolment in undergraduate level has been the highest.

Fig. 4 shows the enrolment at different levels in universities under distance mode of education. Total enrolment in universities under distance education in 2014-15 was 37,73,527, in 2015-16 38,03,917, in 2016-17 40,72,837, in 2017-18 39,73,020 and 2018-19 39,72,068. Enrolment under distance mode has remained higher than that under regular mode throughout the five years. During 2014-15, enrolment under distance mode was 18.16 per cent higher than that under regular mode, in 2015-16 the figure stood at 13.73 per cent. In 2016-17, it was 15.18 per cent, in 2017-18, it was 9.37 per cent and in 2018-19, it was 6.11 per cent. The difference has been decreasing since 2016-17. The trend of highest enrolment in undergraduate courses as seen in regular mode can be seen in distance mode of education as well.

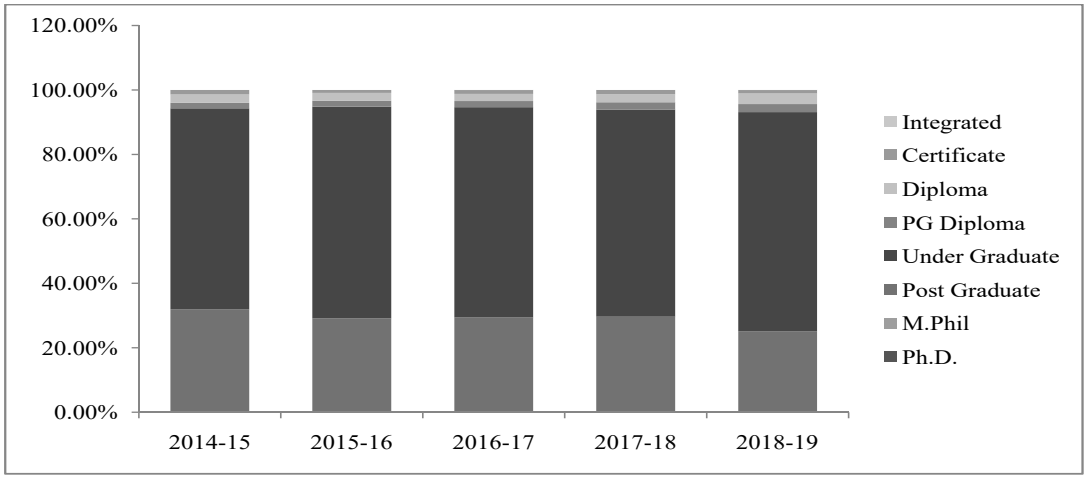
Table 3 shows that even though the share of distance education has remained higher than that under

Fig. 3: Composition of Different Levels under Regular Mode in Universities during 2014 to 2019



Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

Fig. 4: Composition of Different Levels under Distance Mode in Universities during 2014-2019



Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

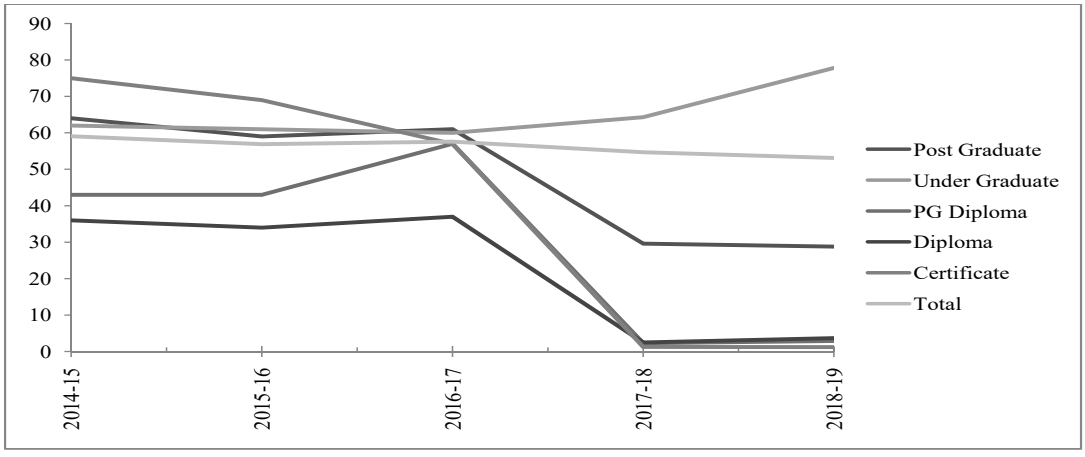
regular mode during 2014 to 2019, the share has declined from 59.08 per cent to 53.1 per cent. Enrolment under Ph.D. and Integrated courses has remained negligible or zero. There has been zero enrolment in M.Phil. The University Grants Commission derecognized Ph.D. through distance mode in 2017.

It can be seen in Fig. 5 that only the share of undergraduate enrolment has been rising during the last five years. Enrolments under Postgraduate, PG Diploma, Diploma and Certificate courses have dropped significantly since 2016-17.

Distance Education: Advantages and Challenges

The modes of non-conventional systems of education such as open and distance learning were started with a view to provide education to the farthest corners. Those who cannot access regular education can take advantage of distance education. Distance education can be accessed as per need and flexibility of place and time. Mostly in India the working population and married females access distance education due to barriers of distance, time and societal norms. Students can get enrolled as and when required to upgrade education arises. Correspondence Courses were started with the intention to cater to those who had to discontinue their formal education owing to circumstances, those situated in geographically remote areas, those who require higher education due to requirements of their jobs or as per need, those who could not secure admission under regular mode due to high cut offs or lack of proper qualifications and those who like to keep themselves updated and upgrade their education from time to time. Distance education provides a lot of benefits to students:

Fig. 5: Trend Showing Rise and Fall in Enrolment at Various Levels in Universities under Distance Education



Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

Table 3: Share of Distance Education Enrolment in Universities from 2014 to 2019

LEVEL / YEAR	Ph.D.	M.Phil.	Post Graduate	Under Graduate	PG Diploma	Diploma	Certificate	Integrated	Total
2014-15	Neg.	Nil	64 %	62 %	43 %	36 %	75 %	Neg.	59.08 %
2015-16	Neg.	Nil	59 %	61 %	43 %	34 %	69 %	Neg.	56.89 %
2016-17	Nil	Nil	61 %	60 %	57 %	37 %	57 %	Neg.	57.59 %
2017-18	Nil	Nil	29.6 %	64.3 %	2.3 %	2.5 %	1.3 %	Nil	54.68 %
2018-19	Neg.	Nil	28.8 %	77.8 %	2.9 %	3.7 %	1.23 %	Neg.	53.1 %

Source: http://www.aishe.gov.in/aishe/reports;jsessionid=C1FE6B8395BB1D94F50BB5493F2181D8

Flexibility

Students can access education as and when required. People can manage their work and studies better with correspondence courses. Flexibility of place and time is a major advantage of distance education. Studies can be done at one's own convenience due to asynchronisation of classes. It provides flexibility mostly to working professionals who have to travel for their jobs.

Saves Time and Money

Distance education helps students save time and effort to travel to and fro every day. People enrolled in higher education via distance mode are usually multitasking professionals or those with busy lifestyles. Distance education helps balance life, work and their pursuit for education judiciously.

Update Knowledge

Distance education helps working professionals and students to keep updating their knowledge without any hassle.

Access to a Lot of Institutions

Distance education does not limit a student to one physical place of study alone. Students can take advantage of a number of institutions spread all over the country which adds to their experience and knowledge.

A Second Chance

Distance education helps provide a second chance to those who had to leave their education mid-way or could not join regular colleges or universities due to social, economic or other considerations.

Resource Sharing

The infrastructure for distance education is utilized by a large number of students spread wide geographically. This leads to efficient utilization and sharing of resources between those pursuing higher education via regular mode and those enrolled in distance education.

Lifelong Learning

Young and old, all can access distance education to enrich their learning. A lot of rules and restriction over formal education are lenient in distance education and it is thus a boon to those who want to keep learning throughout their lives.

Trained Workforce

It helps provide vocational training and required teachings to develop necessary skills, aptitude and motivations. This provides a well trained and qualified workforce for the country which contributes towards the betterment of the economy. It helps add to the tertiary and professional education being provided in the country.

Even though distance education provides a lot of benefits, it has its limitations and drawbacks too. Any technological advancement cannot compete with the effects and advantages of face to face interactive classroom experience.

- Lack of infrastructure is a major problem for distance education. Technological advancements have not been utilized properly by the education system in India.
- Time allotted for Contact programmes are insufficient and the course work cannot be satisfactorily completed.
- Distance education in India is costly which majorly defeats the purpose of providing education for those unable to attend regular classes.
- Even though there exists a large number of courses via distance mode, the content has not been adapted as per present needs and requirements. The course content remains elusive to the special needs of the students. Those opting distance mode of education are left out from the benefits of group learning and positive impacts of peers. A lot of learning takes place from peers.
- People normally believe distance education to be inferior to regular mode of education. This is mostly due to better outputs of regular education system as compared to its counterpart.
- Assessment of students is a major problem as the criteria set fails to provide actual results. Students find it difficult to communicate with their teachers for clarification of doubts. Teaching is a two way process but distance education makes this a problem.
- Situational barriers are a concern in distance education. Students who are also working find it difficult to balance between work and studies. Those with family responsibilities may find it tough to attend contact programmes or meet the assessment requirements of assignments and practical etc. This defeats the purpose of distance mode for working population who want to pursue higher studies.
- There is a lack of proper model for quality assurance for this system. The system is complex and unclear regarding criteria and standards.

Suggestions to Overcome Challenges

Responsible authorities need to take corrective measures to overcome the challenges to distance education in India. Technology needs to be utilized. Internet facilities have to be made available to every household. E-content should be regularly updated to keep up with modern times. Course content should be useful and practical. Teachers handling contact programmes should be trained particularly to make course easy for students. E-lectures can be very helpful in distance mode as it can be time saving and economical. Mostly, infrastructure needs to be upgraded to make Indian distance education at par with international levels. ICT has to promote distance education to spread knowledge. Technology needs to be made not only assessable but also easily affordable. Access to computers and smart phones is a must in order to utilize ICT.

Lack of peers can be overcome by making possible website discussions, webinars, discussion portals etc. practice of self-discipline should be inculcated and motivated among students who remain outside the traditional classroom structure. A routine and structure should be created. The reasons why students adopt distance education to regular mode of education have to be understood in order to make an actual impact.

Study material has to be updated and made reader friendly. Students under distance mode rely on self study mostly and the material needs to do justice in this regard. E-content should be made easily available. E-lectures and doubt clearing blogs and platforms will be useful.

Pattern and concept of Personal Contact Programme needs to be updated and made flexible to keep up with the needs of students. Evaluation criteria should be done keeping in view the particular mode of education.

Conclusion

Distance education is an important part of the Indian education system. Because of the huge diversity of population and numerous reasons for students to adopt distance mode, it is imperative to improve the status of distance mode of education. Government, teachers and all responsible authorities need to play their part seriously and not ignore the challenges to distance education.

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New Education Policy: Way Ahead for Outcome Based Education with Special Reference to Traditional Autonomous Colleges

Samir Terdalkar*

The New Education Policy (NEP)-2020 has been now approved by the Union Cabinet and set to roll out in the coming academic years. The NEP seems to be of ambitious nature and quiet exhaustive focussing of all aspects of education with special emphasis on school education and higher education. It is an effort to strike out balance between freedom given to the HEIs and regulation. It gives leverage to colleges which are already autonomous and at the same time conveys that, all the affiliated colleges will be transformed into autonomous colleges which would be degree awarding institutions/colleges. There seems to be transformational changes with regard to programme structure where undergraduate degrees would be of four years and promotion of research well integrated at undergraduate level. Similarly, it gives impetus for traditional subjects to go beyond the disciplines depending on the learners requirement. There will be multiple entry and exit points for learner with each learner having a academic credit bank.

At this stage, there is a need to review the quality of education provided in traditional autonomous colleges as they will become degree awarding colleges. This itself increases accountability of autonomous colleges. Accountability would be in terms of the academic programmes offered, the designing of the curricula and its delivery and moreover multidisciplinary in those degrees which are being offered. Autonomous colleges function under the governance structure as per the regulations of University Grants Commission (UGC) and State Higher and Technical Education department. Typically, the governance structure comprises of Governing Body, Academic Council, Board of Studies and Board of Examinations. All these committees have representations from affiliating University under which the autonomous college is affiliated, State government nominee and a nominee from UGC. All the above bodies/committees have the responsibility to ensure proper functioning of the autonomous college (academic and administrative) and ensure quality education in the college.

Taking into consideration NEP-2020, every autonomous college need to develop a quality mandate and assign certain benchmarks and move strongly towards Outcome Based Education (OBE). While doing these exercises the autonomous colleges need to understand the principles of OBE and restructure and refine their curricula making them more outcome oriented.

When NEP-2020 was published in draft form by the Ministry of Education, erstwhile Ministry of Human Resource Development (MHRD) and University Grants Commission (UGC), the UGC published Handbooks (practical manuals) focusing on the methods to be followed while reforming higher education. One of the published handbook entitled, 'Evaluation Reforms in Higher Educational Reforms' in November, 2019. The handbook specifies methodologies with reference to curriculum design and development and variety of methods for OBE including its writing, deploying, communicating and evaluation in terms of up to course attainment. This is first bench mark that needs to be created especially for autonomous colleges offering traditional degrees in faculty of Arts and Humanities, Commerce and basic and applied sciences. If autonomous college (traditional ones) are to offer degrees as per NEP -2020, then they need to focus on following issues:

a) Re-write their Vision and Mission Statements reflecting on spirit of NEP-2020.

b) Write Programme Educational Objectives (PEO) which would reflect on their Vision and Mission Statements.

c) Revisit all the Courses offered under B.A., B.Sc., and M.A. M.Sc., programme with special emphasis to bring in sea changes into them involving multidisciplinary and implement Gardner's Theory of Multiple Intelligences.

d) Modify their Course and Programme Outcomes into Course Learning Outcomes (CLOs) and Programme Learning Outcomes (PLOs) and

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adopt atleast one of the methods of CLO/PLO attainment.

e) Identify learning outcomes for the assessment.

f) Decide on criteria based on learning out comes, i.e., the characteristics on which to judge student's performance.

g) Select levels of performance i.e. an appropriate scoring method must be chosen depending on the nature of the assessment and chosen scale.

h) Write descriptors, i.e., describe the expected achievement on each characteristic for each level of performance. The descriptions should be specific, clear and consistent.

i) A rubric for assessment of courses, also called a scoring guide, is a tool used to interpret and grade students' on any kind of work against criteria and standards. An assessment rubric provides the means to increase objectivity in assessment and reduce subjectivity; presents a clear expectation on the assessments, and relates it to learning outcomes; ensures consistency, transparency and fairness in the marking process across course instructors for the same assessment type; efficiently grades or marks many assessments for a large group of students; defines clear guidelines for moderation; and provides more objective data for analytics.

Every autonomous college can develop their own OBE model which will potentially measure graduate attributes like knowledge and skill, thereby enhancing employability. The success of OBE model will act as a pathway towards assessment and accreditation of the college. Once these steps are ensured it will also ease out in demonstrating and explaining qualitative metrics asked by NAAC like, curricula developed and implemented have refence to the local, national, regional and global development needs which would essentially get reflected through PLOs and CLOS, its communication to all stakeholders of the College and will also explain attainment of PLOs and CLOs which are being evaluated by the college from time to time.

The success of the OBE model will depend on the efforts taken by individual teacher. For OBE model to be successful, the teacher should focus on:

a) Designing curriculum with specific CLOs. CLOs to be measured in terms of knowledge and skill gained by the learner at the end of the course.

b) Teaching pedagogy- preferably with reasonable interface of ICT.

c) Develop e-content as per four quadrant method for the course.

d) Develop competency for successfully conducting online teaching by using variety of platforms.

e) Assess learner as per cognitive ability and revised bloom's taxonomy.

f) Take appropriate care regarding sharing/ uploading of contents on online platforms with regard to copyright and other legal modalities.

g) Design and develop a graduate exit feedback for indirect assessment of CLOs.

The autonomous colleges also have the freedom of conducting exams on their own. The exams/ assessment methods also need to reviewed in the light of NEP-2020. A student should be offered with flexible methods of assessment and one option of answering exams anytime apart from the college examination calendar. The colleges should develop an Examination Management System and focus more on student development rather than assessment.

At this point of time, all the above issues need to be addressed at the governance level of the autonomous colleges, as they get more academic freedom and have the ability to transform 'autonomous' college into an 'empowered autonomous' college.

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Cutting-edge Innovations for Fostering Smart Agriculture

M Venkaiah Naidu, Hon'ble Vice President of India deliverd Convocation Address at the 58th Convocation of Indian Agricultural Research Institute, New Delhi on 14th February, 2020. He said, "While the position on food front is comfortable with a total food grain production of 283.37 million tonnes, India, however, ranks at 102 in the Global Hunger Index. The alarming prevalence of malnutrition and hidden hunger are matters of great concern. I am told that more than 80 per cent of adolescents in India suffer from hidden hunger. This problem has to be addressed on a war footing as youth are the backbone of the nation." Excerpts

It is a matter of immense pleasure for me to be with you today on the auspicious occasion of 58th convocation of the Indian Agricultural Research Institute, a premier institute of agricultural research, education and extension in our country. My congratulations to the students who are receiving the postgraduate and doctoral degrees today! The country is proud of the achievements of IARI, which has heralded the Green Revolution through development of high yielding wheat varieties. The achievements of IARI post-Green Revolution phase has been truly remarkable, considering the quantum jump in production of wheat and rice to 101.2 tonnes and 115.6 million tonnes, respectively, boosting the country's foodgrain production from 50.82 million tonnes in 1950-51 to 283.37 million tonnes in 2018-19.

The advanced crop varieties and technologies developed by the institute have been important in strengthening the Indian economy and the prosperity of farmers. I am happy to know that the Pusa Basmati varieties predominate basmati cultivation in India and are helping in securing higher production and profit to the farmers, apart from foreign exchange worth Rs.33,000 crores annually to the country.

Similarly, I am told that IARI wheat varieties like HD 2967 and HD 3086 have played a vital role in enhancing wheat production and productivity in India. It is heartening to note that these varieties alone account for more than 12 million hectares of cultivation by farmers and contribute to more than 50 percent of the country's wheat production.

While the position on food front is comfortable with a total food grain production of 283.37 million tonnes, India, however, ranks at 102 nd in the Global Hunger Index. The alarming prevalence of malnutrition and hidden hunger are matters of grave concern. I am told that more than 80 per cent of adolescents in India suffer from hidden hunger. This problem has to be addressed on a war footing as youth are the backbone of the nation. Undoubtedly, malnutrition is a serious health issue as it not only increases susceptibility to various issues but also affects the socio-economic growth of the country.

Besides launching a massive awareness campaign about nutraceutical and therapeutic values of agricultural produce, there is a need to increase the production of nutritive food to overcome such problems. I am happy to learn that significant progress was made by this institute in developing high yielding, disease resistant and nutrient-rich varieties of crops. I was informed that IARI has released several bio-fortified maize hybrids rich in lysine, tryptophan and pro-vitamin A and pearl millet, lentil varieties rich in iron and zinc—this indeed is a step in the right direction for making India nutritionally secure.

I am also happy to note that the institute has developed several high yielding mustard varieties, which will help in cutting down the edible oil import bill. Thus, with these cultivars, I am confident that India will achieve the target of sustainable developmental goals (SDGs). As we all are aware, climate change has emerged as a serious threat to agriculture. Climate change-induced rise in temperature and changes in rainfall pattern are adversely affecting agriculture. Many a time, the terminal rains are creating havoc by destroying the crops ready for harvest.

Assessing methane emissions from paddy plants is one of the institute's most outstanding achievements, which can be helpful in protecting India's interests in climate change negotiations with the United Nations. There is a need to analyze the effects of climate and

generate technology for climate-resilient agriculture and enhance the adaptive capacity of farmers.

We are now in the era of smart agriculture. Application of digital technology, remote sensing technology, sensors, artificial intelligence, biotechnology and molecular genetics will help immensely help in fostering cutting-edge innovations. The focus of every scientific endeavor has to be on improving the lives of the people, particularly the marginalized sections. Inclusive development is the need of the hour. Therefore, I urge you to lay emphasis on enhancing the productivity of small and marginal farms. As you all are aware, the small and marginal farmers are the most vulnerable to agrarian challenges and their welfare must be accorded the highest priority.

According to the Agriculture Census, the total number of operational holdings in India is 138.35 million with an average size of 1.15 hectares. Of the total holdings, 85 percent are in marginal and small farm categories of less than 2 hectares. These small farms, though operating only on 44 percent of land under cultivation, are the main providers of food and nutritional security to the nation. However, these small farms have limited access to technology, inputs, credit, capital and market. Hence, it becomes incumbent upon every stakeholder associated with agriculture to work for improving lot of small and marginal farmers.

It is a matter of pleasure that IARI has established a state-of-the-art plant phenomics facility named as "Nanaji Deshmukh Plant Phenomics Center", which was dedicated to the nation by Hon'ble Prime Minister of India, Shri Narendra Modi on October 11, 2017. Machine learning and Artificial Intelligence-based analysis are being employed to provide impetus to genetic improvement towards more crop per drop in major food crops.

I am also pleased to note that an Innovation Centre is being developed on this campus to foster innovation, including grass-root innovations. Farmers should be motivated and facilitated to join experimentation at research institutes. They must also be guided for obtaining patents and IPR rights.

The central government took a historic step last year to honour 12 farmers with Padmashri awards for their path-breaking innovations in agriculture. Such recognitions uphold the morale of innovative farmers and entrepreneurs. With the government aiming to double the income of the farmers in the next few years, there is a need for concerted efforts for improving agricultural productivity. Combination of appropriate policies, technologies and institutional arrangements are vital to transform agriculture and make it sustainable and profitable.

I have always been stressing on the need for diversifying traditional cropping systems as it would reduce economic risk while increasing the scope for higher profitability. In addition, integrated farming systems combining various agro-enterprises such as field crops, fisheries, horticulture and animal husbandry would ensure increased employment and agricultural income throughout the year. Diversifying traditional cropping systems and taking allied activities would provide resilience to farmers to withstand the vagaries of nature.

While attaining a production of over 311 million tonnes of horticultural crops has been phenomenal, the full potential in this area is yet to be realized due to lack of adequate facilities for cold storage, processing and value chain development. I am sure that the schemes proposed in this year's budget like "One District One Product", "Kisan Rail and Kisan Udan" for speedy transport of perishable products, "online organic market" will provide fillip to horticulture sector.

Various schemes rolled out by the Government like Pradhan Mantri Fasal Beema Yojana, Pradhan Mantri Krishi Sichayee Yojana , "Har Keti Ko Paani", "more crop per drop", 'Soil Health Card' and e-Nam are all aimed at securing a better future to the farmer. A vital contribution of national importance by this institute has been the development of neem-coated urea. This increases nitrogen utilization efficiency by 10 per cent compared to uncoated urea. With the government making the use of neem-coated urea mandatory, the farmers are saving 10 per cent urea.

I am also happy to note that the new scheme called "Pradhan Mantri Kisan Samman" (PM Kisan) for assured income support to the farmers has immensely benefitted around 12 crore farming families. I am happy that PM Kisan SAMPADA Yojana seeks to create modern infrastructure with efficient supply chain management from farm gate to retail outlet. It will not only provide a big boost to the growth of the food processing sector in the

country but also help in providing better returns to farmers. Indeed it is a big step towards doubling of farmers income, creating huge employment opportunities in the rural areas, reducing wastage of agricultural produce and enhancing the export of processed foods.

Annadata scheme is to be expanded to include "Oorjadata" to help farmers link pumps to solar grid. Farmers having fallow and barren lands can set up solar power generation units and they can sell it to grids to make a living. As we all are aware, agriculture holds immense potential for entrepreneurship. Agriculture needs to be developed as an enterprise and find ways to attract youth by creating an appropriate entrepreneurial ecosystem. It is equally important to strengthen the incubation centers for the promotion of agri-enterprises. I am happy that IARI has set up incubation centre to empower youth and promote agri-business enterprises.

Besides research, IARI has also excelled in agricultural education and in producing quality human resources for agricultural research, education, and extension. I appreciate the contribution made by the institute's scientists, students, and all other staff members in advancing research and technology development.

Finally, I would like to once again congratulate the students who have completed their M.Sc and Ph.D. degrees. I wish you all success in your future endeavors. I am confident that IARI will continue to serve the nation through scientific advancements and innovations in agriculture. ❑

Web Conversation on Teachers' Community and Community Teachers

A One-day Web Conversation on 'Teachers' Community and Community Teachers' was organised to commemorate Teachers' Day by the School of Education (SoE), Netaji Subhas Open University, Kolkata through NSOU App, recently. The learners enrolled under different Programmes of SoE and CDSER (B.Ed. Spl Ed Sem-II & IV, PGED Part-I & II, BDP EED 1st Year and Six-month Certificate Course on Inclusive Education), Faculty members of SoE, Officers and Officials of NSOU participated in the event. The initiative was thought to assemble the countless prosperous ways of being and knowing in order to influence humanity's combined potentials. Such conversation may bring out a broad, open review process that involves youth, educators, governments, business and other stakeholders of the community. To commemorate the birth anniversary of Dr. Sarvepalli Radhakrishnan, the web event was planned with three special deliberations on Teachers' Community and Community Teachers to pay tribute to all Teachers. The digital event started with greetings from Dr. Papiya Upadhyay, Assistant Prof., SoE, NSOU, Host and Moderator of the event. She highlighted the sequence of events in brief. The formal welcome of the invited speakers, participants, delegates and other attendees was addressed by Prof. Swapan Kumar Sarkar, HoD, NSOU. Prof. Sumanta Chattaraj, Professor, SoE, NSOU diligently introduced the illustrious speakers with their lauded credentials. The next phase of the event was thematic deliberations from the three distinguished speakers.

Prof. Pabitra Sarkar, Former Vice Chancellor, Rabindrabharati University, Kolkata, West Bengal told about the real stories of his life teachers and formal teachers enlightened everyone. He added the significance of community teachers in the life of a person to the extended knowledge beyond books. His half an hour deliberation also echoed overseas experiences with his teachers and fellows. Prof. Sarkar's inspiring and heartwarming stories of his school and college teachers gave a true admiration and adoration for them.

Prof. Gopa Datta, Former Vice Chancellor, University of Gourbanga, Malda, West Bengal. Prof. Datta discussed about her childhood memories of her teacher. She also warned against the negative attitudes of teachers often noticed in Educational Institutions. She extended her gratitude to her teacher, Prof. Pabitra Sarkar. Her deliberation reflected an important message that teacher is a relative entity. It is not an absolute one. She insisted on the different roles of a community teacher for an all-round development of a person.

Dr. Satish Kumar Sawhney, Former Advisor, NSS, Ministry of Youth Affairs, GoI, New Delhi delivered a lecture on becoming a perfect person as a perquisite to become a successful teacher. He talked about key competencies and tips for balanced personality. He also stressed upon the diverse aspects of life as India is land of diverse culture, religion, language, region, etc., hence it is imperative to respect it candidly.

The speech was followed by summing up of the three deliberations. It was coalesced by Prof. Sanat Kumar Ghosh, Professor, SoE, NSOU. The Presidential Address was delivered by Dr. Atindranath Dey, Director, SoE, NSOU and the President of the event. Dr. Dey extended his gratitude to all the eminent speakers, their contribution towards the society at large and their valuable lectures. He also interpreted that these great teachers are an inspiration to the youth and community. The Vote of Thanks was proposed by Dr. Parimal Sarkar, Assistant Professor, SoE, NSOU.

E-refresher Course on 21st Century-The Era of Biotechnology

The E-refresher Course on 21st Century- 'The Era of Biotechnology: Innovate by Advanced Biotechnology Learning' was organized by the Department of Biotechnology of AKS University, Satna (MP) under the umbrella of Biotech Research Society, India (BRSI) from September 03, 2020 to October 28, 2020. The event was organized in the association of National Academy of Science, India (NASI), Bhopal Chapter, International Bio-processing Association, Probiotics Association of India, and Asian PGPR Society. About 730 participants participated in the

Course. The Courses was opened to all Biotechnology learners to join. The whole programme was mentor by Chairman of the Course, Prof. Ashok Pandey, Founder President, BRSI and Distinguished Scientist, CSIR-IITR, Lucknow. The Coordinator of the Course was Prof. Kamlesh Choure, Head, Department of Biotechnology, AKS University, Satna (MP). Prof. Shivesh P. Singh, Head, Department of Zoology, Government PG College, Satna was Co-chairman of the Course. The objective of the Biotech e-Refresher Course was to expand and explore the new horizons, developments made by the scientific communities for the betterment of society. 21st Century is the Era of Biotechnology where scientists, researchers, academicians and industrialists playing an important role in ideating, innovating and engaging self to provide numerous biological products, therapies and processes which can lead the society in multiple ways. Rapid increment in diseases through pollution and by various illegal activities of humans creating a new door to entre various pathogens.

The entitled topics covered in the Course were Next Generation Sequencing, Metagenomics, Plant Tissue Culture, Microbial Therapeutics, Biofertilizers, Vaccine Development, Stem Cell Engineering, Fermentation Technology, Intellectual Property Rights, Ethnobiology, Probiotics, Immunology, Rapid diagnostics, Molecular Biology, Microbial Biodiversity, Gene Editing with CRISPR Technology, Genomics Assisted Strategies for Climate Resilient Crops, Scope, Career and Entrepreneurship in Biotechnology was covered by fifty speakers from incredible institutes of India like ICMR-National Institute for Research in Environmental Health, DBT, DST, AIIMS, DBT-ICT-Centre for Energy Biosciences, Institute of Chemical Technology, ICRISAT, Hyderabad, NIPGR–New Delhi, CSIR-Indian Institute of Toxicology Research, IBSD–Sikkim, CSIR-Indian Institute of Chemical Technology, CSIR-National Institute for Interdisciplinary Science and Technology, CSIR–NBRI, IIT–Delhi, ICAR–IISER (Indore), ICAR-Indian Agricultural Research Institute (IARI), New Delhi, Malaviya National Institute of Technology–Jaipur, Merck–CSIR-IMTECH Chandigarh and International Centre for Genetic Engineering and Biotechnology (ICGEB)–New Delhi. The Course was designed in such a way that biotechnology learners can upgrade themselves and innovate by advance biotechnology learning. The Course concluded with twenty rigorous workshops designed based on present and future challenges related with infectious disease, malnutrition, environmental sustainability, bioprocess and bio-prospecting and welfare of mankind. In the Course on 21st Century Era of Biotechnology platform every participant had rigorously engaged with the Scientific and Industry Experts from various organizations from CSIR/DBT/ ICAR/ICMR Labs of Department of Science and Technology, Government of India and leading Bio-Pharma Industries to innovate by Advanced Biotechnology Learning.

International Conference on Built Environment, Science and Technology

A two-day International Conference on 'Built Environment, Science and Technology' is being organized by the School of Architecture and Interior Design, SRM Institute of Science and Technology, kattankulathur, Tamil Nadu during February 20-21, 2021. The academicians, practitioners, researchers, experts from the Industry, and graduate students from the various domain of Architecture, Engineering, Urban Planning, Building Science, Landscape Design, Psychology, and other relevant disciplines around the globe, who are interested in understanding and solving the issues related to the built environment through the lens of science of technology may participate in the event.

The built environment is increasingly becoming a product of technology. The Bio-physics involved in the building has an important role to play in human wellbeing. With the advent of sustainable technologies, our knowledge horizon concerning the physical behavior of buildings and the impact of buildings on the energy efficiency, comfort, health, safety and durability has expanded. In the wake of the above context, it can be said that the Science and Technology have asserted its position in the contemporary building processes; this means the building can't be purely considered as an object of art anymore. The technological quotient involved in a building equally dictates and shapes the final built environment. The themes of the event are:

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

- Urban Climate.
- Urban Heat Island.
- Outdoor Comfort.
- Culture and Societies.
- Air Quality – Outdoor.

- Mobility and Walkability.
- Planning and Policies.
- Future Cities.
- Sustainable Landscape Planning.
- Smart Cities.
- Urban Agriculture/Farming.
- Microclimate Control/Auditing.

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

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

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

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

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

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

For further details, contact Coordinator, Prof. Shanthi Priya. R, Professor, School of Architecture and Interior Design, SRM Institute of Science and Technology, kattankulathur- 603 203 (Tamil Nadu), Phone: +91 9600025*012*, +91 9884901728, +91 638053114*, E-mail: iconbest.2021@srmist.edu.in.* For updates, log on to*: www.srmist.edu.in/iconbest-2021.*

International Conference on Global Entrepreneurship Trends and Empowerment

A two-day International Conference on 'Global Entrepreneurship Trends and Empowerment through Innovation' is being organised by Amity Innovation Incubator (AII) in association with Amity Business School, Yunus Social Business Centre and Amity Institute of Information Technology, Amity University Rajasthan on March 05-06, 2021. All academicians, research scholars and students of various National and International Universities may participate to use the golden opportunity to share their thoughts about the various ways entrepreneurship endeavours and innovative ideas are shaping the face of global business leading to empowerment. The conference may be an excellent platform for all the researchers, academicians, scientists and budding entrepreneurs to present their outstanding work related to the various new trends in the area of Global Entrepreneurship and Innovation. The Track Areas for the event are:

Track 1: Advances in Intelligent Algorithms and Industrial Applications.

Track 2: Entrepreneurship and Innovation.

Track 3: Environmental Sustainability and Innovation.

Track 4: Social Business and Innovation.

For further details, contact Organising Secretary, Amity University Rajasthan, City Campus, Amity House, C-119, Lal Kothi Scheme, Behind Vidhan Sabha, Jaipur - 302 015 (Rajasthan), E-mail*: icgetei2021@jpr.amity.edu*. For updates, log on to: *http://icgetei.in/*

International Conference on Equality, Diversity and Inclusivity

A One-day International Conference on 'Equality, Diversity and Inclusivity: Issues and Concerns' is being organized by the Lovely Professional University, Phagwara, Punjab on February 20, 2021. The prevailing intransigent global system and the left-over scars of the history has necessitated to address a person from being the just same or different to being an insider, an outsider or deviant in the prevailing multicultural society. This led certain individuals and social groups to become deprived or prevented from participating fully and meaningfully by virtue of their poverty, the lack of competencies, and lack of lifelong learning opportunities because of discrimination. To create opportunities and remove the barriers to reach humans to enjoy their life in its fullest is the ultimate goal of any society. The Themes and Subthemes of the event are:

Social and Psychological Dimensions of Equality, Diversity and Inclusivity

- Social inclusion: The Way Forward.
- Journey from Marginalization to Social Equality and Inclusivity.
- Caste Discrimination and Social Change in India.
- Bridging the Rural and Urban Divide.

Political Dimensions of Equality, Diversity and Inclusivity

- Promoting Equality, Diversity and Inclusivity: Political and Legal Perspectives.
- Tribal Empowerment in India: Issues and Challenges.
- Inclusive Approach for Good Governance.
- Refugees, Asylum Seekers, Displaced and People of Nowhere.

Economic Dimensions of Equality, Diversity and Inclusivity

- Globalization: Economic Exclusion to Economic Inclusion.
- Equality, Diversity and Inclusivity and Its Growth Implications.
- International Migration, Ethnic Rights and Economic Development.
- Socio-economic Inclusion in 21st Century.

Educational Dimensions of Equality, Diversity and Inclusivity

- School Education: Equality, Diversity and Inclusivity.
- Higher Education: Awareness and Debates on Equality, Diversity and Inclusivity Issues.
- Inclusive Education for Educational Equality as Capability Equality.
- Role of Educational Technology in Equality, Diversity and Inclusivity.

Arts, Cultural and Linguistic Dimensions of Equality, Diversity and Inclusivity

- Ethnic Assertions in Globalized World.
- Linguistic Diversity and Language Rights.
- Role of Literature and Art in Promoting Equality, Diversity, Inclusivity.
- Recent Trends in Language and Literature.
- Other Related Topics.

For further details, contact Organizing Secretary, Dr. Pavitar Parkash Singh, Associate Dean and HOS, School of Humanities, Lovely Professional University, Jalandhar-Delhi G.T. Road**,** Phagwara, Punjab-144411, E-mail : pavitar.19476@lpu.co.in and/or E-mail: ediic@lpu.co.in. For updates, log on to: *www.lpu.in* ❑

THESES OF THE MONTH

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

AGRICULTURAL & VETERINARY SCIENCES

Agronomy

1. Movalia, Janaki Ambalal. **Effect of sources and levels of sulphur on nutrient composition, yield and quality of *kharif* soybean [*Glycine max* (L) *Merrill*]**. (Dr. S G Savalia), Department of Agronomy, Junagadh Agricultural University, Junagadh.

Forestry

1. Momin, D Marcy. **Characterization of rhizospheric actinomycetes of major crop plants and their plant growth promoting properties under Jhum field of Mizoram**. (Prof S K Tripathi), Department of Forestry, Mizoram University, Aizawl.

Horticulture

1. Thangjam, Nurpen Meitei. **Pharmacological studies of selected lichens of Mizoram**. (Dr. Awadhesh Kumar and Dr. D K Upreti), Department of Horticulture, Aromatics & Medicinal Plants, Mizoram University, Aizawl.

BIOLOGICAL SCIENCES

Biotechnology

1. Bora, Nikita. **A system level approach to select purine-salvage pathway proteins in *Leishmania donovani* and virtual screening of phytochemicals targeting A_{za} adenosine receptor involved in adipocyte inflammation**. (Dr. Anupam Nath Jha), Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur.

2. Borah, Anuj Kumar. **A study on the modulation of adipocyte differentiation and physiology by aqueous extracts of *Terminalia chebula* fruit and *catharanthus roseus* leaves from Assam, India**. (Dr. Saugata Saha and Dr. R Mukhopadhyay), Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur.

3. Borah, Sapna Mayuri. **Understanding the modeling, folding and intermolecular interactions between biomolecules at atomistic level: A dynameomics approach**. (Dr. Anupam Nath Jha), Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur.

4. Divya. **Development and evaluation of multiplex PCR for rapid detection and typing of HSV1 & HSV2**. (Dr. Samander Kaushik), Department of Biotechnology, Maharshi Dayanand University, Rohtak.

5. Malakar, Dipika. **Molecular typing, biofilm formation and antibiotic sensitivity assay of *Listeria* spp isolated from foods of animal origin**. (Prof N Senthil Kumar), Department of Biotechnology, Mizoram University, Aizawl.

6. Priyanka Rani. **Molecular cloning and characterization of heat shock protein from human malarial parasite plasmodium falciparum**. (Dr. Ritu Gill), Department of Biotechnology, Maharshi Dayanand University, Rohtak.

7. Sarma, Neelanjana. **Investigation of tumor microenvironment of head and neck squamous cell carcinoma in context of immune regulation and HPV positivity**. (Prof. Shashi Baruah), Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur.

8. Sivashankari, T R. **Screening identification and partial purification and molecular characterization of L-asparaginase from marine actinomycetes**. (Dr. S. Barathi and Dr. K. Sudha), Department of Biochemistry, SRM University, Kattankulathur,Chennai.

Botany

1. Karwa, Sourabh. **Role of polyamines in improving high temperature and drought stress tolerance in Orya sativa L**. (Dr. Sunder Singh Arya), Department of Botany, Maharshi Dayanand University, Rohtak.

2. Singh, Anjali. **Studies on lignocelluloytic enzyme production by selected white-rot basidiomycetes**. (Prof. R K Singh), Department of Botany, Rajiv Gandhi University, Itanagar.

Food Science & Nutrition

1. Dangi, Nidhi. **Effect of hydrocolloids and their hydrolysates on the techno functionality of starches and flours**. (Dr. Baljeet Singh Yadav), Department of Microbiology, Maharshi Dayanand University, Rohtak.

Genetics

1. Lokesh Kumari. **Evaluation of promoter hypermethylation of notch and Wnt signaling pathways in cervical cancer patients**. (Dr. Ritu Yadav and Dr Smiti Nanda), Department of Genetics, Maharshi Dayanand University, Rohtak.

Microbiology

1. Khare, Neha. **Molecular typing of strains of E.coli isolated from Yamuna river water**. (Dr. Pooja Gulati), Department of Microbiology, Maharshi Dayanand University, Rohtak.

2. Santosh, K N. **Dynamics of immune signals induced by scorpion venom and their impact on microbial immune response**. (Dr. N B Thippeswamy), Department of Microbiology, Kuvempu University, Shankaraghatta.

Zoology

1. Chauhan, Mona. **Community structure of dung beetles in Kailash sacred landscape, pithoragarh, Uttarakhand, India**. (Dr. V P Uniyal), Department of Wild Life Science, Saurashtra University, Rajkot.

2. Ritu. **Impact of metal oxide nanoparticles on enzyme activity (Xanthine oxidase) and serum proteins**. (Dr. Minakshi Sharma), Department of Zoology, Maharshi Dayanand University, Rohtak.

EARTH SYSTEM SCIENCES

Environmental Science

1. Sharma, Pooja. **Bacterial assisted phytoremediation of organic pollutants for detoxification of pulp and paper mill effluent after secondary treatment**. (Prof.Ram Chandra), Department of Environment Microbiology, Babasaheb Bhim Rao Ambedkar University, Lucknow.

2. Shastri, Beenu. **Characterization of endophytic bacterial metabolites and their usage for biocontrol of *Colletotrichum falcatum* causing red rot in sugar cane crop**. (Prof. Rajesh Kumar), Department of Environment Microbiology, Babasaheb Bhim Rao Ambedkar University, Lucknow.

ENGINEERING SCIENCES

Computer Science & Engineering

1. Arora, Sumedha. **An intelligent energy aware approach for big data storage in cloud data centers**. (Dr. Anju Bala), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.

2. Chauhan, Sachendra Singh. **Efficient similarity search techniques for textual and non- textual datasets**. (Dr. Shalini Batra), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.

3. Dorathi, Jayaseeli J D. **Extraction of roads from remote sensing imagery using pixel based and region based methods**. (Dr. D. Malathi), Department of Computer Science & Engineering, SRM University, Kattankulathur, Chennai.

4. Khanna, Divya. **Ensemble approach for antigenic epitopes prediction using physiochemical properties**. (Dr. Prashant Singh Rana), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.

5. Khatkar, Kavita. **Performance analysis of geographical routing in VANETs**. (Dr. Neera Batra), Department of Computer Science & Engineering, Maharishi Markandeshwar University, Ambala.

6. Kushwah, Virendra Singh. **Fault tolerant load balancing strategies for cloud environment**. (Dr. Sandip Kumar Goyal), Department of Computer Science & Engineering, Maharishi Markandeshwar University, Ambala.

7. Namratha, P. **A framework for securing shared data in the cloud**. (Dr. C Shoba Bindu), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

8. Nirgish Kumar. **Exploration and analysis of periocular biometrics for human recognition**. (Dr. Vivek Srivastava), Department of Computer Science, Rama University, Kanpur.

9. Rathee, Nisha. **Study and design of test cases and testing techniques for object oriented software system using genetic algorithms**. (Dr. R S Chhillar), Department of Computer Science and Application, Maharshi Dayanand University, Rohtak.

10. Reddy, M Indrasena. **Efficient cryptographic algorithms using key optimization techniques**. (Dr. A P Siva Kumar), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

11. Uma. **Design and implementation of learning based classification techniques for spam mail detection**. (Dr. Priti), Department of Computer Science and Application, Maharshi Dayanand University, Rohtak.

Electrical & Electronics Engineering

1. Geetha, A. **Investigation of energy management control strategies for hybrid electric vehicle**. (Dr. C. Subramani), Department of Electrical & Electronics Engineering, SRM University, Kattankulathur, Chennai.

2. Mehta, Ruchika. **Reduced order modeling and control using advanced techniques**. (Dr. Sunil Kumar Singla and Dr Swati Sondhi), Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering and Technology, Patiala.

3. Smitha, M S G. **Novel method of transmission cost allocation for bilateral and multilateral transactions**. (Dr. P V Satyaramesh and Dr. P Sujatha), Department of Electrical Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Electronics & Communication Engineering

1. Dash, Meera. **Development of robust and energy efficient algorithms for wireless sensor networks**. (Dr.

Trilochan Panigrahi and Dr Renu Sharma), Department of Electronics & Communication Engineering, Siksha O Anusandhan University, Bhubaneswar.

2. Dey, Suprava. **Design and simulation of silicon nanowire transistors at the scaling limit**. (Prof. Chinmay Kumar Maiti), Department of Electronics & Communication Engineering, Siksha O Anusandhan University, Bhubaneswar.

3. Mudavath, Mahesh. **Design and analysis of CMOS RF receiver front-end of low noise amplifier for wireless applications**. (Dr. K Hari Kishore), Department of Electronics & Communication Engineering, Koneru Lakshmaiah Education Foundation, Guntur.

4. Sravan Kumar, K. **Optimization schemes for joint PAPR reduction and sidelobe suppression in OFDM/ NC-OFDM based on cognitive radio system**. (Dr. K Rama Naidu), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

5. Thakur, Hiranya Ranjan. **Development and analysis of high-*k* dielectrics CNT based ion sensitive field effect transistors (CNTISFETs)**. (Prof. J C Dutta), Department of Electronics & Communication Engineering, Tezpur University, Tezpur.

Food Engineering & Technology

1. Borah, Pallab Kumar. **Strategic design and characterization of biocompatible nutraceutical delivery systems for colorectal cancer therapy**. (Dr. Raj Kumar Duary and Dr. Anwesha Sarkar), Department of Food Engineering and Technology, Tezpur University, Tezpur.

Information & Communication Engineering

1. Kanika. **Inception of data creation phase and prevention of data leakage in big data life cycle**. (Prof. R A Khan and Dr. Alka), Department of Information Technology, Babasaheb Bhim Rao Ambedkar University, Lucknow.

2. Sreedevi, A G. **Radio link performance based association algorithm for indoor device-to-device communications**. (Dr. Rama Rao), Department of Telecommunication Engineering, SRM University, Kattankulathur, Chennai.

Mechanical Engineering

1. Sharma, Vipin Kumar. **Rare earth metals effects on machinability of aluminium based hybrid composites using magnetic abrasive flow machining process**. (Dr. Vinod Kumar and Dr Ravinder Singh Joshi), Department of Mechanical Engineering, Thapar Institute of Engineering and Technology, Patiala.

Mineral Engineering

1. Reddy, U Umamaheshwara. **Characterization and benification of magniferrius iron ores and ferrugionous manganese ores of Sandur Schist Belt, Karnataka India**. (Dr. S J Gopal Krishna), Department of Mineral Processing, Vijayanagara Sri Krishnadevaraya University, Ballari.

MATHEMATICAL SCIENCES

Mathematics

1. Basha, Hussain. **Analytical study of flow and heat transfer in non-Newtonian fluids**. (Prof. K V Prasad), Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Ballari.

2. Brahma, Ashoke Kumar. **A study on fuzzy approach for flood risk management in BTAD area**. (Dr Dipak Kr Mitra), Department of Mathematics, Bodoland University, Kokrajhar.

3. Melkeri, Arunkumar Honnappa. **Wavelet based approaches for signal processing**. (Dr. A Padmanabha Reddy), Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Ballari.

4. Muddalapuram, Manjunath. **Study on some Adriatic indices and related aspects**. (Prof. V Lokesh), Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Ballari.

5. Narender Singh. **Reliability modeling of two-unit standby system subject to inclement weather with different repair facilities**. (Dr. Dalip Singh), Department of Mathematics, Maharshi Dayanand University, Rohtak.

6. Pasha, K M Mussuvir. **Synthesis, characterization and study of electron delocalization of organometallic compounds derived from 4nπ electron ligands**. (Prof. K M Amshumali), Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Ballari.

7. Ramanjini, V. **An analytical approach to study the flow and heat transfer of a Newtonian /non Newtonian fluids over a slender elastic sheet**. (Prof. K V Prasad), Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Ballari.

8. Rohidas, S Prathima. **Theoretical study of the problems of MHD flow past a flat plate**. (Dr. Jitendra Kumar Singh), Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Ballari.

9. Vinod Kumar. **Stochastic modeling and analysis of some systems with bath-tub shaped failure pattern**. (Dr. Rajeev Kumar), Department of Mathematics, Maharshi Dayanand University, Rohtak.

Statistics

1. Naveen Kumar. **Stochastic modeling of non identical redundant system with repairman failure**. (Dr. S C Malik), Department of Statistics, Maharshi Dayanand University, Rohtak.

MEDICAL SCIENCES

Ayurveda

1. Nayak, Ananda Prasad. **A comparative study shaman chikitsa after vaman in the management of hypothyroidism W S R to Kaphaj Galaganda**. (Dr. P K Panda), Department of Ayurveda, Sambalpur University, Sambalpur.

Biochemistry

1. Giri Prasad, V. **Serological prevalence of celiac disease and HLA-DQA1 and B1 genotypes in the general population**. (Dr. B.S. Ramakrishna and Dr. Balakrishnan), Department of Biochemistry, SRM University, Kattankulathur, Chennai.

2. Kishor, P Krushna. **Correlation of serum minerals, vitamins- D and insulin resistance in patient of type-2 diabetes mellitus with and without microvascular complications**. (Dr. P Satyanarayana), Department of Biochemistry, Rama University, Kanpur.

Genetics

1. Bhargava, Saurabh. **Forensic characterization and comparative analysis of venoms of *Naja naja* & *Daboia russelii***. (Dr. Rajvinder Singh and Dr. R K Sarin), Department of Genetics, Maharshi Dayanand University, Rohtak.

2. Kiran Kumari. **A survey and analysis of poisonous plants of forensic interest from Haryana**. (Dr. Rajvinder Singh), Department of Forensic Science, Maharshi Dayanand University, Rohtak.

Microbiology

1. Anil Kumar. **Molecular characterization of TEM, SHV and CTX-M extended spectrum beta lactamase among Escherichia coli and klebsieeella pneumoniae in urinary isolates**. (Dr R Sujatha), Department of Medical Microbiology, Rama University, Kanpur.

2. Goyal, Roma. **A study of phenotypic and genotypic assays for detection of mettalo B-lactamase producing pseudomonas aeruginosa with special reference to New Delhi Metallo B lactamasa**. (Dr. R Sujatha), Department of Medical Microbiology, Rama University, Kanpur.

3. Pal, Nidhi. **Clinical impact of nosocomial infection due to acinetobacter baumammii in intensive care units with its antimicrobial resistance and molecular characterization**. (Dr. R Sujatha), Department of Medical Microbiology, Rama University, Kanpur.

Neurology

1. Arora, Tushar. **Insulin-like growth factor-1 derived peptides: Implications for down syndrome and Alzheimer's disease**. (Prof. Shiv Kumar Sharma), NBRC, National Brain Centre, Manesar.

2. Vipendra Kumar. **Regulation of HDAC1/2 activity by Ube3a: Implication in angelman syndrome**. (Prof. Nihar Ranjan Jana), NBRC, National Brain Centre, Manesar.

Nursing

1. Moapatra, Ashisbala. **Prevalence and prevention of acid peptic disease by lifestyle modification through planned teaching programme of the staff nurses working in different hospitals at Bhubaneswar, Odisha**. (Dr. Maya Patlia), Department of Nursing, Siksha O Anusandhan University, Bhubaneswar.

Pharmaceutical Science

1. Arora, Daisy. **Design and development of novel drug delivery systems of resveratrol for dermatological benefits**. (Dr. Sanju Nanda), Department of Pharmaceutical Science, Maharshi Dayanand University, Rohtak.

PHYSICAL SCIENCES

Chemistry

1. Handique, Junali. **Development of self-healing polymers: Functional polymers and healing characteristics**. (Prof. Swapan Kumar Dolui), Department of Chemical Science, Tezpur University, Tezpur.

2. Itagi, Mahesh. **Studies on redox based materials and macrocycles for electrochemical applications**. (Prof. K S Lokesh), Department of Chemistry, Vijayanagara Sri Krishnadevaraya University, Ballari.

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