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AIU House, 16, Comrade Indrajit Gupta Marg
New Delhi 110 002
EPABX : 011-23230059, **FAX :** 011-23232131
E-mail IDs : publicationsales@aiu.ac.in / advtun@aiu.ac.in / subsun@aiu.ac.in
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New Operating Model for Private Business Schools for COVID-19 and Post-COVID-19 Times

Dipak Kumar Bhattacharyya*

COVID-19 Pandemic, among others, has put private business schools in great difficulty. Being self-financing, on the one hand, these business schools are facing the challenge of new admissions, and on the other, they are now required to emphasize on internal cost efficiency. Uncertainty in managerial level job availability for MBA graduates now dissuades many prospective students to postpone their plans for higher studies and stick to their current jobs (if they are already employed). Those who do not have any job at present are getting engaged in low-end jobs, as new normal process has increased the spate of hiring for various non-managerial job positions. While front-end strategies are now compelling private business schools to increase technology-enabled delivery modules, back-end strategies are compelling these business schools to optimize their costs of operation. This article highlights such practices, along with possible adverse consequences, unless business schools sustain their identity as quality institutions, embracing suitable operating model.

India has six thousand business schools that offer MBA or PGDM (some also say PGDBM) as full-time, part-time or as distance learning mode. Going by National Institutional Ranking Framework (NIRF) ranking 2020, we find there are seventy-five business schools, which are ranked. But we have several thousands more, including some private business schools, outside the ambit of NIRF ranking. Some of these business schools are also good, but presumably not showing their eagerness to come under the lens of NIRF. However, for our purpose, NIRF being endorsed by Ministry of Education, its ranking is considered as quality indicator for institutions of higher learning. In recent business school ranking list, among top ten category, we find that only two private business schools are ranked —XLRI, Jamshedpur (ninth position), and MDI, New Delhi (tenth position). One way, this indicates that private business schools in India are gradually losing ground to government aided institutes and universities. Over the years, private business schools in India, which are roughly estimated to the tune of six hundred, showed more interests for accreditation of AACSB, ACBSP, IACBE, SQAC, etc. to establish their legitimacy as quality institutions, for influencing stakeholders' attention. Without going into their veracity, we find many unaccredited institutions today are in top rank of NIRF. NIRF ranking is now a hallmark of quality for business schools in India, for obvious change in pandemic environment, as global mobility of management graduates will get restricted, for more emerging job opportunities in India. Gradually, it will also catch recruiters' attention, as over the years NIRF has come to the stage of maturity with greater compatibility with any international level rating

* *Professor, Human Resource Management, Xavier Institute of Management, XIM University, Bhubaneswar–751013, Odisha. E-mail: dkb@xub.edu.in*

and ranking agencies. This will further accentuate the pace of NAAC and NBA accreditation. As both these accreditations are more compatible with NIRF ranking criteria. Pandemic situation has its worst effect on all spheres of economic activities, and private business schools are no exception. As they need to generate their own resources primarily through new enrolment, pandemic has significantly affected the process. Moreover, a major chunk of aspiring students is deferring their decisions to join MBA level courses, fearing with hefty fee payment, and two-year time investment (for full time programme), they may not get matching jobs, for transitional shift both in skills and job market. Pandemic revolutionized the work processes. Excepting for direct operation, all other jobs can now be controlled remotely. This necessitates major compositional shift in skill sets, with more focus on digital literacy. As majority of millennium population will now prefer emerging job opportunities, differing their decisions for higher education, more particularly for MBA or PGDM; private business schools in India have started experiencing admission crisis. Many private business schools failed to offer matching job opportunities to their MBA graduates. Even companies are not showing interest in hiring management graduates, rather they are keen in hiring candidate with digital literacy for their low-end jobs.

In the above backdrop, the author suggests an operating model for private business schools to sustain. This operating model is based on author's experiences.

Recommended Operating Model

The author has experience of managing a number of national level business schools in the country. In normal times, all these private business schools took the opportunity of generating super-normal tax-free surplus. All these private business schools operate under the umbrella of a trust or society, and avail best opportunity to enjoy tax exemption in line with section 10 (23C)(vi) of Income Tax Act. The condition of 85% spending of surplus, they can do conveniently booking salaries and benefits of people from their other businesses. Hence on paper they are clean. This is applicable for societies also, including those whose mandate is service to the humanity. Ultimately their operating model so far is to siphon their tax-free surplus for their personal gains, rather than achievement of academic excellence, research and development, and contribution to nation building. The author had a chance to estimate for many successful private business schools, who had no admission problem for their high brand value, could generate surplus up to 6x or sixty percentage, when they do not adjust salaries and benefits of employees of their other business units. But this operating model is now not sustainable, as admission is now a great challenge. Also, they cannot continue with the practice of charging hefty fees. In this backdrop the author recommends operating model focusing on some innovative aspects of reinventing private business schools, which are presented here.

Introduce Courses Through Digital Mode

Conventionally any three-credit course requires students to study for hundred hours, of which thirty hours are for classroom instructions, and rest seventy hours students spend for doing assignments, case presentation, practical exercises like; simulation, role plays, etc. When programme delivery will be through digital mode, class contact hours through digital mode must be increased from thirty hours to at least fifty hours, which means hundred twenty hours should be the study time requirement for each course. Some digital classes can be arranged with recorded classes for optimization of faculty resources. Rationale for such a step can be; sudden change in learning mode, students' adaptability with technology, and limitation of face to face meeting with faculty. Our learning root is to learn directly from teachers, and then remember, which we call *shruti and smriti*. We do not know efficacy of digital *shruti*, rather efficacy of digital mode of learning. In the corporate world we offer training through e-learning mode, but training sessions being for shorter duration, we can see some positive results. Even then training transferability is low when training through digital model is imparted. We have not done any study to measure the effectiveness of digital learning for long duration educational programmes. Hence with higher learning reinforcement, it may be possible to meet the learning gap. The author himself conducted MBA level classes through digital mode and in pandemic situation, and could observe the learning gap among students. Digital mode course delivery requires selection of proper technology platform, which students can access at ease from diverse locations.

Reduce Course Fee Substantially

As MBA aspirants in pandemic and immediate post-pandemic days will be working in general, and as digital mode course delivery can be conducted with a flexi-time approach; private business schools can substantially reduce their operation costs. Moreover, batch size restriction can also be made redundant. With breakout rooms, students in small groups can be assigned class exercises with remote supervision

or proctoring by faculty members. Students also can make presentation, get their doubts clarified on real time basis. Hence, need of the hour is to offer MBA or PGDM programmes at minimum fees. Some private business schools have already started collaborating with globally visible business schools to offer their programmes at affordable fees. Such value addition is enhancing competitive strength. Many quality global institutions are now showing interests to collaborate for their obvious resource crunches.

Industry Recognition

Gradually industry also must recognize digital MBA or PGDM with required credit hours for their recruitment. In fact, by recruiting working MBAs, industry will get benefitted more in terms of job experiences of newly hired professionals. This may require altering industry's quality benchmarking of business schools, only in terms of their traditional ranking. More understanding of subject-wise credit distribution, credit hour allocation per paper of three or two credits, core papers and electives, faculty bodies, research and publication, international collaborators, national and global visibility, etc. should be the consideration. Overall, this requires industry bodies to do their own benchmarking, rather than going by the prevalent quality tag carried by such institutions. Pandemic days will require relooking into the ranking and rating parameters by different agencies and institutions.

Credit Distribution

Many private business schools, and so also government aided business schools are biased to one functional area or the other. For example, some institutions assign more core or compulsory credits to finance subjects, some to marketing, some to operations and systems, etc. MBA or PGDM students get opportunity to specialize opting for major in some functional areas or the other in their second year or from fourth term of their study. Hence uneven credit allocation in one functional area or the other, as core papers, may not be the right decision. The author did observe in some business schools OB/HR subjects get least focus, while finance subjects get disproportionately more weights. Often students get repeated instructions in the specialization or in major papers, as they have already learnt those as their core papers. Some business schools also focus on truncating total credit allocation in the name of rationalizing credit load of students. Needless to say, a balanced approach is necessary to groom students as professionals, without creating imbalance in credit distribution. Wherever necessary, private business schools can offer compulsory non-credit courses to develop knowledge of students.

Repurposing Regulatory and Institutional Control

Governance system in private business schools in India is very poor. This is equally applicable even for private state universities. Very few of them are transparent about their financial details, and very few allow representation of faculty members in the governing bodies. Even though private business schools generate their own resources, as they collect fees, often hefty fees, they need control through regulatory and institutional lenses. One-time recognition, conferring of autonomous status, or affiliation, does not mean they are licensed to rob society in the name of quality professional education. In pandemic days, many private business schools ruthlessly truncated their salary budgets, reduced faculty, and support staff head counts, and even neglected student's legitimate right to get quality education, and proper placement support, Accountability to stakeholders for private business schools can only be enhanced, once they are brought under lenses of the regulatory and institutional bodies.

Summary

With above focus when private business schools design their operating model, it is possible to become sustainable. Gradually class-room contacts will become redundant, and future generation of students will show more interests for digital mode of learning, along with their work, particularly for MBA or PGDM level education. However, success of this operating model depends on proactive regulatory and institutional support in terms of quality control, recognition, and affiliation. Our accrediting bodies also need to relook into their parameters of accreditation, focusing more on governance issues, institutional level quality control measures, subject wise credit distribution, faculty compensation and benefits, transparency, faculty involvement in institutional management, etc. Similarly, industry bodies also need understanding of changed programme delivery, and relook into their benchmarking criteria. Traditional over focus on elite institutions for recruitment, neglecting other quality institutions may not be the right approach. In immediate post-pandemic days, industries also cannot afford to higher management graduates from elite institutions offering higher pay and benefits. In fact, changed work environment may not require high profile elite management graduates. Rather industries can optimize their hiring costs sourcing management graduates at competitive pay and benefits from other quality institutions. ❑

Policy Issues in Training of School Teachers: Critical Analysis of Some Recommendations of National Education Policy—2020

Sunil Behari Mohanty*

National Education Policy–2020 (NEP-2020) has outlined several strategies to improve quality of teacher education. Two chapters-Chapter 5 "Teachers" under school Education and Chapter 15" Teacher Education" under Higher Education contain the recommendations of the Policy on Teacher Education. Chapter 5, 5.15- 5.16 (p.22) covers Continuous Professional Development (CPD) of schoolteachers, school principals and school complex leaders; 5.20 (pp.22-23) covers Professional Standards for Teachers; 5.21 (p.23) covers Special Educators; and 5.22-5.29 (pp.23-24) covers Approach to Teacher Education. Chapter 15, 15.1- 15.8 (pp. 42-43) deals with training of schoolteachers and 15.9-15.11 training of higher education teachers. A modification of the policy document is needed to avoid repeated mention of a few strategies in chapters 5 and 15.

Need for Having A Re-look at Some Recommendation of NEP–2020

Number of recognised general teacher training course as per NCTE (2020) are: (a) DPSE (Pre-school) (204), D. El. Ed. (Elementary) (11,359), D. El. Ed. (Elementary) (ODL) (6), B.El.Ed. (Elementary) (104), B.Ed. Secondary (9,634), B.Ed. Secondary (ODL) (43), B.Ed. Secondary Part time (11),3 yrs. B.Ed.- M.Ed. (Integrated) (30) and 4 Yr. B.A., B.Ed. / B.Sc., B.Ed. (Integrated) (724). The policy document mentions three types of B.Ed. courses (Table-1).

The NEP–2020 is silent about 3 Year B. Ed & M.Ed. courses. According to NCTE (2020) mentions about its recognition for such courses – 1 each in Bihar, Goa, Gujarat, Jharkhand 2 each in Haryana and Uttar Pradesh, 3 each in Punjab and Rajasthan, 4 in Odisha, 5 in Maharashtra and 7 in Madya Pradesh.

The NEP–2020 is also silent about B. El. Ed.,D. El.Ed., DPSE, B.Ed. Secondary Part time, and D.El. Ed. ODL and B.Ed. ODL courses.

* *President, All India Association for Educational Research, Flat 1, Beatitude Apartment 2, 61B Selvaraj Chettiar Street, Vaithikuppam, Puducherry-605001. E-mail: sunilmohanty@gmail.com*

Integrated 4-Year Teacher Training Course for Initial Training

For providing initial Teacher Training through 4 years Integrated B.A., B.Ed. / B.Sc., B. Ed. Courses, the NEP–2020 states,— *"By 2030, the minimum degree qualification for teaching will be a 4-year integrated B.Ed. degree that teaches a range of knowledge content and pedagogy and includes strong practicum training in the form of student-teaching at local schools"* (Art. 5.23, p. 23)

> *"Moreover, all stand-alone TEIs will be required to convert to multidisciplinary institutions by 2030, since they will have to offer the 4-year integrated teacher preparation programme."* (Art.15.4, p.42)

Four-year integrated programmes were first time tried out in sixties by a College in Kurukshetra in Haryana. Later, this concurrent mode initial teacher training programme was taken up which offered this programme along with consecutive mode initial teacher training programme of one year B.Ed. The NCTE Annual Report 2019-20 did not report four-year integrated courses in the states of Goa, Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, and Sikkim and in all union territories except A&N Island and Pondicherry**.**

The Education Commission 1964-66 asked the nation not togo for four-year integrated courses in teacher training (Art.4.18, Art. 4.19, p. 121). The Commission states—

> *Art. 4.18 Integrated Courses of General and Professional Education—An alternative way to link the study of subjects with professional preparation at the level of secondary teachers is to provide concurrent and integrated courses in general and professional education, on the pattern of teacher education in the USA. Courses of this type have been introduced in a few selected subjects in the Kurukshetra University in Punjab, in the Regional Colleges of Education and in one Rural Institute. In the Kurukshetra experiment, the total period of*

Table-1: 3 Types of B.Ed Courses Mentioned in NEP-2020

Article & Page No.	Duration & Degree	Minimum Entry Qualification	No. of years taken after Higher Secondary to get a Degree in Teacher Training
Art. 5.23, p. 23 Art 15.4, p. 43 Art 15.5, p.43	1 year B.Ed.	PG or a Four-year Degree	6 years (Degree 3+ PG2 +B.Ed.1) 5 years (Degree 4+ +B.Ed.1)
Art 5.23, p.23 Art 15.4, p. 43	2 year - B.Ed.	Three-year degree	5 years (Degree 3+ +B.Ed.2)
Art. 5.23, p. 23 Art 15.4, p. 42 Art 15.4, p. 43	4 years Integrated BA., B.Ed.... / BSc., B. Ed.	Higher Secondary	4 years

education has been reduced by one year, and the B.Ed. degree can be obtained in four years after the SSLC or the Matriculation examination.

Art. 4.19 The utility and feasibility of these integrated courses have been widely questioned. It has been argued that this experiment has not and will not succeed in India since a young student, about 16 or 17 years old, who has just completed secondary education does not ordinarily decide to be a schoolteacher. It is also contended that there is no evidence to show that the products of these integrated courses are better in any way than teachers who have first taken their degree and then completed their professional education; and that the dwindling enrolments in such courses (except where substantial stipends are provided) show that the experiment has no promising future. Although we do not subscribe to all the objections raised, it is obvious that these integrated courses, even when developed to their fullest potential, can only provide a very small proportion of the total number of trained teachers required at the secondary stage (estimates vary from 5 to 10 per cent) on account of the heavy expenditure involved therein. We feel that it would be wrong to place an undue emphasis on such marginal experiments and that, from the point of view of raising standards in teacher education, it would be better to concentrate on improving the professional one-year course following the first or the second degree. (Kothari 1966, p.121)

In view of the above suggestion given half a century ago, the national government may reconsider modifying the strategy of providing initial teacher training through four-year integrated courses.

Converting Stand-Alone Institutions in to Multidisciplinary Institutions

For Teacher Training by Multidisciplinary Colleges and Universities and Converting all Stand-Alone Teacher Education Institutions to Multidisciplinary Institutions by 2030, the NEP 2020 states—

Recognizing that the teachers will require training in high-quality content as well as pedagogy, teacher education will gradually be moved by 2030 into multidisciplinary colleges and universities. As colleges and universities all move towards becoming multidisciplinary, they will also aim to house outstanding education departments that offer B.Ed., M.Ed., and Ph.D. degrees in education (Art. 5.22, p. 23)

The 2-year B.Ed. programmes will also be offered, by the same multidisciplinary institutions offering the 4-year integrated B.Ed. and will be intended only for those who have already obtained Bachelor's Degrees in other specialized subjects. (Art.5. 23, p.23)

Multidisciplinary higher education institutions offering the 4-year in-class integrated B.Ed. programme and having accreditation for ODL may also offer high-quality B.Ed. programmes in blended or ODL mode to students in remote or difficult-to-access locations and also to in-service teachers who are aiming to enhance their qualification, with suitable robust arrangements for mentoring and for the practicum training and student-teaching components of the programme. (Art.5. 23, p.23)

Moreover, all stand-alone TEIs will be required to convert to multidisciplinary institutions by 2030,

since they will have to offer the 4-year integrated teacher preparation programme (Art 15.4, p. 42)

Above statements may need rewording, as "stand -alone teacher education institutions" include teacher training institutions offering Diploma and certificate courses and are affiliated to state school boards / councils or SCERTs. What will be the fate of central government supported Block Institutes of Teacher Education (BITE), District Institutes of Education and Training (DIET), Colleges of Teacher Education (CTE), and Institutes of Advanced Study in Education (IASE)?

Before universities jumped into B.Ed. programmes, the teacher training was provided generally by government standalone teacher training institutions. After seeing the successful profiteering by universities, profit making private organisations joined the trend. This made the central and state governments not to insist on earlier activities of government stand-alone teacher training institutions, as suggested by various commissions. A few of these recommendations given below, if can be implemented now will make the teacher education free from all types of allegations and make the for-profit privatestand-alone teacher educations flee from the teacher training arena and will purify the teacher training system found in central and state government universities**.** Hence, the above-mentioned sentences in NEP–2020 Art 5.22, 5.23 and 15.4 may need appropriate correction.

Regarding Selling of Degrees by Stand-alone Teacher Education Institutions, the policy states—

According to the Justice J.S. Verma Commission (2012) constituted by the Supreme Court, a majority of stand-alone TEIs-over 10,000 in number are not even attempting serious teacher education but are essentially selling degrees for a price. (Art. 15.2, p. 42).

As regards selling of degrees in teacher education, the sale is carried out in collusion with examining bodies, which are mostly agencies of the state and central governments. There is instance of one university that conducted evaluation of B.Ed. examination properly that resulted in huge number of failures and the following year these colleges had to be closed. There may be mass malpractice in theory examinations that examiners may fail to notice. If teacher training is a skill-based programme, the B.Ed. students of institutions having inadequate number of teacher educators will fail. Again, there are many central and state government universities which run B.Ed. courses without appointing adequate number of teachers and their students rarely fail in practical test. Why to blame standalone institutions when government universities are also following similar practices? Hence, above statement may need rewording.

Universalising One Year B.Ed Courses

NEP–2020 has suggested both one year and two-year B.Ed. till 2030. NEP–2020 has not named any national level study that indicate teachers with one-year B.Ed. are less effective than those with 4-year integrated B. Ed. degree. There are one-year teacher training courses for graduates in US and in UK. Stanford University (2020a) states "STEP Elementary is 12-month, full-time program leading to a Master of Arts in Education and a preliminary California Multiple Subject Teaching Credential." Stanford University (2020b) states "STEP Secondary is a 12-month, full-time program leading to a Master of Arts in Education and a preliminary California Single Subject Teaching Credential." Quality wise as per QS 2020 Rankings, the University College London (UCL) is the topmost teacher education institution. Duration of its PGCE Mathematics that enables the certificate holder to teach Mathematics to 11-16-year-old students, is one year. Wikipedia accessed on August 23,2020 stated that "The Postgraduate Diploma in Education (PGDE), also known as a Graduate Diploma of Education (GradDipEd), is a one-year postgraduate course in several countries including Australia, Ghana, New Zealand, Republic of Ireland, Scotland, Hong Kong, Singapore and Zimbabwe for existing bachelor's degree holders leading to become a qualified teacher. It is not known why the nation is spending one more year in having two-year B.Ed. while there is no money to ensure quality elementary education for all by at least having one teacher per class. However, school placement in case of UCL is 120 days out of one year, which is much less in India.

A Few Questions which Need Answers

At the national level, now there are five different types of qualifications found among Professors of

Education working in central and state universities, and in NCERT and NIEPA:

- B.A./B.Sc., M. Ed., and Ph.D. in Education.
- M.A. (Education) and Ph. D. in Education.
- M.A./ M.Sc.; M. Ed. and Ph. D. in Education.
- M.A./ M.Sc.; Ph. D. in Education; and
- M.A./ M.Sc.; Ph. D. in a non-Education Subject

Out of the above, there are four categories of M.A. Education degree holders working as Assistant / Associate Professors and Professors in Education having gone through:

1. School teaching practical in primary schools at +2 and at B.A. stages and in secondary schools at M.A. stage (Odisha State)
2. School teaching practical in primary schools at +2 and at B.A. stages (Odisha State) and no teaching practical at M.A. stage (outside Odisha State)
3. No school teaching practical at +2 and at B.A. stages and at PG stage. (Outside Odisha State)
4. Acquiring B.Ed. degree as a private candidate after completing M.A. (Education) to become eligible for the post of a lecturer in Education as suggested by NCTE.

Although there are professors of education belonging to the above 5 categories, there have been controversies regarding giving equal status to M.A. (Education) and M.Ed. The present scenario indicates six categories of M.Ed. degree holders found based on a minimum number of years higher secondary passed student takes to acquire a M.Ed. degree.

(a) 1yr. B.Ed. + 1 yr. M.Ed. - 2 years after a general degree -7 year after higher secondary

(b) 4 yr. integrated B.A./B.Sc. B.Ed. + 1 yr. M.Ed. - 7 years after higher secondary

(c) 2yr. B.Ed. + 1 yr. M.Ed. - 3 years after a general degree -8 years after higher secondary

(d) 4 yr. integrated B.A./B.Sc. B.Ed. + 2 yr. M.Ed. - 8 years after higher secondary

(e) 3 Yr. integrated B.Ed.& M.Ed. (3 yrs. after a degree) - 8 years after higher secondary

(f) 2yr. B.Ed.+2 yr. M.Ed. (4 years after a general degree)-9 years after higher secondary

A few questions which need to be answered are:

1. Should there be three different scales of pay for M.Ed. degree holders, keeping in view the minimum number of years spent (7 years, 8 years, and 9 years) after higher secondary to acquire a M.Ed. degree?
2. As M.Ed. or M.A. (Education) is the minimum qualification to appear at NET. As the duration of M.Ed. has become two years, to make M.A. (Education) compatible with M.Ed., should minimum qualifications for admission into these two post graduate courses be made same- a degree with or without Education subject?

A Few Strategies that May Need Re-consideration

A Demonstration School Under Control of Each Teacher Training Institution

The Secondary Education Commission 1952-53 stated, —*"The training college should conduct research work, in various important aspects of pedagogy and for this purpose it should have under its control an experimental or demonstration school."* (Mudaliar, 1953, p. 171).

Regional Institutes of Education of NCERT at Ajmer, Bhopal, Bhubaneswar, and Mysore have Demonstration Multipurpose Schools in their campuses.

Teacher Training Institutions to Conduct in service Training Programmes for School Teachers

The Secondary Education Commission 1952-53 states—*The training colleges should, as a normal part of their work, arrange refresher courses, short intensive courses in special subjects, practical training in workshop and professional conferences.* (Mudaliar, 1953, p. 171).

Conducting in service training programmes for school teachers is part of Institutes of Advanced Study in Education and Colleges of Teacher Education for secondary school teacher training and District Institutes of Education and Training for elementary school teacher training of the state governments and universities financially supported by the Central government. Pitroda (2009, p.54) pointed out necessity for a mechanism for interaction between teachers and teacher training institutes**.** One of these mechanisms

may be having an extension services unit / department in each teacher training institution.

The Education Commission 1964-66 recommend Breaking the Isolation from Schools.

Breaking the Isolation from Schools

To break down the isolation from schools, every training institution should be required to guide neighbourhood schools and their staff in planning their work and in using improved methods of teaching. Such extension work is needed as much for the improvement of schools as for the improvement of the training programme itself. We, therefore, recommend that an extension department should be established in each training institution-pre-primary, primary or secondary-and should be regarded as an essential part of the programme and the responsibility of the training institution. All members of the staff should participate in it, and it should not be left to the coordinator only. Excellent pioneer work has been done by the Department of Extension Programmes for Secondary Education of the NCERT by providing extension services in nearly 50 per cent of teacher-training institutions at the secondary level." (Kothari 1966, p.116)

Mohanty (1981) reported the function of 108 extension departments attached to secondary teacher training colleges and 45 extension centres attached to primary teacher training institutions. The present deterioration in quality of teacher training could have been avoided if the nation could have ensured functioning of extension departments in its approved teacher training institutions and in departments of education in central government universities, state government universities and private universities and departments of education in state government and private general colleges offering - pre-primary, primary and secondary initial teacher training courses. Future modification of the policy, if any, may consider this important strategy.

No Tuition Fee for Teacher Training Courses

The Secondary Education Commission 1952-53 states— *"No fees should be charged in training colleges, while during the period of training all the student-teachers should be given suitable stipend by the State; the teachers who are already in service should be given the same salary which they were getting."* (Mudaliar, 1953, p. 171).

During 1965-66, when the author was a B.Ed. student all the students either got scholarship from the college or salary from the institution from which they had been deputed. Future modification of policy may consider this strategy that will make for-profit private stand-alone teacher training institutions and private universities and state universities and open universities and open schools offering self-financed initial teacher training courses voluntarily leave teacher training area and try their luck in other enterprises.

School Teaching Experience of Faculty of Teacher Training Institutions

Seventy years ago, the University Education Commission 1948-49 states—*"But bulk of the staff including emphatically the Lecturers in Education and in Methods must be able to speak from first-hand experiences of school teaching if they are to command the respect of their students, and to have any chance of convincing them that they are entering a noble career. It should be a condition of recognition that all training departments and training colleges that not less than a named proportion of the staff should have school teaching experience; and the named proportion should be high; at least 50 per cent"* (Radhakrishnan, 1949, p. 143).

School Teaching Experience for M.Ed. Students

The Secondary Education Commission 1952-53 states— *"For the Master's Degree in Education only trained graduates who have normally done a minimum of three years' teaching should be admitted.* "(Mudaliar, 1953, p. 171

Free Exchange between Professors in Training Colleges, select Headmasters of Schools, and Inspecting Officers

The Secondary Education Commission 1952-53 states—*"There should be a free exchange between professors In Training Colleges, selected Headmasters of Schools and Inspecting Officers."* (Mudaliar, 1953, p. 171)

Faculty of Training Institutions for Secondary Teachers

"In our opinion, the staff of these institutions should have a double Master's degree, in an academic subject and in education, and a fair proportion (say, 10 per cent) should also have a doctorate. They

should also have studied teacher education as a special subject at the M.Ed. or through a special education course. Salary scales should be the same as for lecturers, readers and professors in arts and science colleges; but two advance increments should be given in recognition of the professional training received" (Kothari 1966, Art. 4.41, p. 127).

This recommendation was implemented in certain states and universities but without two advance increments in the UGC recommended salary scale. UGC also continues with M.Ed. / M.A. (Education) as the required qualification in NET for Lecturer/ assistant professor in Education. Many states have gone for minimum qualification for an assistant professor in Education as a M.Ed. and MA/M.Sc. in a school subject, without going for two advance increments

Awareness about Strategies in Teacher Training Institutions in the Neighbourhood

The Education Policy 1913 of the Government of India (Under British Rule) states—*"Visits made by selected members of the staff of one college to the other institutions and the pursuit of furlough studies would seem especially likely to lead to useful results in this branch of education* (Superintendent "(Government Printing India 1913, pp. 38-39).

Minimum Number of Working Days in One Year B.Ed. Courses

One year B.Ed. course for aspirants having a post graduatedegree or a four-year degree has been mentioned in NEP 2020 (Art. 5.23, p. 23 & Art. 15.5, p.43). Various recommendations by a few Commissions on minimum number of working days for one year B.Ed. course are as follows:

The Education Commission 1964-66 states—"*At the secondary stage, where the duration of the course is only one year, it has been suggested that it should be increased to two years, to do justice to the existing heavy courses and to incorporate the proposed subject- matter courses. From a financial and practical point of view this does not seem feasible. However, it is possible to make better use of the existing duration by extending the working days in the academic year from the existing level of 180-190 days to 230 days. Academic years of such lengths have been adopted in some secondary training institutions with very good results; and we recommend that the reform should be extended to all institutions without delay."* (Kothari 1966, Art.4.15, p. 120)

National Commission on Teachers I (1983-85) states—"*We are of the view that the two summer months may be added to the academic year ensuring a working year of at least 220 days. An increase in working hours per day may also be considered."* (Chattopadhyaya, 1985, p. 49).

National Advisory Committee Appointed by the Ministry of Human Resources and Development) states— "*The duration of the programme should either be one year after graduation or three-four years after higher secondary".* (Yash Pal 1993, p. 26).

Duration of Integrated Course for Initial Teacher Training after +2, for Secondary School Teaching

National Commission on Teachers I (1983-85) states— *"If teacher education is to be made relevant to the roles and responsibilities of the New Teacher, the minimum length of training for a secondary teacher, in our judgement, should be five years following the completion of class 12.* (Chattopadhyaya, 1985, p. 48).

National Advisory Committee Appointed by the Ministry of Human Resources and Development) states— *"The duration of the programme should either be one year after graduation or three-four years after higher secondary*". (Yash Pal 1993, p. 26).

Induction at School Level for Beginning Teachers

Many advanced nations provide induction programmes to the trained teachers before they are to work as full teachers. European Commission (2010, p. 13) described the importance of induction programme as :*"Induction programmes bridge the gap between initial teacher education and continuous professional development. Within the continuum of lifelong learning, induction programmes form the linking pin between initial and in-service teacher education. In the first years of teaching, teachers experience the effectiveness and quality of their initial training and assess the extent to which teacher education prepared them for the realities of the teaching profession."*

UNESCO (2010. p. 20) states—*"Induction into teaching is the missing link between initial teacher education and continuous professional development in most countries." Effective induction programme is carried out through an appropriate mentoring system*

that identifies teachers who can act as mentors and then trains them for the purpose.

European Commission (2010, p. 16) states— *"Mentoring in an induction programme is understood as an experienced teacher being given responsibility for helping the beginning teacher, providing support on the personal/ emotional level, the social level (introducing someone to the organisation and norms of the school) and the professional level. The focus of the mentoring system must be to stimulate professional learning by using a variety of approaches, e.g., coaching, training, discussion, counselling, etc."*

After initial teacher training programme for graduates (Postgraduate certificate/ Diploma in Education) in UK is for one-year duration, there is provision for induction programme for about one year for beginning teachers. In OECD countries, duration of induction programmes varies from seven months (Republic of Korea) to nearly two years in Canada (Quebec), Switzerland and US.

School-Based Initial Teacher Training

At the end of the last century, governments of the United States and the United Kingdom has given authority to selected school systems to select individuals considered by them suitable for a teaching job and train them on the job with or without any support from faculty of university-level teacher training institutions or departments (US: Office of Assessment, Research, and Data Analysis 2012; The Open University, UK 2013). Knowledge Commission (2006-09), while suggesting starting of teaching of English language from Class I stated that *"In order to meet the requirement for a large pool of English language teachers, graduates with high proficiency in English and good communication skills should be inducted without formal teacher training qualifications"* (Pitroda 2008, p. 48, 2009, p.28).

Instituting New Teacher Training Courses

As NEP–2020 has come out with four stages in school education- Foundation 5 years, Preparatory 3 years, Middle 3 years, and Secondary 4 years, should the future modification of policy suggest four different courses for four different stages of education?

As the nation has introduced eligibility test for schoolteachers, in the present era of proliferation of self-learning opportunities from internet, video recordings of classroom teaching, etc.,

(a) should the nation consider it appropriate to allow any one with or without any teacher training to appear at this test and if found fit allowed to become a teacher?

(b) Should untrained faculty members of junior colleges, taking +2 classes be allowed to appear at B.Ed. examinations as private candidates?

(c) Should a graduate with Education at a subject at degree stage, be allowed to appear at B.Ed. examinations as private candidates?

(d) Should a graduate with Diploma in Elementary Education or Pre-school Education, be allowed to appear at B.Ed. examinations as private candidates?

Allowing any Degree holder to appear at Teacher Eligibility Tests

As the nation has introduced eligibility test for schoolteachers, in the present era of proliferation of self-learning opportunities from internet, video recordings of classroom teaching, etc., it may be appropriate to allow any one with or without any teacher training to appear at this test and if found fit allowed to become a teacher. It may be noted that governments of the United States (Office of Assessment, Research, and Data Analysis, US 2012), and the United Kingdom (The Open University, UK2013), towards the end of the twentieth century, have allowed selected schools to appoint individuals without any teacher training qualification as teachers.

Including Activities for Spiritual Development in Initial Teacher Training Curricula

True Indian culture is based on spirituality (Mohanty 2012). Pointing out importance of spirituality in eastern world, White & Janowiak (2012, p. 14) stated that "Among the Eastern philosophical tenets, the ideal of education includes moral and spiritual values within the formal curriculum, without whose appreciation no student can approach feelings of great happiness, especially of a spiritual nature." Spiritual development of school students covered under school inspection in UK. Ofsted, UK (2018, p.40) states —

"The spiritual development of pupils is shown by their:

- ability to be reflective about their own beliefs, religious or otherwise, that inform their perspective on life and their interest in and respect for different people's faiths, feelings, and values
- sense of enjoyment and fascination in learning about themselves, others, and the world around them
- use of imagination and creativity in their learning
- willingness to reflect on their experiences."

Citing instances of spiritual development activities in a few foreign countries, Mohanty (2021, pp.156-158) pointed out need for spiritual development of students in higher education. At the school level, teachers play a vital role in spiritual grooming of students. Hence, schoolteacher training programmes need to cover spirituality (Mohanty (2019). Such an attempt will contribute to the wish of the NEP 2020 about value-based education and global citizenship education (MHRD 2020, p. 37, Art. 11.9). Such an attempt is noticed in a few standalone teacher training institutions, but not in university teacher training institutions and departments of education. It is time nation introduce this aspect of teacher training curricula more emphatically, which can build sincerity in teacher trainees.

Introducing periodic teacher licensing system to accelerate self-learning in teachers and school leaders for continuous professional development

Teacher licensing system is found in a number of developed countries (Mohanty 2017). OECD (2018, p. 47), analysing findings of Programme for International Student Assessment 2018 stated that "While teacher certification, credentials and licenses offer no guarantee of excellence in teaching, they may help ensure that only the most motivated candidates progress in their career." Preliminary licensing to teach and renewal of licensing is a regular process (National Research Council, US 2001; Teachers Registration Board of South Australia 2021;US Minnesota Professional Educator Licensing and Standard Board 2020).Provisional licensing and introduction of licensing for a few years to be renewed after giving adequate proof may be another mechanism for self- regulated learning of teachers and development of their initiative for continuous updating of their knowledge and skills, even without any support from school where they work or of appropriate in-service education provider agency of the government.

Engaging Faculty Members of Teacher Education Institutions as Academic Supervisors of School Teachers

There are State Government institutions, where a faculty member teaches for less than three hours a week. This is the worst kind of wastage of human resources. The teacher education institutions having only B. Ed. courses, on many occasions, are unable to provide any work to most of their faculty members, when admissions are delayed. The author remembers, during the first year of his service as lecturer in a government training college, admission process was delayed due to delay in declaration of government policy for admission. The teachers including the principal spent time in playing cards. Again, in teacher training institutions there are art teachers, music teachers, physical education teachers etc. who do not have enough work load. Their engagement is school activities will boost their expertise. Besides, they may be involved in training of regular school teachers in their field of expertise. If the teacher educators can be declared as honorary academic supervisors of school teachers indicating their areas, the heads of the teacher institution should engage the fewer hours working faculty members in observation and giving feedback of school teaching or in preparation of teacher support materials. Faculty Members can observe lessons of school teachers and can finalise their findings after discussion with concerned teacher. Later, they can convey the findings to the concerned regular supervisors and heads of schools.

A few years ago, a private teacher training institution was taken over by the state government of Odisha. One of the teachers was found extra as per the state government workload. The author while working as a principal of this college, deputed the surplus teacher to observe the classes of schoolteachers and give feedback to them and report his findings to the school and of course to the college as a proof of his duty. In another taken over college the surplus teacher was deputed for adult literacy

work. Free exchange between school headmasters and school inspectors and faculty of teacher training institute were mooted by the Secondary Education Commission 1952-53 (Mudaliar, 1953, p. 171). When the author was a student of M.Ed. Class, the headmaster of the attached school used to take classes in the college. Before introduction of UGC scale of pay for training college teachers, in Odisha state Assistant Inspector of schools and lecturer in education was a transferable job. In Korea, which is one of the top achievers in PISA test of 2018, School principals and professors are transferable. Hence, the nation may consider making modifications in university and government regulations concerning duties of faculty members of teacher training institutions tomake school teaching as part of duty and allow deputation of teachers in teacher education institutions and in university departments of education to work in schools with their original salary package that can boost quality of schools and teacher training programmes.

There are many teacher educators in universities and colleges without any school teaching experience. In earlier days, the faculty members used to have not only prior school teaching experience for enabling them to act as teacher educator, but also, they had continued school teaching experience. In case of faculty members who do not have recent school teaching experience, the demonstration lessons become stereo-typed and ritualistic. Their engagement in school teaching and in supervising school teachers will make them go for self -directed learning of teaching techniques to enable them get due acknowledgement not only from schools, but also from their own students (teacher trainees).

Conclusion

Quality and quantity of school education depends on quantity and quality of human and material resources available in a nation. Much variation in the resources leads to variations in number of beneficiaries and quality of education being received by them. International agencies such as UNESCO, UNICEF, and World Bank have been highlighting these types of situations as academic exercise, which rarely results in transfer of funds from rich countries to poor ones. Illiteracy and poverty do not stop poor countries in producing a greater number of children than found in rich countries. Whatever financial aid poor countries get for at least compulsory school education by the government isneutralised by the steady rise in number of children to receive education. The situation is aggravated by many poor countries having fighting with neighbouring countries that makes them again spend money in purchasing arms and ammunition from the same rich countries, which donate funds for education. Thus, unless, the world becomes one, the rich poor diplomacy will continue to maintain the gap between school education situation in rich and poor nations.

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Education Practice and Research in Astrophysics: A Study of Ph.D. Researches Conducted in Indian Universities

Shiv Singh*, Neha Munjal and Agnibha Das Majumdar*****

The Ph.D. theses are building blocks for the growth of the subject in any field of knowledge. The analysis of the research studies conducted in the any field is very important for researchers, policy makers, etc., to have an overview of the areas which are neglected or over-conducted. Presently, we are equipped with tools and technologies for conducting research studies easily as this is an epoch of science, technology and information, where, we can get all the information about the things surrounding us very easily. But, in primeval period, gathering information used to be a herculean task. However, the people who are curious about knowing facts used to quench their curiosity by undertaking all the tedious work required. One field which developed through such efforts is Astrophysics. A specialised subject area called Astrophysics was developed involving all the facts and figures which were collected about the space by those who had curiosity about knowing the space. The present paper deals with researches in this most basic field of science i.e. "Astrophysics". There are about 1401 and 328 research articles from Indian researchers in Scopus and Web of Science respectively in the field of Astrophysics. Ph.D. theses are the building blocks for any discipline. Looking to the importance of the field, a significant effort has been made in this paper to reconnoitre the Online Union Catalogue of Indian Universities (Indcat) for collecting all the theses related to Astrophysics and analysing those using Scientometrics tools which focus on the quantitative features and characteristics of science and scientific research. Thus, the Indcat Thesis Database has been explored to analyse the growth of the 'Astrophysics' in India. This catalogue contains 4,36,967 unique Ph.D theses records of 317 universities. The data was analysed by tabulating decade-wise, university-wise, state-wise, supervisor-wise, department-wise, topic-wise, keywords-wise, subject-wise data. Additionally, collaboration and keywords co-occurrence networks were generated using VOS software.

** Assistant Librarian, Bennett University, Plot Nos 8-11, TechZone II, Greater Noida-201310(Uttar Pradesh)*

*** Assistant Professor, Department of Physics, Lovely Professional University, Jalandhar-Delhi G T Road (NH-1), Phagwara 144 411 (Punjab). E-mail: nehamunjalphy@gmail.com*

****Research Scholar, Department of Physics, Lovely Professional University, Jalandhar-Delhi G T Road (NH-1), Phagwara-144 411 (Punjab)*

Data Interpretation

From 1943 to 2015, there were 789 theses consisting the keyword 'Astrophysics', out of these maximum studies were conducted in 1976-1985 and growth rate were observed 10.88%. This shows that Astrophysics as keyword became popular among the scholars over this period of time where initially only a few researches have been done in this area but after 1975 a continuous growth had been observed in this area. But after 2006, the growth rate is again declining which is pointing towards some challenges in this area. The decade-wise growth of the theses related to Astrophysics has been presented in Figure 1 and the trends of cumulative frequency of research articles has been presented in Figure-2.

Table-1 depicts the names of top universities along with the state, number and the percentage of the theses. Top universities that contributed to the domain of Astrophysics were University of Delhi. University of Calcutta, Dr Bhimrao Ambedkar University got 2nd and 3rd rank with contribution of 14 and 9 respectively.

State-wise distribution is reflected in Figure 3, which resembles the Dirac delta function. It clearly indicates that the majority contributions were from 'New Delhi' i.e. 86.95% followed by 'West Bengal' with contributions 2.15% and 'Uttar Pradesh' with contributions 1.90 %. On the contrary to this, states other states have not contributed much in conducting studies in the areas of Astrophysics. Therefore, it is suggested to observe and enhance the facilities in the above-mentioned states.

Figure 4 shows that the top two supervisors Prof P C Mathur and Prof . Abhaiman Singh, are

Figure 1: Decade-wise Growth of Astrophysics Ph.Ds

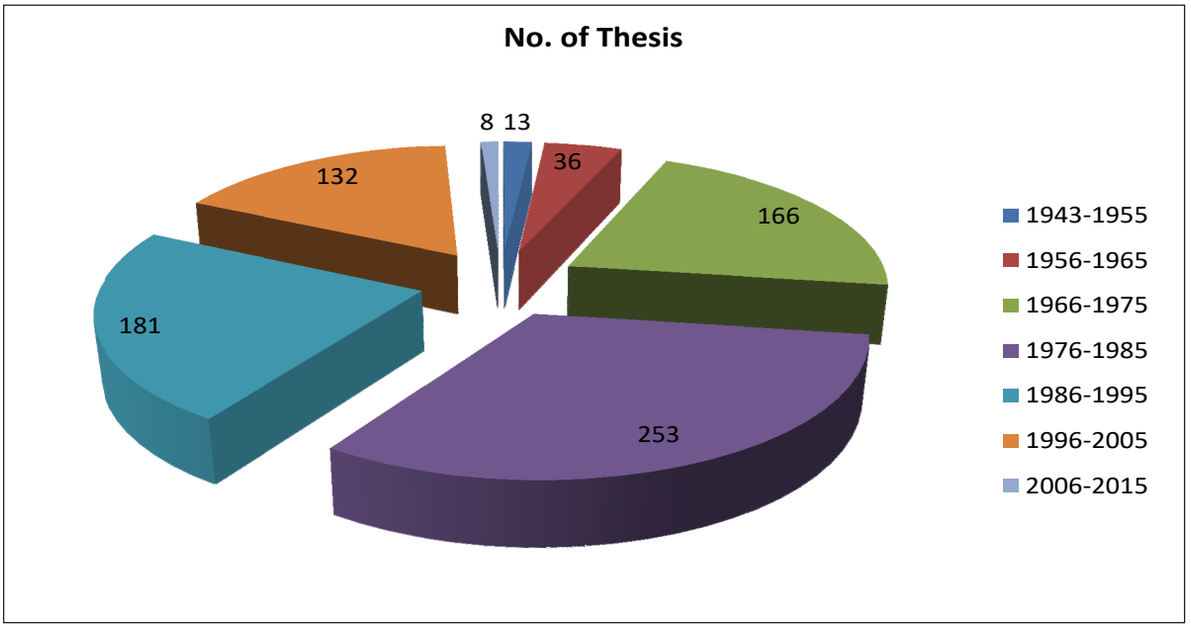


Figure 2: Cumulative Decade-wise Frequency of Astrophysics Theses

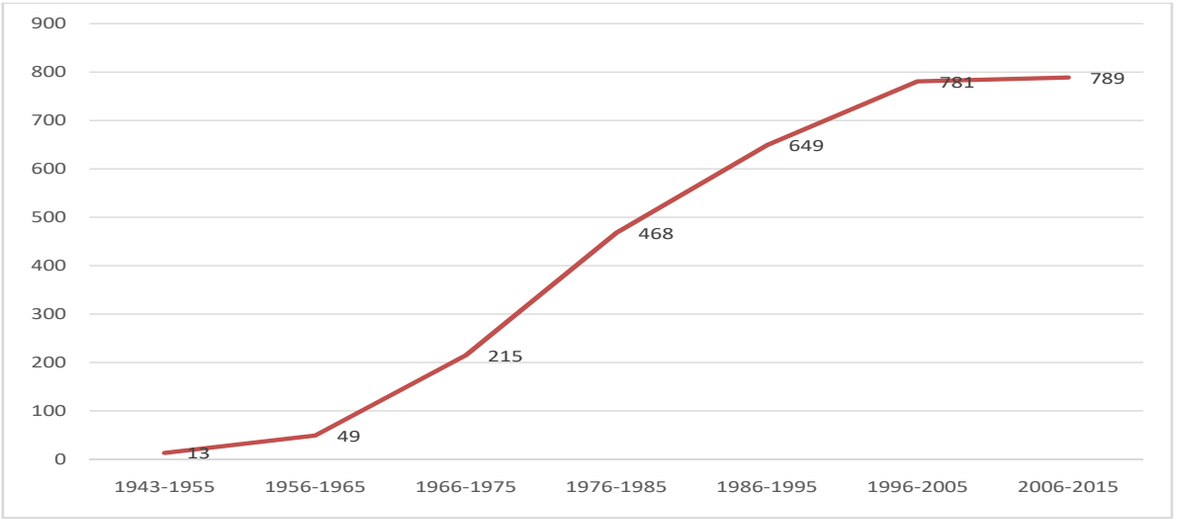


Table 1: Rank List of Highly Productive Universities

Rank	Name of University	City	Frequency	%	Cumulative %
1	University of Delhi	Delhi	685	86.82	86.82
2	University of Calcutta	Kolkata	14	1.77	88.59
3	Dr Bhimrao Ambedkar University	Agra	9	1.14	89.73
4	Gujarat University	Ahmedabad	7	0.89	90.62
4	University of Mumbai	Mumbai	7	0.89	91.51
5	University of Madras	Chennai	6	0.76	92.27

Figure 3: Geographical Distribution of Contributed Universities

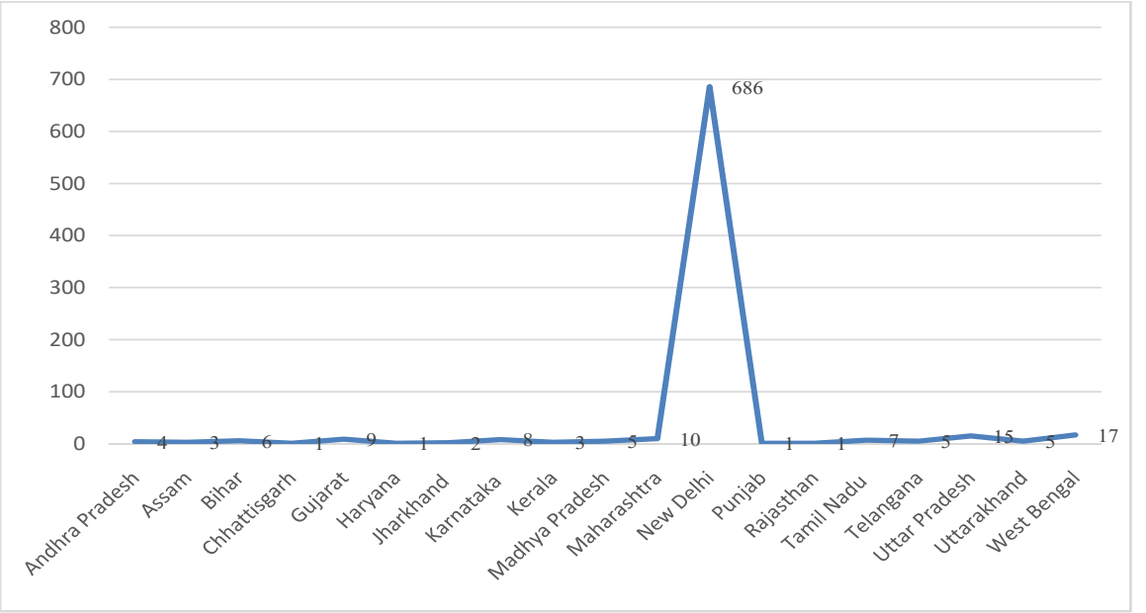
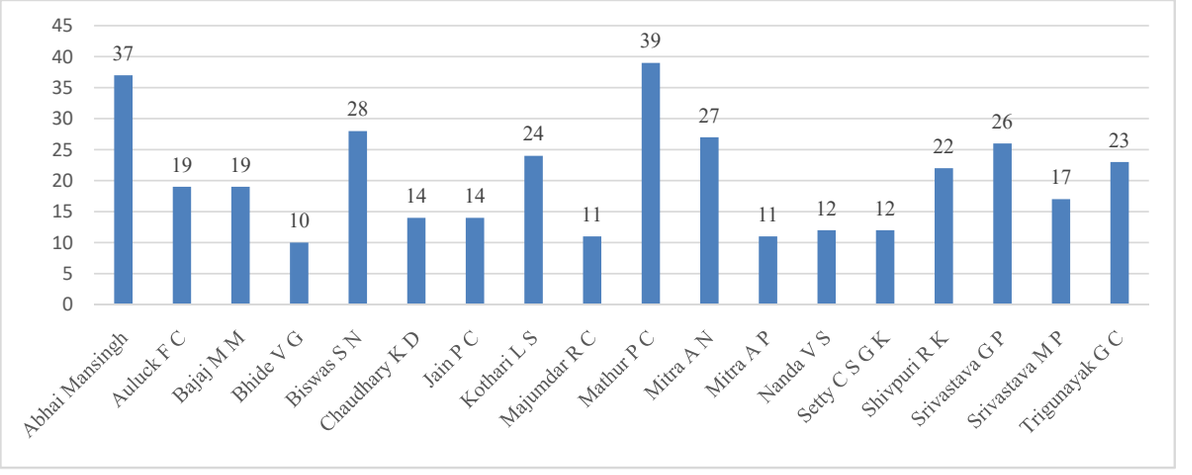


Figure 4: Highly Productive Supervisors



affiliated from University of Delhi. Prof. Mathur has guided 39 theses. The supervisor at the second rank, Prof. Abhaiman Singh has supervised 37 theses. It is specially noticed that the top ranked 15 supervisors of Astrophysics are affiliated from University of Delhi only.

Table 2 provides the departments working in the areas of Astrophysics. The top five disciplines are Physics and Astrophysics, Physics, Astrophysics, Mathematics, Astronomy with 635, 103 and 23, 10 and 5 contributions respectively. The growth trend of top three departments is presented in Figure 5.

In terms of popular keywords in the field of Astrophysics, in total 1790 keywords were presented. These keywords signify the zone where Astrophysics is revolving. The top keywords are Physics and Astrophysics, Astrophysics, Physics, Astronomy, Descriptive Astronomy, States of matter, Thin Films, which are cited more than 24 times. Figure 6 gives the co-occurrence of the 41 keywords which have occurred more than 5 times. The visualization shows a good diversity of terms, used in the Astrophysics, the terms most frequently used are 'Physics and Astrophysics'. This is interlinked with all the fundamental terminology

Figure 5: Decade-wise Growth of Top Three Departments

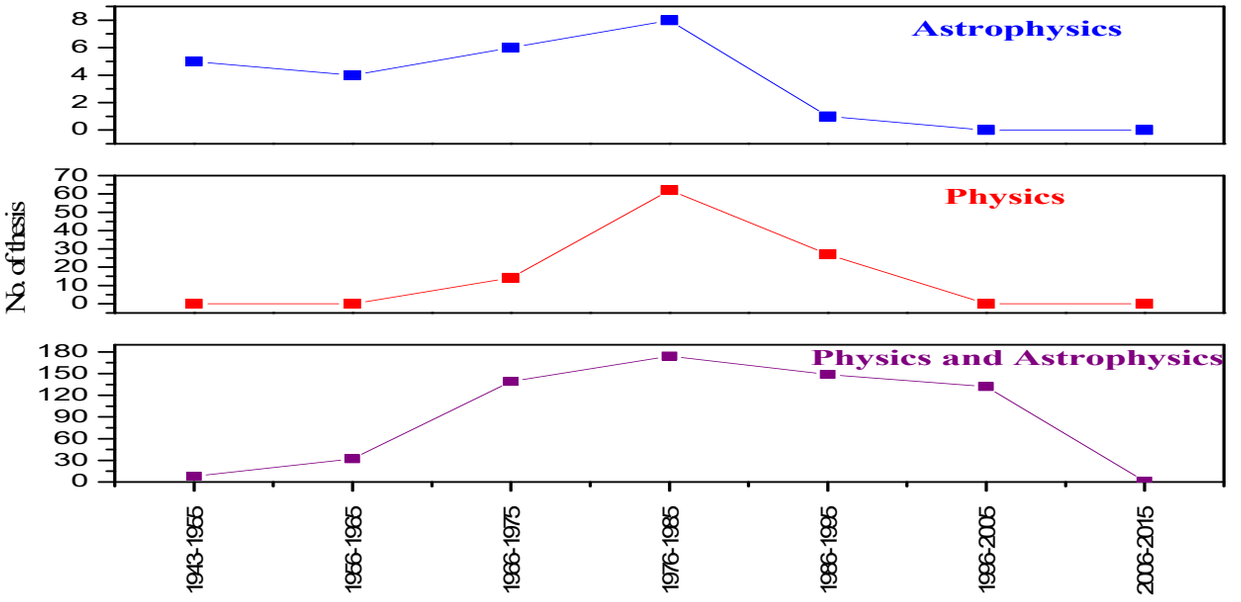


Figure 6: Co-occurrence of Keywords Minimum Threshold 5 and 41 Links

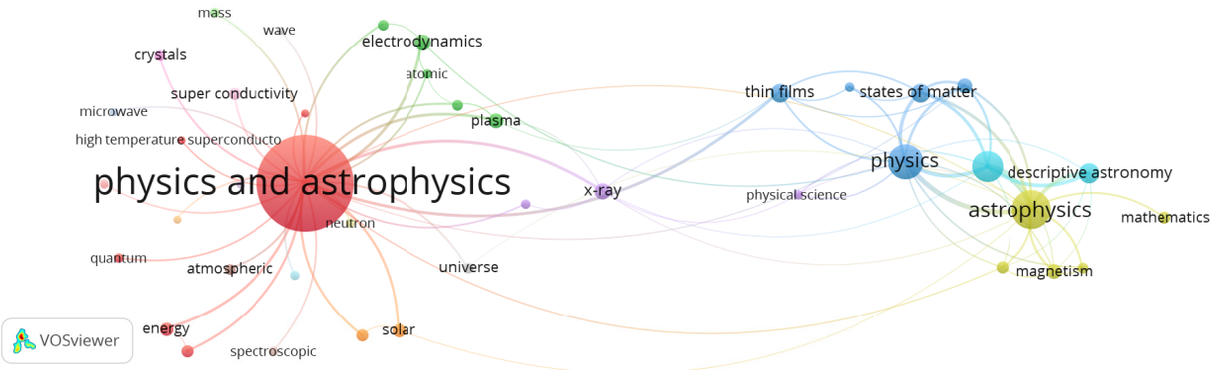


Table 2: Department-wise Contribution to Astrophysics Research

Rank	Name of the Department	Frequency	Percentage
1	Physics and Astrophysics	635	80.48
2	Physics	103	13.05
3	Astrophysics	23	2.92
4	Mathematics	10	1.27
5	Astronomy	5	0.63
6	Indian Centre for Space Physics	3	0.38
6	Geophysics	3	0.38
7	S.N. Bose National Centre for Basic Sciences	2	0.25
8	Inter-University Centre for Astronomy & Astrophysics	1	0.13
8	Solar Energy Engineering	1	0.13
8	Space Physics	1	0.13
8	Indian Institute of Astrophysics	1	0.13
8	Astronomy & Astrophysics Division	1	0.13

of Physics and Astrophysics like Electrodynamics, Plasma, Quantum, Energy, Atmospheric, Solar etc. The keyword Astrophysics is related to Mathematics also clearly indicate the interdisciplinary nature of the field. In addition, the closeness of the terms, indicate that these terms co-occur quite frequently.

Conclusion

This study presents a Scientrometric overview of the leading trends of Indian theses in Astrophysics. It is an imperative area for research and have more scope for development. As we have observed that there are many states like New Delhi, West Bengal, Uttar Pradesh where a significant work has been done in this area but still there are some places where there is a lot of scope of conducting studies in this particular area. It has also been noted that the number of researches, conducted in the areas of Astrophysics, is reducing day by day whereas different policies at national and international level continuously highlight that there is a need of astrophysicists. Therefore, it has been suggested that India needs to enrich Astrophysics education and promote more researchers to conduct researches in this area and to focus on innovation instead of only fundamental principles. Overall, "the culture of astronomy teaching must grow in India," for the scientific development of our country. Research in Astrophysics requires a broad foundation of knowledge in fundamental physics. It is linked to heterogeneous sub branches. On the basis of the present study, it can be said that there is need of Astrophysics.

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Virtual Internship Programme for Teacher Trainees

Kiran Lata Dangwal*

The education system right from the planning stage to the execution stage is highly devoted and focussed to meet the needs of the society. Prime objective of providing education and training to the students at all levels is to groom them in such a manner that they meet the requisite standards in the field of education ultimately aimed at nation-building and sustainable development. The teachers play an important role by shouldering the responsibility of teaching to promote the most effective learning with positive intent in mind. In order to reach this level, teachers are required to undergo very tough, rigorous, and successful specialized training, so that they can execute the same in an efficient and effective manner.

The profession of teaching is exciting, gratifying and highly rewarding but at the same time it is highly demanding as the teachers have to teach and train the students to make them productive and balanced individuals. For this, the teachers need to have know-how of pedagogy, methodology and psychology of teaching-learning. Thus, the teachers training institutions not only impart theoretical knowledge but also practical skills needed for teaching different subjects to prospective teachers. Teaching internship is carried out for practical application of theoretical understanding about different teaching methods for becoming a good teacher. It is generally of one-to-four-monthduration. The Teaching methodology involves the transfer of knowledge, skills, and attitudes from one person to another, that is from teachers to learners therefore, it is obligatory on the part of a teacher to first acquire, learn and possess the same and transfer to learners.

Teacher Training Programmes

It is said that becoming merely a teacher is easy but making a good, effective and skilled teacher takes a lot of effort, hard work and training. Teacher training programmes therefore, play a very important role in enhancing the skill, confidence and competence level of teachers. For this, internship for a trainee teacher aimed towards preparing the new raw pupil intern teacher into a skilled teaching professional is essential since it is a culmination step towards making a teacher. During internship, the trainee teachers get opportunity to practice and sharpen their skills.

Concept and Need of Internship

Internship is an important component of teacher training by which the pupil teacher can learn, develop and secure their future teaching by acquiring proficiency. Internship in teaching includes practice–teaching and a wide variety of school experience under the guidance of a competent or expert supervisor. A pupil teacher undertakes teaching duties under the supervision of the teacher and a lot depends on the attitude, values and beliefs of the supervising teacher. The internship is very essential for today's teacher because it gives proper and organised training to the pupil-teacher for better understanding of the method of teaching to be adopted and also the understanding of all the students and other school activities. The exercise acquaints these pupil teachers with the practical knowledge and know-how of teaching and learning process including preparation of lesson plans, classroom management, the presentation, the communication skills, evaluation and acquiring desired personality trait of professional teachers under guided supervision. The school serves as the experience laboratory for the supervisor and pupil teacher both. The cooperating school and the cooperating teachers come in contact with teacher education experts from the participating college or university and this way the teachers of such Schools are thereby provided with the added opportunity to develop and improve their own supervising skills as well.

The interns through the training learn and share all the significant experiences going on in the total school environment and develop meaningful skills and attitudes towards the teaching profession by improving knowledge. The internship is also a very essential element for today's teachers

* *Assistant Professor, Department of Education University of Lucknow, Lucknow. Email : Kldangwal@yahoo.co.in*

for overall understanding of different aspects involved in teaching process. A trained teacher can essentially face the class with confidence without any hesitation. It helps the pupil teachers to build upon their existing skills to become autonomous, reflective, and collaborative. It is a platform which provides different opportunities to the interns for consolidation of links between theory and practice which is necessary before entering into the teaching profession.

The main objective of an internship programme is to achieve a desirable change in the behavior of a pupil teacher. Internship helps to modify knowledge and skills i.e. what students know and how they will work. We may therefore, say that internship is an act of imparting, improving, updating and enhancing the knowledge and skills of a pupil teacher which they learn in the form of theory. Internship leads to the intern's individual development through challenging occupational coursework. It would help them to choose, design, organize and conduct meaningful classroom activities.

Phases of Teaching Internships

A school internship is a compulsory component of a teacher training programme so the record of it has to be maintained in a Reflective Teacher's Diaryon daily basis. Different phases of internship teaching are presented here.

Pre-internship Activities

An intern trainee teacher is required to maintain certain documents for recording all the school activities. This involves the observation of the regular teachers of the school by the pupil teacher. It is an understanding of the regular teaching, school's organizational structure and its rules and regulations, the syllabus and textbooks, lesson plans, and all other related activities.

During the School Internship

The pupil teacher needs to participate actively in the co-curricular and extracurricular activities like sports events, cultural programs, celebrating National Days etc. Supervisors and regular teachers observe pupil teachers about how they are handling the situations in the classroom and outside the classroom. This practice teaching provides pupil teachers to experience new strategies and improved methods and materials used for conduct of effective teaching. Pupil teachers develop conventional and digital learning resources for practice teaching.

Appraisal of the School Internship

During internship at the school, the pupil teacher is always under supervision. A detailed evaluation for the school internship is done, including preparing the lesson plans, conducting the class, organizing various activities, etc. Pupil teachers are also assessed for personal traits, such as commitment, dedication, sincerity, the attitude of honesty and discipline towards the teaching profession.

Changing Scenario: Teaching Internship through Virtual Environment

As we all know during COVID-19 situation all schools, colleges, universities and all other educational institutions are closed for indefinite time. In such a situation which may arise in future too, the pupil teachers are not able to have school internship where they acquire first-hand experience in teaching students and observing other school activities. The pupil teachers therefor, are deprived and disappointed as they are not getting opportunities and are not able to gain an experience of real school situation.

Now, the question is how it should be implemented in the curriculum. The only viable option is to have virtual internships. It can easily be included and practiced during long vacations of school for instilling techno-pedagogical skills among pupil teachers. This inclusion will be helpful for pupil teachers to complete compulsory internships despite the restrictions.

Virtual internship, also called as remote or e-internship, allows pupil teachers to undergo all the essential components of internship through online media the the pupils are geographically dispersed. Pupil-teacher execute teaching as an experience from home in the virtual environment. During the internship, students communicate with assigned school administration through a range of digital resources, including Skype, Microsoft Teams, email, webinars, etc, who are otherwise not able to complete a traditional face-to-face internship. The pupil teachers must learn and must be thorough in

imparting knowledge through digital mode and therefore, concept of virtual internship is suitable for pupil teachers at all stages and can even be supported individually by mentors of the school.

Advantages of Virtual Internships

There is a larger flexibility in virtual internships. The inherent advantages of virtual internship are:-

- ***Save Money and Time***: This is quite economical and one can work from anywhere in the world. The time and money on peripheral activities is saved.
- ***Enhance 21st Century Skills****:* It is the need of 21st century and will enhance the abilities and capabilities of pupil teachers towards excellence.
- **Broaden Cross-Cultural and Global Perspectives**: The horizon of learning widens due to availability of a broader network with people joining from all over the world.

Drawbacks of Virtual Internships

There are a few drawbacks to virtual internships and it depends on several factors:

- Virtually communicating and tracking interns is a difficult task.
- Self-discipline and self-motivation are an essential part of virtual training.
- Establishing set working hours and strictly adhering to the laid out timings is difficult.
- Although, the teaching experience can be gained but not at par with the real experience of teaching in a school environment.

Prerequisites for Virtual Internship

For Virtual internship to be successful, there are certain prerequisites which can also be called Digital Readiness. Digital Readiness encompasses the digital skills that people need to take advantage of technology in useful, meaningful, and innovative ways. Though digital readiness is broad and ambiguous, there are concrete digital skills that are foundational to this concept. Some are presented here.

Skills for Digital Internship

All pupil teachers are required to have certain technological competencies before beginning digital internship, which are discussed here.

Fundamental Computer Operation & Application

Pupil teachers should be aware of common technology devices with proficiency, select appropriate tools for given tasks, and apply the technology throughout the learning process. They should be able to create folders/directories, find and save files, use web browser, bookmark web pages for future reference. They should be able to play audio and video files, work in word processing, spreadsheet, presentation software and applications. Pupil teachers should be able to use digital tools to collect, organize, process, analyze, and visualize real-world data.

Technological Inquiry & Innovation

Pupil teachers need to develop skills and knowledge specific to Web-based educational systems and should be able to demonstrate proficiency in accessibility requirements for technology in the classroom and online instruction. They should have the ability to evaluate Internet resources, understanding aspects of copyright privileges and violations, designing and implementing appropriate lesson plans for students and ability to troubleshoot minor technical issues.

Use of Digital Tools for Problem Solving & Critical Thinking

Pupil teachers should be sensible to leverage technology in the problem-solving process and model computational thinking to uncover, apply, and scale solutions though digital tools. They should be able to wield technology resources for problem solving, critical thinking, and informed decision making.

Online Communication and Collaboration

An online learning environment requires clear, concise instruction; therefore pupil teachers need to develop stronger written communication skills. Skills for using graphics, videos and digital audio files for communication with students are essential. Conversations with students and parents today rely more heavily on texting, email and voice-messaging. Rather than meeting in-person for parent-teacher conferences and student tutoring activities, online teachers often use a webcam setup. Some students may experience difficulties retaining information learned through an online course. An effective online educator must have sufficient skills to develop an engaging course curriculum that motivates and

encourages students to participate fully. Pupil teachers should be aware of developing the learning networks to communicate information in a variety of online formats, curate and synthesize resources, and collaborate with others using digital mediums. Pupil teacher should be able to recognize the ethical and legal implications of plagiarism of copyrighted materials.

Time Management Skills

Time management is very important in an online learning environment than in a traditional classroom. Information on the Internet changes frequently. Teachers must be able to evaluate information and update course materials as necessary to ensure students have timely, relevant information. Timely classes, timely evaluation and feedback and all related academic activities means a lot.

Online Assessment and Evaluation Skills

It is important to understand the methods of online evaluation procedure accurately for monitoring of performance. It should involve everything right from the method adopted for teaching, reviewing discussion posts and grading the assignments. This method of assessment will affect the overall performance. It is necessary for digital education environment.

Basic Features and Considerations for Virtual Internship

The virtual internships instil techno-pedagogical skills among student-teachers to gain their own expertise for imparting education by use of online technology. The fundamental aspects which are considered vital at the time of school internship are highlighted here in the perspective of virtual internship: -

Allotment of School for Virtual Internship

The Teacher Education Institution (TEI) needs to tie up with any school for encouraging this type of innovative teaching-learning. Virtual internships can be planned at the time of emergencies and situations such as COVID-19 Pandemic in which the cooperation of guardians for ensuring their children to attend and learn is also important as we all know how the complete education curriculum has been disturbed and stalled.

Well-designed Structure for Learning:

Preparation of learning design at pre-teaching phase is a tool of training. Virtual internship calls for techno-pedagogy based learning design where due importance is given to Technological Knowledge, Content Knowledge and Pedagogical Knowledge on which the learning design for teaching internship is to be prepared.

Online Teaching Platforms

There are various Apps and web-based platforms like ZOOM Meeting, Google meet, Webex Meet, Skype Meetings etc on which a virtual classroom can be conducted for imparting smooth internship so that the teachers teach and the students learn in real-time, face to face via web-based technology.

Use of Various Digital Tools as Teaching Learning Material (TLM)

Delivering lessons through teaching-learning-materials is an inevitable part of teaching. Here, pupil teachers can switch on share screen option for displaying PowerPoint, videos, photographs, diagrams, pictures, sketches, etc. to students in respect to the given topic. Various digital tools like Jamboard, Cmap, Padlet, Mentimeter etc can be used as teaching aids.

Online Assessment of the Students

Online tests can be planned for the students in respect of examining their level of learning achieved. Learning tasks can be scheduled for them and evaluation can be done virtually with the help of Google classroom and various other digital tools. Students can also express their learning outcome in creativity based productive forms like painting, collage making, singing, reciting, video production with the help of various digital tools.

Virtual Supervision

Classroom teaching conducted by pupil teachers must be supervised by teacher-educators. Here, any teacher-educator can enter the classroom through a web link which is to be notified to him/her earlier. In the same way, the Head Teacher or Subject Teachers of schools can join in the classroom to supervise the teaching practice of intern teacher.

Recognizing Digital Tools for Online Collaboration

Virtual internship is the concept of pursuing the actual ways and means for providing a holistic

work experience in the remotest working set-up. Creating interactive online activities is an important part of virtual internship learning. It is necessary to recognise different available online tools for the purpose of interaction among the students for collaboration since this is going to become the way of life for all future internship training.

Online Action Research

Action research, a tool of practitioners develops the professional competence of interns and can also practice virtually. Student-teachers can meet the child at an online platform, make a discussion with him, observe his behaviour, and take an interview with his parents and teachers. In this way, a case study-based action research can be prepared virtually.

Other Online School Activities

Pupil teachers can arrange a parent–teachers meeting virtually by scheduling and involving the head teacher and other teachers as well. The Video conferencing can be used for sharing knowledge of senior and experienced teachers in respect of creating more effective classroom teaching. The interest of students and the support from parents in the form of financial support, technological support, internet support, encouragement and motivation are necessary.

Various Activities During Virtual Internship

The internship is a step wise progression of training. The steps involved are selection, planning, preparation, execution and evaluation. The parameters for evaluation have been devised keeping all factors in mind for making a good teacher. Each university or college determines which components are necessary and acceptable for credit. Following are various activities during virtual internship:-

Online Reflection

Mentoring is a very important component of online reflection. After an introductory meeting, the interns are assigned an individual mentor who supports them in the preparation and follow-up of the lessons, participates in the group teaching sessions and is available for pedagogical questions. The interns complete and update sheet every week of all activities undertaken and also planning the next steps. All these are reflected online as a record.

Learning to Teach Digitally

The practice teaching, the supervision, subsequent grading and evaluation is a very essential part of any teaching internship. School provides every pupil interns with guides and also makes available videos to assist them in planning their lessons for classroom teaching. It is necessary for all trainee teacher to have adequate knowledge and use of all digital tools those are being brought into use.

Maintaining Online Attendance Register

It is necessary on the part of pupil teacher to maintain the attendance register, in which the record of attendance is kept and updated. The records of attendance of students attended is maintained and this helps in understanding the response of students regarding online classes.

Conducting Online Assembly and Cultural Programmes

As a matter of routine sometimes even online assembly can be organised and points briefed and also the cultural activities can be conducted online successfully.

Developing Virtual Report Cards

Based on the process of learning, a virtual report card can be developed for the purpose of evaluation to check the performance which will be beneficial for the future of the pupil teacher.

Continuous and Comprehensive Evaluation

The evaluation has to be continuous process and must be done comprehensively at all levels by everyone in the chain. Pupil teachers can bring into use various digital tools such as Padlet, Recap, Google Forms/Sheets and Flubaroo, Nearpod and Pear Deck, Quizlet Live, Zaption.

Online Record of School Infrastructure

The details of infrastructures, facilities and resources available in the school conducting the pupil training is required to be mentioned and maintained online. This makes the planning and conduct easier.

Assigned Duties and Responsibilities

In addition to the main focus being kept on training, there are many additional responsibilities

and tasks related to school activities assigned to the pupil teacher from time to time by the school principal. These are from the principal. The supervisor has to ensure that the pupil teacher is taking these tasks willingly and cheerfully and also completing them on time. This will certainly enhance the overall personality of pupil teacher. This learning will be highly beneficial for overall growth and in the making of a good teacher.

Reflections and Consolidation through Internship Report Writing

Finally, after having gone through the complete training for a specified period of time the complete reflection of the performance has to be prepared in the form of Report and submitted for assessment as well as to be maintained as a record. This will give the overall outcome of the complete pupil teacher training and the learning during the course.

Conclusion

The traditional in-person face to face internship is time tested and is being practiced since long, but there is a continuous transformation in the field of education and different viable options are being explored and brought into use due to frequent lockdowns and closure of educational institutions. The virtual online internship with the help of digital tools is the right alternative for continuance of the education without experiencing any break in the curriculum. Due to changing norms the virtual internship is being adopted and adapted by all the educators and learners. This is going to be the future norm as the conduct of virtual training up to 25% would be mandatory. The virtual internship is not only a compensatory solution for compulsory internships in times of the pandemic, but will be relevant for teacher training in the long term. All prospective teachers will acquire and master the digital technology and achieve high level of competencies by exploring different methods by use of digital tools, and didactic principles in lesson preparation and implementation. At the same time, virtual teaching supports students regardless of their social, cultural, and financial backgrounds, thereby promoting more equal opportunities in the education system. This virtual teaching by the use of digital platform will go a long way in times to come

The intern training will be one of the most important activities for becoming a teacher. The virtual pupil training being conducted online is one of the methods. During the course of training all the activities being undertaken in training curriculum at all stages is required to be strictly monitored, guided and evaluated properly. This will help the pupil teacher in developing self-confidence and enhancement of knowledge in becoming what we call is a good teacher.

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COMMUNICATION

Meaning of Education

Kamlesh Patel*

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

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

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

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

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

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

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

The foundation of life is a strong and sound moral character. Morality is the capacity to be precise in our thoughts, words and actions, meaning an exact dose, just as in medicine –not too little,

not too much. Anything that weakens us physically, mentally and spiritually cannot be moral, per se, as there is no moderation there.

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

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

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

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

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

Connectivity: An Important Component of Rural Development

Narendra Singh Tomar, Hon'ble Minister of Agriculture and Farmers Welfare, Rural Development, Panchayati Raj and Food Processing Industries, Government of India delivered the Convocation Address at 40th Convocation of Institute of Rural Management Anand, Gujarat on May 06, 2021 through virtual mode. He said, "No doubt, the economic recovery of rural India will continue to require high-calibre professionals to step up and meet the present challenges. With management education on the verge of rediscovery, owing to both the National Education Policy and recruiters seeking skill enrichment, there is an urgent need to align skill-orientation with management. I strongly believe that it is you who can develop dynamic change-makers to serve underserved segments of the economy through high-calibre management acumen. And there is no better time than now for you to go out into the world and make a difference." Excerpts

Undoubtedly, the rural scenario in India has changed over the years. With infrastructure and social indices and, consequently, purchasing power registering marked improvement the rural sector is being taken more seriously than ever before. Yet the landscape remains pocked with multiple challenges. The villages vary between 6 lakh to one million according to various government databases, and house an astounding 66 per cent of the country's population. It is obvious, though, that even without the assistance of statistics, the level of economic development in the villages has been uneven at best, both at state and national levels. The problems are wide-ranging and related to aspects like food scarcity, sanitation facilities, credit availability, land reforms, farmer suicides, to name just a few. When India's development is compared to those of countries considered contemporary in terms of having acquired independence around the same time, it is clear that India's gains have not been particularly spectacular.

Since it is not possible to touch upon all the pain points, I shall mention a few aspects that merit urgent attention in the rural context. Since I am addressing an educational institution, I shall begin with education.

As already mentioned, more than half of the country's population resides in rural India. Which means that more than half of our people receive their education in villages that are faced with limited resources and restricted learning opportunities. Undoubtedly, resource constraints hinder the social, cognitive, and intellectual growth of students. Most students have to cover long walking distances to study without transport facilities; this acts as a strong disincentive. In addition, students have no access to proper classrooms, playgrounds, or even toilets and drinking water facilities. Furthermore, many of these students come from low-income families with insufficient resources to feed a family of four or five. As a result, instead of going to school and studying, they are asked to assist the family's earning members by earning extra money.

The next point of concern is rural health. In these unprecedented pandemic times, the subject is topical and relevant. It is sadly evident that rural residents generally have less access to health care compared to their urban counterparts. Having to contend with fewer medical practitioners, mental health programs, and medical facilities rural people are exposed to less preventive care and to longer emergency response times. Rural hospitals are unable to generate the revenue necessary to serve their communities because they are not reimbursed for much of the care they provide. Rural hospitals are losing money in nearly four out of ten cases. The issue is exacerbated by a lack of patients. Hospitals are either closing or reducing their services.

While India has one of the largest medical education systems in the world and prestigious institutions such as AIIMS, educated and 'city-bred' doctors and healthcare providers are unwilling to serve in rural areas, many of which remain inaccessible and without electricity. Which is what brings me to the question of rural electrification.

Rural electrification poses yet another challenge. The challenges of bringing electricity to rural areas are formidable despite the government's

best efforts to electrify the entire country by 2030. To begin with, high capital and operating costs result from low population densities. Besides consumers are frequently impoverished, and their electricity consumption is low.

Also critical to economic and social progress is the development of transportation and communication infrastructure. The development of rural transportation is particularly relevant in terms of economic integration in rural areas with administrative, marketing, and service centers. Such connectivity promotes close relationships between different areas and interaction between towns and villages, which is an important source of modernization.

It is with this intention that an intervention like the *Pradhan Mantri Gram Sadak Yojana*, or PMGSY, was launched. The scheme's primary goal was to provide all-weather road connectivity to eligible unconnected habitations, including those of hill states like Sikkim, Uttarakhand, Himachal Pradesh, Jammu and Kashmir, and the north eastern states.

It goes without saying that rural road connectivity is an important component of rural development because it promotes access to economic and social services, resulting in higher agricultural incomes and more productive job opportunities. It is also an important component in terms of ensuring poverty reduction.

I am pleased to state that Jammu and Kashmir has been designated as a high-performing Union Territory in the implementation of the *Pradhan Mantri Gram Sadak Yojna* (PMGSY), ranking third among all states and Union Territories in the country.

The government is doing what it can to meet its citizens half way, be it through interventions like the PMGSY, medical schemes like the Ayushman Bharat Scheme, and other interventions like *Jan Dhan Yojana, Sansad Adarsh Gram Yojana*, or *Gramoday se Bharatoday*. Yet, we look to young people like you, graduating from a hallowed institution like IRMA, to become active participants in the future of India, especially rural India.

I am aware that the situation is a tough one in these pandemic times. And I congratulate all of you for having the courage to stand up to your circumstances and take challenges head on. While the COVID-19 pandemic and its economic consequences have wreaked havoc on the urban economy, the rural economy has fared much worse. With millions of migrant workers returning to their villages, rural India is in desperate need of new growth pathways.

According to the credit rating agency, Moody's, the second wave of the pandemic is likely to weaken the country's economy.

However, since much of India's economy is driven by consumer necessities, it is possible that the rural economy will drive the country's economic recovery. What I mean to say is: there is hope yet.

And that hope comes from you, the future rural managers.

As I have already said before, COVID-19 will have a long-term impact on the rural economy. This is why the rural management curriculum and syllabus from an esteemed institution like yours will be critical in guiding rural economies through their transformational phase. In rural India, an estimated 30 lakh non-governmental organizations (NGOs) are in operation. New entrepreneurs have relocated from major cities to establish agri-tech start-ups in tier II and III cities. Multinational corporations are already reshaping the job landscape by outsourcing their processes to smaller towns. More than half of India's 6.3 crore MSMEs, which produce over 6,000 products, are located in rural areas. Add to that the enormous government machinery that operates in rural India. There will be a need for rural development and management professionals with governments (both central and state) and other organizations conducting feasibility and impact studies on schemes in these areas.

As we all know, a rural management MBA can lead to employment in rural development agencies and flagship development programs focused on livelihoods, education, health, water and sanitation, agriculture, handicrafts, cooperatives and producer organizations, non-governmental development organizations, public foundations, banking and finance institutions, consulting firms, agribusiness organizations, and information and communications technology. Additionally, students with appropriate skill sets may choose to become rural entrepreneurs, generating employment and profits in the rural space.

It is no wonder that Moody's still predicts a double-digit growth, despite the current pandemic-induced slowdown. To some extent, the present government has made strong efforts towards improving the lot of the rural dwellers.

It has, for instance, increased the budgetary allocation for rural development by more than 9 per cent. Budgetary allocations for key initiatives like NREGA, mid-day meals in schools, and the National Rural Livelihoods Mission have also gone up.

Undoubtedly, the government is doing what it can to promote rural development. But, like I said before, the initiative has to come from you, my young friends. I see some of you working as policymakers, managers, analysts, and consultants in rural enterprises, doling out advice on operational and program efficiency.

The rural landscape provides ample opportunities for established competitors to grow, as well as for new entrepreneurs seeking a solid foundation. With 67 per cent companies looking to expand in rural areas, professional like you who understand the pulse of the rural economy are in high demand.

No doubt, the economic recovery of rural India will continue to require high-calibre professionals to step up and meet the present challenges. With management education on the verge of rediscovery, owing to both the National Education Policy and recruiters seeking skill enrichment, there is an urgent need to align skill-orientation with management. The Institute of Rural Management Anand (IRMA) is one of the institutes best prepared to do so. I strongly believe that it is you who can develop dynamic change-makers to serve underserved segments of the economy through high-calibre management acumen. And there is no better time than now for you to go out into the world and make a difference.

I wish you all the best for a fulfilling and prosperous future.

Thank you! ❑

Shri J Veeraraghavan Passes Away

Shri J Veeraraghavan (March 04, 1932- June 03, 2021), a seasoned Administrator and renowned Educationist who was engaged as Advisor to Apeejay Education Society passed away on 3rd June, 2021.In view of his capability and versatility in dealing with multiple development sectors, he was appointed as the Secretary (1986-1990)when the first Ministry of Human Resource Development was established with multiple sectors including culture, sports and education to coordinate and create a coherent perspective for the work of different departments. He immensely contributed to Education, Policy Planning and Administrations and played a critical role in the development of Education in India. He served as Director, Bharatiya Vidya Bhawan. He took the charge of the National Institute of Educational Planning and Administration (NIEPA), New Delhi as its Executive Director at a crucial period when the Institute was getting transformed from Staff College to an Academic Institute. Along with Professor MV Mathur and Professor Moonis Raza, he played a very important role in casting the structure of the institution setting the agenda for training and research. Having worked closely with JP Naik, he had a deep understanding of educational administration and financing. He was perhaps the first non-IAS to occupy such a high-ranking position in Government of India based on the second National Policy on Education (1986) commenced its implementation phase during his term. Earlier, as Joint Secretary and Director, In-charge of Planning, Finance and Statistics in the Ministry of Education(1969–75). He reviewed the progress in 22 countries in Asia for UNESCO, Bangkok in the implementation of Education for All, 1990. Based on that a report was prepared for UNESCO in 1992 and again in 1994.

He was a gentle soul with genuinely compassionate and friendly approach to everyone and everything he dealt with.

His demise is great loss not only for his family but also for the country.

AIU fraternity expresses profound grief on his demise.

National Conference on Emerging Phase of Training

One-day Online National Conference on 'Emerging Phase of Training during the Transition from Industry 4.0 to 5.0' was organized by the Centre of Excellence in Happiness Studies, Shri Vaishnav Vidyapeeth Vishwavidyalaya (SVVV), Indore, Madhya Pradesh, recently. The theme of the event was 'Happiness in Global Perspective: Prospects and Challenges'. More than 30 registered participants from industry as well as academic institutions spanning the country were participated in the event.

During Inaugural Function, Dr. Upinder Dhar, Vice Chancellor, SVVV welcomed Shri Saurabh Tripathi, IPS, IG Provisioning, Sashastra Seema Bal, New Delhi to the conference. Convener, Dr. T K Mandal, Head, Centre of Excellence in Happiness Studies, Coordinator, Shri Vaishnav School of Law and Professor, Shri Vaishnav School of Management, Indore introduced the theme of the event. Dr. Mandal wished everyone a Happy International Day of Happiness and said that there is a background of the day as on 12th July, 2012 United Nations in the assembly passed the resolution proclaiming 20th March as International Day of Happiness. He said that we need to recognize the relevance of happiness and well-being as a universal goal. He further said that in 2015 UN launched the 17 sustainable goals with three main aspects connected to the concept of happiness and this concept was initiated in Bhutan which recognizes the value of Gross National Happiness over Gross National Product. Talking about the conference, he said that this year there will be 32 papers to be presented in three concurrent sessions following the plenary session.

Vice Chancellor, Dr. Upinder Dhar delivered the welcome address. Dr. Dhar wished all a Happy International Day of Happiness. He said that Happiness should not be restricted to one day, we must learn to remain happy 365 days. He said that every year UN releases the World Happiness Report and there is a Happiness Index that reflects the position of each country and India has been continuously ranking on the lower side. He further stated that a lot of research has been conducted on why some countries have a higher ranking and some have a lower ranking in Happiness Index and one of the common findings is that the more inequities in terms of socio-economic status, excess to health services and so on affect the state of Happiness, and unfortunately in our country inequities are very high.

The e-Souvenir of the Conference 'SAAR-ANAND' was released by the Dignitaries. The e-Souvenir contained 30 abstracts of the registered participants. The Chief Guest, Mr. Saurabh Tripathi, IG-Provisioning, Force Headquarters, Sashastra Seema Bal, New Delhi, in his address congratulated the University for organizing the conference. He said that we need to do a lot of research on different dimensions of Happiness and the Constitution says that there are three important pillars for humans i.e. life, liberty, and pursuit of Happiness. He said that in a diverse country like India happiness has different meanings in terms of Culture, Religion, Artistic Area, Politics, Economics. He also spoke about the factors that stimulate happy hormones and various perspectives of happiness. The inaugural ceremony was concluded with Vote of Thanks by Dr. Anu Ukande, Co-convener of the event.

The Inaugural Ceremony was followed by Plenary Session that included three distinguished speakers. The Plenary Session started with speaker, Mr. Mike Murali, Chief Fun Officer and Director Marketing, Capgemini India. He said that as his job defines to spread happiness among the customers and the Capgemini group works on 7 parameters of happiness and fun is the core parameter of happiness for last 54 years. He stated that we need to focus on our foundation and there should be 'A' for Affection 'B' for Benevolence and 'C' for Care. He further talked about the science of happiness where he mentioned that nothing is permanent in life. Similarly, happiness and sadness, neither of them is permanent. He also stated that freedom and trust are the core parameters that can lead to happiness and you attain the maximum happiness when you do something you love. He further said that if happiness is a universal

goal, then we need to understand its cause and effect as every individual has their own definition of what makes them happy.

Mr. Akhilesh Argal, CEO, Rajya Anand Sansthan, M P Government, in his address said that Happiness is an electrifying and elusive state that encompasses living a good life, one with a sense of meaning and deep contentment. Feeling joyful has its health perks as well and attaining happiness is a global pursuit. He stated that the government of Madhya Pradesh established a Happiness Department to focus on the Happiness of the Individual and the Society as well. He spoke about Anand Sansthan activities like Anand Club, Anand Shivir, Anandam, Anand Sabha, Anand Project and Fellowship, Happiness Index, and many more.

In her address, Brahma Kumari Shashi Didi said that everyone wants to be happy and happiness is an emotional state which leads to life satisfaction, subjective well-being, and well-being. She said that happiness does have a very important role in our lives, and it can have a huge impact on the way we live our lives. Happiness is equated with feeling pleasure or contentment, meaning that happiness is not to be confused with joy, ecstasy, bliss, or other more intense feelings. She said that happiness is not necessarily an internal or external experience, but can be both. She further stated that there are two components of subjective well-being i.e. balance of emotion and life satisfaction.

The Plenary Session was followed by the Technical Sessions which included three concurrent sessions. The first concurrent session was chaired by Dr. Rajeev Shukla, Director, Shri Vaishnav School of Management, SVVV, Indore and moderated by Dr. Pragya Jaroliya, Associate Professor, Shri Vaishnav School of Management, SVVV, Indore. The session rapporteur was Ms Supriya Vyas, Assistant Professor, Shri Vaishnav Institute of Science, SVVV, Indore.

The second concurrent session was chaired by Ar. Vishal Yardi, Director, Shri Vaishnav Institute of Architecture, SVVV, Indore and moderated by Dr Alok Verma, Assistant Professor, Amity University, Noida. The session rapporteur was Dr Aditi Veda, Assistant Professor, Shri Vaishnav School of Management, SVVV, Indore. Dr R K Datta, Director, Shri Vaishnav Institute of Textile Technology, SVVV, Indore chaired the third concurrent session. It was moderated by Dr Supragya Thakur, Associate Professor, Shri Vaishnav Institute of Science, SVVV, Indore. Rapporteur of the session was Dr Pragati Tomar, Assistant Professor, Shri Vaishnav School of Management, SVVV, Indore. Total 24 research papers were presented in the conference.

The Valedictory Session was conducted by Mr. Premansh Sharma, Core Committee Member, Centre of Excellence in Happiness Studies and Section Officer, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore. Event report was presented by Co-convener of the event. The feedback was shared by participants of the conference. Dr. Upinder Dhar gave closing remarks and motivated the organising team for successfully conducting the conference in the third year. He encouraged the participants to continue their quest in research activities. Convener, Dr. T K Mandal proposed the Vote of Thanks during the valedictory session.

Virtual International Conference on Sustainable Finance, Economics and Accounting in Pre and Post Pandemic Era

A two-day Virtual International Conference on 'Sustainable Finance, Economics and Accounting in The Pre and Post Pandemic Era' is being jointly organized by the Indian Institute of Management Jammu, and The University of Bradford, School of Management, UK during July 30-31, 2021. The Institute of Cost Accountants of India (ICAI) and The Institute of Company Secretaries of India (ICSI) are the professional partners. The policy makers, think-tank specialists, corporate leaders, academic researchers, and doctoral scholars may participate in the event.

The bias inherent in the current practice of traditional finance, economics and accounting concepts is culpable for much of today's pollution, the degradation of resources, environmental calamities, and the inequities suffered by deprived social groups. The notions of free-market laisser-faire capitalism, untrammeled economic growth and shareholder wealth maximization have resulted in distortionary decision making, which is exclusive by design, and in the denial of the value of co-creating opportunities with its focus on the benefits for all stakeholders

rather than just for those with economic superiority. Changing direction is critical to compensating the cumulative adversities caused by mankind but also to ensure our legacy is an inhabitable and enduring planet. For the change in direction to be effective requires foregoing the traditional concepts and imposing the principle of sustainability at the core of our finance, economics, and accounting concepts. This is clearly articulated in the UN Member States 2015 adoption of the 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs), the Addis Ababa Action Agenda on Financing for Development, and the Paris Agreement on Climate Change, which amongst others specifically affirm poverty eradication, quality education, decent work supporting sustainable economic growth, reverse climate change, and partnership for mutual goals. The lead themes for this conference reflect the SDG agenda. They are the critically appraisal of both the empirical and theoretical efficacy of the development goals, effectiveness evaluations of the various metrics used to characterize the goals, and proposals on alternative decision-making tools underpinning sustainable development solutions, in the unfolding world following the COVID-19 pandemic. The major themes of the event are:

Sustainable Finance

- Corporate Social Responsibility (CSR).
- Impact Investment.
- Sustainable Investing, Business Valuation, Corporate Governance, Green Finance, Fintech, Crowd funding, Earnings, Value Creation.
- Financial Inclusion.
- Transition Finance.
- Taxes Green, Environmental, Carbon.
- Financial Technology Blockchain, Cryptocurrencies.

Sustainable Economics

- Sustainable Demographics, Fiscal and Monetary Policy, Transportation, Tourism, Public Economics, Circular Economy, Societies and Cities, Agriculture, Energy.
- SDGs, No Poverty, Gender Equality, Women Empowerment, Universal Health, Sanitation, Human Development, Reducing Economic Disparities and Inequities.
- Climate Action: Paris Agreement, Carbon Credits.
- Pandemic, Global Order, Economic Growth, International Trade, Poverty, Inequality, Employment, Sustainable Development.
- Green Economy.

Sustainable Accounting

- Sustainability Standards: GRI Standards, Integrated Reporting Framework, SASB Standards.
- Sustainability Reporting: Social, Environmental, Human Rights, Climate, Carbon, Corruption and Governance, ESG, CSR, Green, Value-based.
- Ethical Issues in Sustainability Reporting.
- Sustainability Audit and Assurance.
- Biodiversity Accounting.

For further details contact Chair, Prof. Manoj Kumar, The Indian Institute of Management Jammu, Old University Campus, Canal Road, Jammu-180016, Phone No: 0191-2585837, E-mail *: chairpersonmba@iimj.ac.in.* For updates, log on to*: www.iimj.ac.in.*

International Conference on Ergonomics

A three-day Online International Conference on 'Ergonomics' is being hosted by the Center for Ergonomics: User Centered Design and Occupational Wellbeing, Department of Design, Indian Institute of Technology Guwahati, Guwahati, Assam during December 01-03, 2021. The Topics of the event are:

- Design Applications.
- Work Physiology, Biomechanics and Sports.
- Social and Rural Development.
- Cognitive Science and Neuroergonomics.
- Virtual Environments, Modelling and Simulation.
- Occupational Sectors (Informal and Organized).
- Production System, Industrial Manufacturing and Management.
- Entrepreneurship and Service Design.
- Healthcare and Medical Science.
- Occupational Safety and Health.
- Environment and Sustainability.
- Automotive Design and Transportation System.
- Education, Training and Audit.

- Regulation, Standards and Guidelines.
- People with Special Needs.
- Aesthetics, Creativity and Human Values.
- Tourism and Recreations.
- Traditional and Renewable Energy Sectors.
- Prototyping, Usability and User Experience.
- Communication Design.

For further details, contact Organizing Secretary, Dr. Urmi Ravindra Salve, Department of Design, Indian Institute of Technology Guwahati, Assam-781039, Phone: +91-361-25823097, E-mail:*hwwe2021@iitg.ac.in / 2021hwwe@gmail.com*. For updates, log on to: *www.iitg.ac.in*

International Conference on Public Policy and Management

A three-day International Conference on 'Public Policy and Management' is being organized by Indian Institute of Management, Bangalore during August 23-25, 2021 via Zoom. The event draws scholars representing a diversity of perspectives on public policy issues and provides a forum for showcasing the latest developments in policy research and practice. The conference typically hosts academic sessions, topical policy debates, workshops, panel discussions and practitioner-oriented discussions on contemporary topics on public policy and management. The conference would be ideal for academicians, students, research scholars, policy regulators, auditing and rating agencies, lawyers, NGOs and anyone with an interest in public policy. The themes of the event are:

- Policies of Economic, Political, Social and Financial Inclusion.
- Identities and Development – Especially Focusing on Policies Pertaining to LGBTQ, Dalits, Women and Marginalized Communities.
- Institutional Architecture and Challenges in Democratic Structure – Especially Looking at the Independent Authorities – Central Bank, Judiciary, CAG, Election Commission, CVC and Other Autonomous and Independent Institutions.
- Policy Approach towards State Owned/Controlled Organizations Including Banks, PSUs, Universities, Institutions of Higher Learning.
- Management of Non-Governmental Organizations and the Changing Policy Ecosystems.
- Management of Co-operatives and Farmers' Producer Organizations and the Changing Policy, Legal and Regulatory Ecosystem.

For further details, contact Conference Secretariat, Centre for Public Policy, Indian Institute of Management Bangalore, Bannerghatta Road, Bangalore–560076 (Karnataka), Phone: +91-80-26993051/3323, E-mail: *cppconference@iimb.ac.in***.** For updates, log on to: *www.iimb.ac.in*

Manodarpan Programme at NCERT

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

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

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

Enter your Name * .....

Your answer

Gender *.....

Male

Female

Other

Date of Birth (DD-MM-YYYY) *.....

Your answer

E-mail ID * .....

Your answer

Mobile Number *.....

Your answer

Whatsapp Number * .....

Your answer

Complete Address of School/College/Institution, where employed *.....

Your answer

Type of Present Employment *.....

Government Organisation

School

College

Hospital

Private Practice

Other:

City *.....

Your answer

Rural / Urban *.....

Your answer

District *.....

Your answer

State/UT * .....

Your answer

Diploma (Guidance and Counselling) Awarding Institute * .....

Your answer

Year of Completion of Diploma *.....

Your answer

Fluency in Language(s) *.....

Your answer

Area of Expertise * .....

Your answer

Any Professional Training (Please specify - Name of the Organisation and Year) *.....

Your answer

The format is available on following link: *https://docs.google.com/forms/d/e/1FAIpQLSc4UYkTG17hDN5Hky6XQ4uBCD3f8CEz03PtWyMNWxbtd2LlxQ/viewform?usp=pp_url*

For further details contact Prof. Anjum Sibia, Dean (A) and Chairperson, Manodarpan Cell, NCERT, New Delhi on *email : anjumsibia@yahoo.com* or browse NCERT *Website: www.ncert.nic.in*

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

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

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

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

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THESES OF THE MONTH

SCIENCE & TECHNOLOGY
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of March-April, 2021)

AGRICULTURAL & VETERINARY SCIENCES

Agricultural Engineering

1. Chaware, Snehalata Ankush. **Cadastral level assessment of resources for Watershed development planning of Nagjhari Watershed using geospatial techniques**. (Dr. G U Satpute), Department of Soil and Water Conservation Engineering, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

2. Karale, Dhiraj Sadashivrao. **Development of battery electric vehicle sprayer**. (Dr. S H Thakare Thakare), Department of Farm Power & Machinery, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Biotechnology

1. Barinder Singh. **Molecular characterization of canine distemper virus field isolates and establishment of a CDV rescue system**. Department of Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

2. Bhardwaj, Ekta. **Development of an Antigen Capture Enzyme-Linked Immunosorbent Assay (AC-ELISA) for diagnosis of classical swin fever**. Department of Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

Dairy Science & Technology

1. More, Ramprasad Vashistha. **Studies on preparation of *Lassi* blended with biofortified bajara (AHB-1200)**. (Dr. B M Thombre), Department of Dairy Science, Vasantrao Naik Marathwada Agricultural University, Parbhani.

2. Sawant, Vijay Yashwant. **Studies on preparation of *Lassi* blended with biofortified sorghum (Parbhani Shakti)**. (Dr. G K Londhe), Department of Animal Husbandry and Dairy Science, Vasantrao Naik Marathwada Agricultural University, Parbhani.

Entomology

1. Rana, Abhishek. **Bioecology and management of melolontha spp (Scarabaeidae: Coleoptera) in Himachal Pradesh**. (Dr. R S Chandel), Department of Entomology, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

Forestry

1. Laldingngheta, Jerry. **Phyto-chemical characterization of anti-diabetic plants in Mizoram**. (Prof. Lalnundanga), Department of Forestry, Mizoram University, Aizawl.

Genetics & Plant Breeding

1. Sabhaya, Ankit Gordhan. **A statistical analysis on market integration and price forecasting of domestic and international wheat markets**. (Dr. S M Upadhyay), Department of Genetics and Plant Breeding, Junagadh Agricultural University, Junagadh.

Soil Science

1. Vitthal, Pimpale Swapnali. **Influence of mulches and irrigation regimes on soil physical properties moisture conservation and yield of tomato in vertisol**. (Dr. A S Kadale), Department of Soil and Water Conservation Engineering, Vasantrao Naik Marathwada Agricultural University, Parbhani.

Veterinary Science

1. Deshmukh, Dhananjay. **A study on interlinkage of credit availability vis-a-vis dairy farming in Punjab**. Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

2. Poonia, Amit. **Histomorphochemical and ultrastructural variations in thyroid gland of buffalo, sheep and goat**. Department of Veterinary Anatomy, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

BIOLOGICAL SCIENCES

Biotechnology

1. Bhatt, Shweta Anil. **Isolation and charcterization of halophilic and halotolerant PGPR for alleviation of salinity stress in cotton groundnut and chickpea (Brown gram) crops from Saurashtra Region in Gujarat State**. (Dr. Neepa Pandhi), Department of Biotechnology, Saurashtra University, Rajkot.

2. Jaber, Hassanain Hataf. **Pharmacological screening of bioactive components isolated from a nearly endangered tree species pterospermum xylocarpum**. (Dr. A krishna Satya), Department of Biotechnology, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Mahto, Ram Balak. **Investigation on random mutagenesis approach for enhanced production of pectinase by bacillus subtilis**. (Dr. Mukesh Yadav), Department of Biotechnology, Maharishi Markandeshwar University, Ambala.

4. Mazumdar, Deepika. **Studying the effect of plant growth promoting rhizobacteria supplementation on growth and seed yield of *Brassica campestris* L (mustard plant)**. (Dr. S Ghosh), Department of Biotechnology, University of North Bengal, Darjeeling.

5. Narain, Renu. **Development of cardiovascular disease prediction system**. (Dr. Sanjai Saxena and Dr. Achal Kumar Goyal), Department of Biotechnology, Thapar Institute of Engineering and Technology, Patiala.

6. Saraswathi, Y Yamini. **Plant mediated green synthesis nanoparticles and evaluation of the bio potency (Anti-microbial, catalytic and cytotoxic activities**. (Dr. Sudhakar Podha), Department of Biotechnology, Acharya Nagarjuna University, Nagarjuna Nagar.

Marine Science

1. Pillai, Devika. **Prevalence of antimicrobial resistant bacteria in the aquatic environment: A study conducted in the vicinity of selected hospitals and adjoining aquaculture farms in Kerala**. Department of Aquatic Animal Health Management, Kerala University of Fisheries and Ocean Studies, Kerala.

Microbiology

1. Hegde, Veena. **Evaluation of antidiarrhoeal properties of simarouba amara (AUBL) against enterotoxigenic esherichia coli**. (Dr. N B Thippeswamy), Department of Microbiology, Kuvempu University, Shankaraghatta.

2. Joshi, Anjali Udaybhai. **Development of a potential bacterial consortium for the degradation of textile DI-AZO dyes**. (Dr. Ramesh Khothari), Department of Microbiology, Saurashtra University, Rajkot.

3. Shruthi. **Purification and characterization of amylases and cellulases and from fungal isolates**. (Dr. N B Thippeswamy), Department of Microbiology, Kuvempu University, Shankaraghatta.

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1. Awasthi, Neha. **Resource partitioning among sympatric ungulates in Kanha Tiger Reserve, Madhya Pradesh, India**. (Dr. Y V Jhala), Department of Wild Life Sciences, Saurashtra University, Rajkot.

2. Chandrakala, E. **Genetic association of human NrCAM gene in Autism Spectrum Disorders (ASD)**. (Dr. Nagaraja), Department of Applied Zoology, Kuvempu University, Shankaraghatta.

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5. Kanojia, Rohit. **Role of histone methylation in extinction of fear memory**. (Prof Kamal Jaiswal and Prof. D R Modi), Department of Applied Animal Sciences, Babasaheb Bhim Rao Ambedkar University, Lucknow.

ENGINEERING SCIENCES

Aerospace Engineering

1. Dinesh, M. **Improvement of natural fiber reinforced composites strength for aerospace application**. Department of Aeronautical Engineering, Hindustan Institute of Technology and Science, Chennai.

Civil Engineering

1. Reddy, B Sudharshan. **Performance evaluation of stabilized bases and subbases with recycled concrete aggregates for low volume roads**. (Dr. G Sreenivasa Reddy and Dr. C Sashidhar), Department of Civil Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Computer Science & Engineering

1. Basavaraj, G N. **Optimization of energy efficiency in wireless sensor network by enhancing the adjustable sensing ranges with placement strategies and cluster formation**. (Dr. Jaidhar C D), Department of Computer Science and Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

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1. Khera, Richa. **Control of DC-DC converter for PV system using artificial intelligent technique**. (Dr. Anita Khosla and Dr. Dheeraj Joshi), Department of Electrical & Electronics Engineering, Manav Rachna International Institute of Research and Studies, Faridabad.

Electrical Instrumentation Engineering

1. Batra, Indu. **Optimal congestion management in deregulated power system**. (Dr. Smarajit Ghosh), Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering and Technology, Patiala.

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Mechanical Engineering

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MATHEMATICAL SCIENCES

Mathematics

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Statistics

1. Kotra, Sai Swathi. **Some inferential and quality control contributions on half logistic Rayleigh distribution**. (Prof. G V S R Anjaneyulu), Department of Statistics, Acharya Nagarjuna University, Nagarjuna Nagar.

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MEDICAL SCIENCES

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1. Chinthala, Rajkumar. **Influence of dehaprakriti in the manifestation of Amavata vis-a-vis rheumatiod arthritis: A case control study**. (Prof. A S Baghel), Faculty of Ayurved, Gujarat Ayurved University, Jamnagar.

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7. Rao, Rajdip Rajeshbhai. **A compparative clinical study of Shampakadi Basti administration with Basti Putaka and Enema pot method along with Vishwadi Kwatha in Katishoola W S R to Lumbar spondylosis**. (Prof. A B Thakar), Faculty of Ayurved, Gujarat Ayurved University, Jamnagar.

8. Rawal, Priyanka. **Evolution of organs in Ayurvedic literature in context to their applied utility w s r to Rakatmedhe Prasadadwarikoo**. (Prof. Hitesh A Vyas), Faculty of Ayurved, Gujarat Ayurved University, Jamnagar.

9. Zala, Divyaben Samatbhai. **Effect of Vamana and Virechana followed by Lekhana Basti in comparison to Amrutadhya Guggulu for the management of sthaulya W S R to obesity: A randomized placebo controlled clinical trial**. (Prof. A B Thakar), Faculty of Ayurved, Gujarat Ayurved University, Jamnagar.

Biochemistry

1. Akhtar, Kulsum. **Molecular analysis of hedgehog signalling pathway genes (HHIP,SHH & GLI 1) in gastric cancer**. (Dr. Syed Mudassar, Dr. Syed Besina Yaseen and Dr. Fazl Q Parray), Department of Biochemistry, Sher-e-Kashmir Institute of Medical Sciences, Soura, Srinagar.

2. Maqbool, Irfan. **Molecular analysis of Hippo LATS pathway genes: (LATS1, LATS2 YAP and TAZ) in colorectal cancer patients**. (Dr. Syed Mudassar, Dr. Syed Besina Yaseen and Dr. Rauf Wani), Department of Biochemistry, Sher-e-Kashmir Institute of Medical Sciences, Soura, Srinagar.

Biotechnology

1. Mehta, Gunjankumar Jagdishbhai. **Isolation, identification and evaluation of Quorum Sensing Inhibitors (QSIs) from medicinal phytoextracts**. (Dr. Vasantba J Jadeja), Department of Biotechnology, Saurashtra University, Rajkot.

Endocrinology

1. Gurjeet Kaur. **Identification and characterization of microRNAs involved in sporadic parathyroid tumors**. Department of Endocrinology, Postgraduate Institute of Medical Education and Research, Chandigarh.

Immunology

1. Jagdeep Singh. **Study of HLA and non HLA genetic polymorphisms and neutrophil-lymphocyte cross talk in ANCA associates vasculitis**. Department of Immunopathology, Postgraduate Institute of Medical Education and Research, Chandigarh.

Medicine

1. Borah, Dhruba Jyoti. **Quality of life of the people living with HIV/AIDS registered in designated anti retro viral treatment centres in Assam (North East, India)**. (Dr. Hiranya Saikia), Department of Medicine, Srimanta Sankaradeva University of Health Sciences, Guwahati, Assam.

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Microbiology

1. Chaudhary, Naveen. **Isolation and charatcerization of phages against multidrug-resistant and biofilm forming Escherichia coli and V*ibrio cholerae***. Department of Medical Microbiology, Postgraduate Institute of Medical Education and Research, Chandigarh.

Neurology

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Ophthalmology

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Parasitology

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Pharmaceutical Science

1. Patchala, Abhinandana. **Development and validation of analytical methods for various NPPA listed fixed dose combinations by RP-HPLC**. (Dr. Rama Rao Nadendla), Department of Pharmaceutical Science, Acharya Nagarjuna University, Nagarjuna Nagar.

2. Sahu, Adarsh. **Syntheses and characterization of some 1,2,3 triazolyl linked medicinal compounds for improvement of their efficacy**. (Prof. R K Agrawal), Department of Pharmaceutical Science, Dr Harisingh Gour Vishwavidyalaya, Sagar.

Physiology

1. Namasundra, Uma. **Physico-chemical analysis, antimicrobial activity and few therapeutic evaluation**

of two food ingredients *Muia* and *Chakhwi* of Tribal people of Tripal. (Dr. Debabrata Bhaumik and Dr. Biplab De), Department of Human Physiology, Tripura University, Suryamaninagar.

Radiotherapy

1. Mathew, Don. **Incidence and severity of radiotherapy induced toxicity in head and neck cancer patients treated with conventional radical radiotherapy and their association with genetic polymorphism**. Department of Radiotherapy, Postgraduate Institute of Medical Education and Research, Chandigarh.

PHYSICAL SCIENCES

Chemistry

1. Anshu. **Thermodynamics of molecular interactions in binary mixtures containing haloarenes**. (Dr. Sanjeev Makin and Dr. Manju Rani), Department of Chemistry, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

2. Chopda, Jalpa Vikrambhai. **Synthesis and physico-chemical study of chalcone based polymers, resins and their fiber reinforced composites**. (Dr. P H Parsania), Department of Chemistry, Saurashtra University, Rajkot.

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6. Meka, Srinivasa Rao. **Consecutive determination of few selected drugs in combination drug products by RP-HPLC (Method development and validation)**. (Dr. K Rambabu), Department of Chemistry, Acharya Nagarjuna University, Nagarjuna Nagar.

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