Rs. 30.00
ISSN-0566-2257

UNIVERSITY NEWS

A Weekly Journal of Higher Education

Association of Indian Universities
Vol. 60 • No. 28 • July 11-17, 2022

#Let'sBeatCoronaTogether

UNIVERSITIES HANDBOOK – 34th EDITION (2018)

(Set of Two Volumes) : (ISBN 81-7520-147-9)

PRICE : Rs. 8000/- (+ Postage/Courier Charge Rs. 400/-)

The **34th Edition of Universities Handbook** is a compendium that contains latest information on 402 Universities level institutions of AIU Members including 56 Technical, 41 Agriculture, 24 Health Sciences, 13 Law, 03 Journalism, 15 Open Universities and Five Associate Members : Kathmandu University, Nepal; University of Mauritius, Mauritius; Royal University of Bhutan; Middle East University, United Arab Emirates and Semey State Medical University, Semey have also been included in this Edition.

The Handbook gives information relating to : Courses of Studies; Minimum Requirements for admission to each course; Duration and the subjects of study for each course; Library and Research Facilities; Scholarship and Fellowships; Academic year – date for admission and the approximate dates of examinations; Names of Faculties; Deans of Faculties, Names of Professors and Readers/Associate Professors with their specialization (department-wise); Staff, Officers and Name of Affiliated Constituent Colleges together with the names of Principals and Heads of Postgraduate Departments in the Colleges.

The Handbook also includes an introductory chapter giving an overview of the University System in India.

The payable amount is required to be remitted **in advance** by any of the following modes of payments :

A. **CASH DEPOSIT**: The required amount could be remitted directly to our Saving Account in any branches of Canara Bank from places other than Delhi & NCR Area.

B. **DEMAND DRAFT ONLY** : Such instrument is required to be prepared be in the name of **"ASSOCIATION OF INDIAN UNIVERSITIES" (payable at New Delhi), preferably from the Nationalised Banks ONLY.**

C. **CHEQUES OF ANY KIND ARE NOT ACCEPTABLE.**

D. The **requisite amount could also be transferred for its direct remittance to our Saving Account via NEFT/RTGS using the following details :**

1	**Bank Account No.**	**0158101000975 (Saving)**
2	Beneficiary Name	**Association of Indian Universities**
3	Address	16, Comrade Indrajit Gupta Marg New Delhi – 110 002
4	Bank & Branch Name	CANARA BANK, DDU MARG
5	Bank's Address	"URDU GHAR" 212, Deen Dayal Upadhayaya Marg New Delhi – 110 002
6	MICR Code	110015005
7	Branch Code	0158
8	IFSC Code	CNRB 0000158
9	PAN NO.	AAATA0407F
10	Contact No.& E-mail ID	(011) 23230059 Extn. 208/213 **(M)** 09818621761 **E-Mail ID : publicationsales@aiu.ac.in**

NOTE : In case of **Cash Deposit** and **Transfer via NEFT/RTGS/ECS**, the proof of payment in the form **Counterfoil of the Cash Deposit Slip** and the **NEFT UTR Number** may be communicated IMMEDIATELY BY MAIL for linking and crediting of the same against the respective Order/ Bill, please.

- **THE HANDBOOK WILL BE AVAILBLE ON CASH BASIS FROM THE SALES COUNTER OF THIS OFFICE.**

Please send Pre-paid Order to :

The Under Secretary
Publication & Sales Division
ASSOCIATION OF INDIAN UNIVERSITIES
16, Comrade Indrajit Gupta Marg, New Delhi 110 002
Phones: 23230059 (Extn. 208/213), Fax 91-011-23232131

UNIVERSITY NEWS
Vol. 60 July 11-17
No. 28 2022
Price Rs. 30.00

A Weekly Journal of Higher Education Published by the Association of Indian Universities

In This Issue

New Subscription Tariff
(Effective April 01, 2020)

	Inland		Foreign	
Institutions	Academics/ Students *(at residential address only)*		Airmail	Surface Mail
	Rs.	Rs.	US$	US$
1 year	1250.00	500.00	210.00	170.00
2 years	2200.00	900.00	400.00	300.00

Subscription is payable in advance by Bank Draft/MO only in favour of Association of Indian Universities, New Delhi.

International Students in Canada: Patterns, Trends and Economic Contribution

Misbah* and Jaswinder Singh Brar**

The knowledge-based economy of the 21st century has fostered the growth of globalized academic institutions. Consequently, the process of international student mobility has become more profound and inevitable. The last two decades witnessed a substantial rise in international student mobility with most of the students migrating from developing to developed nations. With this, many advanced nations have acquired the unique status of the reservoir of highly skilled personnel. Students' mobility patterns show that a major chunk of enrolments is concentrated in countries such as Japan, Australia, Canada, and Britain. Besides, the various student exchange programs like SOCRATES, ERASMUS, and others of the European Union have ominously contributed significantly to student mobility among the students. The globalization of economic activities, rise in tradable services, and the emergence of high-tech skill-oriented commercial and financial platforms have caused a real surge in academic migration. Cross-border deepening and widening of the movement of skilled persons, which was earlier viewed as a unidirectional phenomenon of brain drain, has now acquired new meaning and purpose and thereby has been perceived as 'brain gain' and 'brain circulation'. Out-migration has now increasingly been viewed as an opportunity rather than a colossal threat. The new realities signify that the borders have gone beyond control and the ability to curtail out-migration of students has been reduced significantly. The emergent global education market has enhanced developed nations' appetite for international students manifold.

Canada, with its liberal immigration policies and dynamic education market, has been attracting a large number of international students from all over the world. In the situation of an ageing population, where a growing number of people are withdrawing from the labour market, the developed nations are under immense pressure to keep their immigration rates at higher levels. Further, globalized education institutions have started impacting immigration policies. The advanced nations have been facing a unique opportunity wherein the legions of the older populations are now being superseded by a more educated and younger population entering their labour market (Barakat and Durham 2014; Meyer et al. 1977; and Wilis and Goujon 1998). The Canadian Education Strategy (2019- 24) particularly aims to attract foreign students from all over the world into diverse courses and to strengthen and promote return migration for its own students.

** Research Scholar, Department of Economics, Punjabi University Patiala -147002 (Punjab).*
*** Professor of Economics, Centre for Research in Economic Change, Punjabi University Patiala -147002 (Punjab).*

The approach is based on strategic objectives such as the diversification of the Canadian Education Sector, boosting the education capacity and disseminating global ties for cultivating a vibrant Canadian economy.

Extent and Pattern

Canada's Education market for international students witnessed noticeable expansion. The information pertaining to international students has been generated by the Government of Canada's Ottawa based federal department namely Immigration, Refugee and Citizenship Canada (IRCC). For this purpose, it defines foreign students as those 'temporary residents who entered Canada mainly to study and have been issued a study permit (with or without other types of permits). A study permit is an official document issued by an officer that allows someone who is not a Canadian citizen or a permanent resident to study in Canada'. The number of study-permit holders has been used as a proxy for assessing the number of international students. As per Table 1, the overall number of study-permit holders rose from 62, 875 in 2015 to 1, 77,755 in 2018; thereby registering 182 percent growth. The data further reveals that out of the ten provinces, only two provinces namely Ontario (67 per cent) and British Columbia (21 per cent) prove to be the primary choice of study destination within the country.

Canada witnessed a significant shift in the inter-regional inflow of international students over the period from 2002 to 2019 (Table 2). It has received the highest number of students from two regions, viz. South Asia (32.04 per cent) and East Asia (35.16 per cent) during 2017-19 (TA). The proportionate share of South Asia increased from just 10,408 students (6.62 per cent) to 1,44,298 students (32.04 per cent) over the period from 2002-04 (TA) to 2017-19 (TA). Importantly, the proportionate share of East Asia declined from 49.87 percent to 35.16 percent during the respective periods. Further, the proportionate shares of the USA and Europe too declined to 2.59 and 8.63 per cent respectively. Canadian education market for international students (Table 3) got centred around South Asia as it grew by 19.41 per cent per annum. Further, out of 1,44,298 students from South Asia, the share of Indian students was equivalent to 93.07 per cent, followed by Bangladesh and Pakistan. Furthermore, as reported in Table 4, during 2018, amongst the top 10 foreign student source countries in Canada, India's share was the highest (30.23 percent), and importantly it was higher than that of China (24.99 percent) also. The movement of students to Canada has been found to be closely related to the level of development and stage of demographic transition (Table 5). The perusal of data shows that the countries which fall in the region of Early Demographic Dividend such as India had experienced a steady rise in their share of international students in Canada. For example, the share of students from this region has increased from 16.62 percent to 40.66 percent from 2002-04 (TA) to 2017-19 (TA) with a growth rate of 14.19 percent per annum. Similarly, another region namely Late Demographic-Dividend too witnessed a rising share of their students 37.05 per cent during 2017-19 (TA).

Table 1: Province Wise Number of Study-Permit Holders in Canada: 2015-2018

Province	2015	2016	2017	2018
Newfoundland and Labrador	215(3.42)	270(0.29)	320(0.22)	345(0.19)
Prince Edward Islands	35(0.05)	45(0.05)	95(0.07)	110(0.06)
Nova Scotia	720(1.15)	880(0.95)	1495(1.02)	2260(1.27)
Quebec	2850(4.53)	3450(3.74)	4405(3.01)	5980(3.36)
Ontario	41995(66.80)	63260(68.60)	100655(68.90)	119495(67.20)
Manitoba	1245(2.0)	1925(2.10)	3155(2.20)	3935(2.20)
Saskatchewan	740(1.17)	1020(1.10)	1465(1.00)	2000(1.10)
Alberta	3035(4.80)	3370(3.70)	4825(3.30)	6240(3.50)
British Columbia	12040(19.10)	18015(19.50)	29690(20.30)	37390(21.00)
Total	62,875 (100.00)	92,235 (100.00)	146,105 (100.00)	177,755(100.00)

Source: Immigration, Refugee and Citizenship Canada, Government of Canada, Ottawa.

Table 2: Region Wise Number of Study-Permit Holders in Canada: 2002-2019

Region	2002-04 (TA)	2005-07 (TA)	2008-10 (TA)	2011-13 (TA)	2014-16 (TA)	2017-19 (TA)	Growth Rate 2002 to 2019
1.United States of America	12692 (8.07)	12922 (7.70)	12088 (6.10)	12142 (4.55)	12377 (3.49)	11683 (2.59)	-0.92
2.Latin America and Caribbean	12087 (7.69)	12003 (7.15)	14960 (7.55)	19695 (7.38)	25730 (7.25)	34002 (7.55)	-10.27
3.Europe	22292 (14.17)	22277 (13.27)	25320 (12.78)	31052 (11.64)	39362 (11.09)	38883 (8.63)	4.36
4.Middle East and North Africa	10260 (6.52)	12222 (7.28)	21977 (11.09)	30123 (11.29)	30395 (8.56)	30802 (6.84)	8.32
5.Africa	10110 (6.43)	9592 (5.71)	12632 (6.37)	17517 (6.57)	26733 (7.53)	28680 (6.37)	8.31
6.South Asia	10408 (6.62)	11795 (7.03)	18287 (9.23)	38053 (14.26)	62350 (17.56)	144298 (32.04)	19.41
7.East Asia	78425 (49.87)	85780 (51.10)	90755 (45.79)	114528 (42.92)	153732 (43.30)	158330 (35.16)	5.15
8.Eastern Europe and Central Asia	992 (0.63)	1285 (0.77)	2168 (1.09)	3713 (1.39)	4323 (1.22)	3687 (0.82)	10.5
Total	157265 (100.00)	167875 (100.00)	198187 (100.00)	266823 (100.00)	355002 (100.00)	450365 (100.00)	7.5

Source: Immigration, Refugee and Citizenship Canada, Government of Canada, Ottawa.

Table 3: Number of Study-Permit Holders from the South-Asian Region: 2002-2019

Country	2002-04 (TA)	2005-07 (TA)	2008-10 (TA)	2011-13 (TA)	2014-16 (TA)	2017-19 (TA)
Afghanistan	82 (0.79)	38(0.32)	100(0.55)	140(0.37)	123(0.20)	103(0.07)
Bangladesh	1523(14.63)	1638(13.89)	1688(9.23)	2117(5.56)	2772(4.45)	5005(3.47)
Bhutan	65(0.62)	60(0.51)	43(0.24)	40(0.11)	25(0.04)	65(0.05)
India	5812(55.84)	7507(63.65)	13393(73.24)	31372(82.44)	54495(87.40)	134297(93.07)
Maldives	17(0.16)	20(0.17)	7(0.04)	2(0.01)	8(0.01)	8(0.01)
Nepal	120(1.15)	148(1.25)	208(1.14)	245(0.64)	288(0.46)	617(0.43)
Pakistan	1905(18.30)	1845(15.64)	2307(12.62)	3587(9.43)	4067(6.52)	3325(2.30)
Sri Lanka	885(8.50)	538(4.56)	540(2.95)	552(1.45)	572(0.92)	878(0.61)
Total	10408	11795	18287	38053	62350	144298

Source: Immigration, Refugee and Citizenship Canada, Government of Canada, Ottawa.

Table 4: Number of Long-Term International Students in Canada, by Top 10 Source Countries, 2018

Country	Number	Per Cent	Country	Number	Per Cent
1.India	171730	30.23	7.Brazil	13770	2.42
2.China	141995	24.99	8.Nigeria	11190	1.97
3.Korea	24070	4.24	9.Iran	10535	1.85
4.France	22540	3.97	10.Japan	8335	1.47
5.Vietnam	20185	3.55	Total (1-10)	438790	77.23
6.USA	14440	2.54	All Countries	568130	100.00

Note: Long-Term here means those students who pursue study for periods more than six months.

Source: Canmac Economics Limited (2020), Table 3.2

Economic Impact

Academic migration, apart from making direct monetary benefits to educational institutions, results in innumerable benefits to the economy and thereby to the government of the host country. The rise in affordability, which emerged from the active participation of financial institutions, immigration agencies, and education consultants, has made the student migration sector highly selective and choice driven also. In recent years, it has been noticed that both the traditional (UK, USA, Australia) and the newly emerging competitors (China and Malaysia) are investing more in their higher education sector in order to market their educational offerings globally and thus, exerting a strong pull on the top talent. International students are being increasingly viewed as strong candidates for improving the economic, financial and social health of the Canadian economy which has been facing current and future shortage in terms of human resources and skills. The Canadian government has been introducing measures since the beginning of 21st century to help such students by providing better work opportunities, acquiring skills and experience not only during the study duration but also after completion of the study program so as to smoothen their transition in becoming permanent residents. International students are on average younger and have a considerable number of years to make a significant contribution to the labour market of the host nation as compared to late-age migrants.

Income and Employment Impact

International students' contribution to the various dimensions of the Canadian economy has been estimated to be decisive. Table 6 shows the international students' contribution to the Canadian economy in terms of addition to GDP and employment. In 2018, the various types of spending by international students, their visiting families, and friends translated into a $ 19.7 billion contribution to Canada's GDP, and it further supported 2,18,577 jobs. The contribution by international students to GDP increased during 2018 over 2017 by 22.14 percent to GDP and 21.40 percent to employment. Further, out of overall additional GDP contribution, two provinces Ontario and British Columbia have gained a maximum equivalent of $ 1.08 billion (54.96 percent) and $ 0.39 billion (20.20 percent).

Taxes and Revenue Impact

Spending by international students benefits the host country in the form of realization of various types of taxes. As per Table 7, the total tax revenue collected from international students was equivalent to $3.78 Billion in 2018; which consists of $ 1.65 billion (43.77 percent) as indirect taxes and $ 2.12 billion (60.88 percent) as personal income tax. Among all provinces and territories, the maximum benefits accrued to Ontario are $ 2.10 billion (55.76 percent), British Columbia $ 0.64 billion (17.07 percent), and Quebec $ 0.51Billion (13.71 percent).

Fees and Spending

Importantly, the spending by international students has emerged as a key financial metric for the Canadian economy (Table 8). Their overall spending increased steadily from $12.6 billion to $ 22.23 billion over the period from 2015 to 2018.

Table 5: Total Number of Study-Permit Holders Based on Demographic Dividend[1]

Region	2002-04 (TA)	2005-07 (TA)	2008-10 (TA)	2011-13 (TA)	2014-16 (TA)	2017-19 (TA)	Growth Rate
Early-Demographic Dividend	78350 (16.62)	89610 (17.76)	139390 (23.31	231105 (28.58)	310420 (28.85)	568445 (40.66)	14.19
Late-Demographic Dividend	157430 (33.40)	168240 (33.35)	212415 (35.53)	324710 (40.15)	462760 (43.01)	517955 (37.05)	9.12
Post-Demographic Dividend	215260 (45.67)	226695 (44.94)	218510 (36.55)	212745 (26.31)	240840 (22.38)	242995 (17.38)	0.55
Pre-Demographic Dividend	20285 (4.30)	19880 (3.94)	27585 (4.610	40120 (4.96)	62010 (5.76)	68540 (4.90)	0.01
Total	471325 (100)	504425 (100)	597900 (100)	808680 (100)	1076030 (100)	1397935 (100)	7.71

Source: Immigration, Refugee and Citizenship Canada, Government of Canada, Ottawa.

Table 6: Direct Economic Impact of All International Students on the Canadian Economy (Thousand Dollars), 2017 and 2018

Province/ Territories	GDP			Employment (in number)		
	2017	2018	Per Cent Increase	2017	2018	Per Cent Increase
Newfoundland and Labrador	68,127 (0.42)	83,134 (0.42)	22.03	793	972	22.57
Prince Edward Island	61,346 (0.38)	79,599 (0.40)	29.75	751	971	29.29
Nova Scotia	3,34,300 (2.07)	4,21,594 (2.13)	26.11	4564	5732	25.59
New Brunswick	1,14,281 (0.71)	1,42,375 (0.72)	24.58	1519	1882	23.90
Quebec	1,967,561 (12.17)	23,51,332 (11.91)	19.50	22978	27324	18.91
Ontario	8,727,941 (53.98)	1,08,54,670 (54.96)	24.37	95596	118206	23.65
Manitoba	3,76,805 (2.33)	4,60,082 (2.33)	22.10	4400	5340	21.36
Saskatchewan	206,529 (1.28)	2,45,361 (1.24)	18.80	2209	2628	18.97
Alberta	9,27,831 (5.74)	11,06,277 (5.60)	19.23	8640	10228	18.38
British Columbia	33,70,592 (20.85)	39,88,723 (20.20)	18.34	38478	45164	17.38
Territories	13,412 (0.08)	15,261 (0.08)	13.79	112	130	16.07
Total	161,68,725 (100)	197,48,407 (100)	22.14	1,80,041	2,18,577	21.40

Note: Canada has three Territories namely Northwest, Yukon, and Nunavut. Territories are distinct administrative units having those powers delegated by the federal government.

Source: Canmac Economics Limited (2020), Summary Table 2

The increase in absolute amount was $ 3.9 billion during 2018 over 2017 with yearly addition of 17.49 percent. The share of spending by international students in overall service exports of Canada nearly doubled from 12.50 percent to 24.50 percent during the period of four years from 2015 to 2018.

The international students have made their place as key revenue generators for educational institutions in Canada. This comes clearly from the comparison of the tuition fee borne by Canadian students and that of foreign-born students (Table 9). It can be noticed that international students pay a much higher level of fees as compared to their Canadian counterparts for the same course. For example, during 2021-22, for an undergraduate course, the level of fees for an international student was $ 33,623 as compared to $ 6,693 for the Canadian student, which means 402.36 percent higher. Similarly, for graduate courses, it was higher by 169.27 percent with corresponding levels of $ 20120 and 7472 $. Among all provinces, the difference was found to be highest in case of Quebec for both graduate and post-graduate courses.

Table 7: Total Tax Revenue Collected by Canada Government from Spending by International Students 2018, Thousand Dollars

Region	Indirect Taxes	Personal Income Tax	Overall Tax Revenue
Newfoundland and Labrador	8253 [0.50] (47.19)	9235 [0.43] (52.81)	17488 [0.46] (100)
Prince Edward Island	7060 [0.43] (47.64)	7759 [0.36] (52.36)	14819 [0.39] (100)
Nova Scotia	35919 [2.17] (43.94)	45818 [2.16] (56.06)	81737 [2.16] (100)
New Brunswick	13754 [0.83] (51.43)	12988 [0.61] (48.57)	26742 [0.71] (100)
Quebec	268287 [16.21] (51.76)	249997 [11.76] (48.24)	518284 [13.71] (100)
Ontario	896041[54.14] (42.51)	1211937 [57.01] (57.49)	2107978 [55.76] (100)
Manitoba	44527 [2.69] (49.36)	45678 [2.15] (50.64)	90205 [2.39] (100)
Saskatchewan	14267 [0.86] (39.00)	22316 [1.05] (61.00)	36583 [0.97] (100)
Alberta	59019 [3.57] (33.86)	115286 [5.42] (66.14)	174305 [4.61] (100)
British Columbia	252521 [15.26] (39.12)	392907 [18.48] (60.88)	645428 [17.07] (100)
Territories	55280 [3.34] (82.28)	11908 [0.56] (17.72)	67188 [1.78] (100)
Total	1654928 [100] (43.77)	2125829 [100] (56.23)	3780757 [100] (100)

Note: Square brackets refer to vertical percentage shares. And, round brackets for horizontal shares.
Source: Government of Canada, International Education,

Table 8: Spending by All International Students in Canada, Annual: 2015-2018

Year	Overall Spending (Billion Dollar)			Per Cent of Canada's Service Exports
	Amount	Annual Increase (Absolute Amount)	Per Cent Increase	
2015	12.6	-	-	12.50
2016	15.5	2.9	23.02	14.50
2017	18.4	2.9	18.71	22.30
2018	22.3	3.9	17.49	24.50

Note: The term All International Students here means both short-term and long-term students.
Source: Canmac Economics Limited (2020), Table 4.2 and Table 4.4

Table 9: Tuition Fees by Level of Study in Canada: 2021-22 (Current Dollars)

Province	Under-Graduate			Graduate		
	National Students	International Students	High (Per Cent)	National Students	International Students	High (Per Cent)
Canada	6693	33623	402.36	7472	20120	169.27
Newfoundland and Labrador	3078	12037	291.07	2825	4082	44.50
Prince Edward Island	6954	20417	193.60	5187	10564	103.66
Nova Scotia	9028	20397	125.93	10147	23048	127.14
New Brunswick	7983	16458	106.16	6988	13123	87.79
Quebec	3274	27406	737.08	3443	18577	439.56
Ontario	7938	42185	431.43	9765	26236	168.67
Manitoba	5082	17786	249.98	5406	11887	119.89
Saskatchewan	8545	22197	159.77	4694	7583	61.55
Alberta	6567	28014	326.59	7020	15167	116.05
British Columbia	6109	30903	405.86	9720	20295	108.80

Source: Statistics Canada, Table No.37-10-0045-01

Summing Up

From the above, it clearly emerged that the international education market has come of age. It has acquired its own distinct identity, growth drivers, and financial metrics in the realm of the international movement of services. Apart from other factors, it became possible with the emergence of the General Agreement on Trade in Services (GATS) framework of WTO. Out of GATS[2] specified four modes, it has been happening under the second mode of 'Consumption Abroad' where students from one country move as consumers of educational services provided by institutions located in other countries. Canada's higher education sector tilted strongly towards international students. And, South Asia particularly India has emerged as the epicenter of the supply of students to educational institutions there for graduate-level studies. Further, India has supplied a maximum number of students to Canada even among the top ten suppliers of students; much higher than China also. It further seems that such a trend would be strengthened in the future, apart from usual push and pull factors, by the process of early demographic dividend in which India is likely to stay for a longer period. Within Canada, so far two provinces Ontario and British Columbia have absorbed an overwhelming number of international students but other provinces too are following the suit as international students' contribution to academic institutions, service exports, government revenue, general business activity, jobs, human resources, overall economic life, and state income has proved to be decisive.

The emergence of Canada as the nuclei of the international education market raises several pertinent questions. It needs to be understood that this segment of global services market, in fact, represents by and large the unidirectional flow of students from certain regions of developing countries to Canada. For example, in the case of India, it is the Punjab state, though some other states like Kerala, Gujarat, Haryana, and Chandigarh are following, which account for a large flow of such students to Canada. The phenomenon which essentially operates as the movement of students is actually driven and guided not only by purely academic pursuits but also by migration (permanent settlement) interests. Acquiring academic degrees from host countries' institutions facilitates this process of getting permanent residency, green cards, work permits, citizenship, etc. That is why the international movement of students has been gearing more towards such countries which offer more scope for later residential settlements there. In fact, the international education market has been much more than that of the apparent study-purpose-based movement of students but a typical case of international academic migration. The fast-paced

(contd. on pg. 15)

European Union Copyright Law for the Digital Era: Will it Survive?

S Kumar* and Chetna Boriwal**

A copyright is a group of rights vested in original work. It is a form of safety provided by the laws of a nation. It is available for inventive works of authorship that are fixed in a tangible form, whether published or unpublished, literary works, paintings, live performances, photographs, movies, software, etc. The primary goal of copyright law is to protect the time, efforts, and creativity of the works' creators. As a copyright owner, one has the authority to keep each right or to transfer them individually or collectively to one or more people. This can be accomplished through licensing, assigning, or any other forms. The power of copyright allows authors to choose the way how work is made available to the public.[1]

The copyright is a person's exclusive right to reproduce and publish their original works of authorship (as literary, musical, dramatic, artistic, or architectural work, etc.). It gives the copyright owner certain moral, economic, and exclusive rights which include the right to:

a) Reproduce the work;
b) Prepare "derivative works" (other works based on the original work);
c) Distribute copies of the works by sale, lease, or another form of transfer of ownership;
d) Perform the work publicly; and
e) Display the work publicly[2]

Besides these exclusive rights, there are some rights of an author which are as follows:

a) The right to claim authorship of a work;
b) The right to object to any distortion, mutilation, or modification of work; and
c) The right to object to any derogatory action that may damage the authors' honor or reputation[3].

So far, creators of works are human beings but nowadays there is the entry of non-human entities also in this area. In such cases who will be the copyright holder is a question.

Artificial Intelligence and Copyright Law

Nowadays, artificial intelligence (AI) is a new trend of creativity. It has limitless potential. Whether the works created by AI are within the ambit of the copyright law of a nation or not is a big question. If yes who is the author. The legal system of most countries in the world excluded machines as authors. Should this trend be continued or some kind of protection may be given is a burning topic of today[4]. Tomorrow this may be more challenging.

Non-human Creation and Copyright Law

In an interesting case of copyright, probably the first known case in history, a monkey has been given a share of the amount for the work created by him by chance. In San Fransisco, a monkey named 'Naruto clicked a selfie picture from the camera of photographer David Slater JK in 2011. Photographer was on a visit to Netherland Park, Indonesia. Naruto picked up Slater's camera and clicked 12 pictures including a few selfies unknowing. It was published in a U.S. magazine. Slater used this picture with his name which was opposed by institutions working for animal rights named People for the Ethical Treatment of Animals (PETA). This was challenged in the 9th US Circuit Court in 2015. In this case, it was agreed that the picture has been clicked by the monkey himself so the earning should go to Naruto. It was opposed on the ground that copyright law does not give the right to animals. In 2017 Slater agreed to pay 25% of the amount to PETA for the benefits of Macaque monkeys[5]. Future copyright laws may have to be amended to include many such types of cases.

European Union Copyright Law

Before we go into the details of the European Union Copyright Law (EUCL) it will be relevant to understand in brief European Union (EU) and European Parliament. European Union is a political and economical union of 28 members in Europe with an area of 4,475,757 square km. It has an estimated

** Former Professor and Dean, Faculty of IT, Vikram University, Ujjain-456010 (Madhya Pradesh)*
*** Librarian, Govt. Home Science College, Narmadapuram-461001 (Madhya Pradesh)*

population of 513 million (513 crores,7.3%world population). Historically its roots can be traced to the 1951 Treaty of Paris and 1957 Treaty of Rome establishing the European Coal and Steel Community (ECSC) and European Economic Community (EEC) respectively with 6 members Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany.

The European Union and European citizenship came in 1993 with Maastricht Treaty. The number of member countries grew. A Monetary Union was established in 1999 which came into full force in 2002 with 19 members with the common currency Euro. In 2009 Treaty of Lisbon came into force with major amendments.

European Union has developed an internal single market through a standardized system of laws. The laws are applicable to all member states in those matters where members have agreed to act as one. It enables member states to move freely their people by abolishing passport requirements within Schengen area goods, services, and capital, and maintaining common policies on trade, agriculture fisheries, and regional development. The EU was awarded Noble Prize for Peace in 2012[6].

The European Parliament is the parliamentary institution of the European Union that is directly elected by EU citizens aged 18 years or older. The Parliament is composed of 751 Members of the European Parliament (MEPs) (705 for 2019-24). It had 375 million eligible voters in 2009. It is directly elected every five years by the European citizens (each EU Member State's national has his state's nationality and also of European Union. The European Parliament and its Council have legislative powers but they do not formally possess the legislative right to introduce a bill or repeal existing legislation. It is vested in European Commission.

The European Parliament has three places of work Brussels (Belgium), Luxembourg (Luxembourg), and Strasbourg (France). Luxembourg has administrative offices (the "General Secretariat"). Meetings of the whole Parliament ("plenary sessions") take place in Strasbourg and in Brussels. Committee meetings are held in Brussels.

The European Commission, an executive body of the European Union having executive powers but no (legislative powers') It is accountable to Parliament. The Parliament elects the President of the Commission and approves the appointment of the Commission as a whole.

The European Union Copyright Law

European Union has copyright laws for European countries. It was again introduced for amendments in digital environment by European Parliament Copyright on Legal Affairs on 20.6.2018. It was revised by European Parliament on Sep.12, 2018, and voted to support the European Union Copyright Directives which empowers authors and right holders to seek compensation for the snippets (pieces) of their works used online on various platforms. The Directives were supported by 438 parliamentarians as against, 226 while 39 remained absent from the vote (Total of 703 votes). It was first unveiled by the European Commission in 2016 but was rejected by Parliament in July 2018.

In an earlier effort in January 2018. European Union *Ministers had failed to approve the compromise text* Germany, Belgium, Croatia, *and* Portugal *voted against. Its final version came on 13.2.2019*[7].

Finally European Parliament has given approval to the Copyright Directives in March 2019 to update Copyright Law in Europe. The newly created Digital Single Market is designed to govern digital barriers across the European Union[8]. European Union has given approval by 348 votes as ageist 274 to it. The Article 13 has been narrowly saved by just 5 votes, as stated earlier; in Sep. 2018 it was supported by 90 more parliamentarians (438). The opposition has increased from 226 to 274 in final voting[9]. Now each of European Union member country would be required to enact laws within 24 months to support the Directives (Till April 202). In UK the EU legislation has already been implemented into UK law. Details of the legislation will have to be made by individual member states[10].

Directives on Copyright

The Directives on Copyright in the Digital Single Market which is also known as European Union Copyright Directive (EUCD) intend to ensure a wall-functioning marketplace in particular to cross-border use of protected contents. EU directives are a form of legislation that set an objective for member states to achieve. European Council describes its

big key goals as protecting press publications and reducing the value gap between the profits made by Internet platforms and content creators, which involve requiring financial agreement before they can use their content. Another goal is creating copyright exceptions for text and data mining[11].

It is an effort of the European Union to modernize copyright laws to prevent piracy and ensure that original creators are paid for what they produce. It reduces Value Gap in which media platform companies are able to profit from copyrighted materials without adequately compensating the artists. The Directives aim to give online press publishers more freedom to protect their content from news aggregators. The law will have a huge impact on how the internet works in Europe. This European Law may influence US policy in the future. It can also be a leader in the laws in other countries such as China, and India where internet users are large in numbers.

The European Union Parliament Directive Copyright in the Digital Single Market includes provisions regulating internet contents. The two most important provisions are Articles 11 and 13.

Article 11(Now Article 15)

It sets out new rights for publishers. The article 11 requires publishers and aggregate sites to pay a tax to sites to whom they link[12].

Article 11 requires a license before linking news stories etc. e.g. Google would need to pay to list news stories and other websites on its search engine.

Article 13

It imposes the application of technical measures to prevent the diffusion of copyright works. It is an attempt to reshape copyright law for the internet age. It is based around the relationship between copyright holders and online platforms, compelling the latter to enforce tighter regulation over protected contents. According to it platform providers should take measures to ensure the functioning of agreements concluded with rights holders for the use of their works or other subject-matter or to prevent the availability on their services of works or other subject-matter identified by rights holders through the cooperation with the service providers." The Article stipulates that platform should "prevent the availability" of protected works, suggesting those ISSPs will need to adopt technology that can recognize and filter work created by someone other than the person uploading it. Article 13 would make platforms like YouTube liable for copyrighted material. As such, platforms would require agreements with content producers[13].

Criticisms

The EUCL has been severely criticized by many, some in favor of it and others against it. A few such criticisms are discussed here.

In Favor

Many have favored the move. Mr Andrus Ansip, Vice President of European Commission said it is a big step ahead. The traditional media such as newspapers and magazines, etc. backed the move to regenerate more revenue which is flowing towards online platforms in digital age. The law gives more power to traditional media such as newspapers, etc. as against internet giants like Google, Face Book and U Tube, etc. Many European networks, studios and publishers have supported these Copyright Directives in order to fix the value gap, help original creators to detect copyrighted contents and report violations to tech companies. "The value gap is the gulf between the value these platforms derive from music and the value they pay to the creators. YouTube will have to deploy *ex-ante* measures to avoid liability. It will mean the introduction of algorithmic filtering[14]. UK music CEO Michael Dugher has supported Copyright Law and criticized Google as, "Behaving like a corporate vulture feeding off the creators and investors who generate the music contents shared by hundreds of millions on YouTube. Google should make a positive contribution to those who create and invest in the music[15]. It will balance the playing fields between American tech giants and European content creators giving copyright holders power over on how internet platforms distribute their contents[16].

As Against

Many groups and individuals started crying against it at its early stages. As per EUCL big technical companies will have to negotiate a license with authors/content creators/right holders for every piece (snippet) of work for use on their platforms. This will be costly as well as involving legal complications. The companies are also required to scan the contents before

uploading them on their platforms to avoid copyright infringements. The right holders can compel to share the revenue or withdraw contents from the platforms. The companies will have to withdraw contents if right owner wishes so[17].

The most popular content, memes, film reviews, video games, etc., are jeopardized by new legislation that will force the site to create an "upload filter" to block content with potential copyright violations. The platforms have to deploy *ex-ante* measures to avoid liabilities which will mean introduction of algorithmic filtering[18]. It could break the internet as we know it. The letter highlights that cost of putting automatic filtering technologies in place to fulfill the new copyright rules, which they argue will hinder European startups and SMEs from competing with US firms[19].

Article 13 will hinder, 'Remix' culture, a key part of online communities and create a type of censorship. Companies would have to block uploads from European Union countries. Article 13 is 'Meme Ban' because current content-filtering technology cannot distinguish copyright violation from fair dealing such as parody. The filtering measures should be "appropriate and proportionate", and the platforms should provide rights holders with "adequate reporting on the recognition and use of the works and other subject-matter "Filter may be error prone and ineffective.

Article 13 includes some obligations on internet companies that would be impossible to respect without the imposition of excessive restrictions on citizens' fundamental rights." By going ahead with Article 13, and filtering content would violate the freedom of expression set out in Article 11 of the Charter of Fundamental Rights. It violates the fundamental rights of internet users, contradicts rules previously established by the European Union's E-Commerce Directive Memes, remixes and other types of user-generated contents would all be put at risk as these could technically be seen as breaches of copyright. Article 13 is "incompatible with the guarantee of fundamental rights and freedoms and the obligation to strike a fair balance between all rights and freedoms involved"[20].

The tech giants also fear that the law can be misused to censor political messages and free expression[21]. They also say that change will lead in effect to blanket censorship of platforms of on-line creativity and entertainments. According to Google it will be bad for creators, entrepreneurs and innovators. As per Reddit it will disregard the concerns of users who feel internet as best. Wikipedia concerns and that the law is disappointing. It has lost an opportunity to modernize copyright in digital age to learn and create online[22].

Article 13 contradicts the European Union's E-Commerce Directive, which takes a different approach towards ISSPs' liability for hosting services that store information provided by user[23].

It will be a large financial burden for YouTube, making them liable for all copyright-infringing content on their service and the company wouldn't want this financial burden, and would instead stop European Union citizens uploading contents. Article 11, a new licensing requirement on reproducing snippets of news articles—are so controversial that they risk sinking the entire process[24].

Seventy leading technical giants have given a joint letter condemning Article 13. "56 leading academics published a set of recommendations on the proposed directive, including claims that new companies will have the threat of mandatory upload filters hanging over them as they grow[25]. YouTube launched Save Your Internet, a campaign in December 2018. It released a video explaining the law and how it could affect the platform, which was displayed prominently on the home page. A Change Org. petition gathered 4.7 million signatures opposing the directives till 18.02.19[26].

Digital Rights Groups had decried this legislation as a mask for censorship – and an end to memes in Europe. According to them Article 13 centers around on the use of protected contents by "Information society Service Providers" (ISSPs), which store and give access to material uploaded by users[27].

Beside many others have also criticized this law as:

(i) It will bleed money from the fledgling European Union digital sector into the coffers of the established rights holders. It will also bleed money from individual European Internet users[28].

(ii) The law is vague and poor thought out and will end up restricting how content is shared on line estranging, innovation and force speech[29].

(iii) Article 13 can enable abusive behavior, thereby threatening freedom of expression and information[30].

iv) It will hurt European's creative and digital economy. The law could massively obstruct digital startups in the European Union[31].

(v) The law may mainly affect Google search and Google news which show snippets of news articles. It may shutter Google news altogether. The dominance of US tech giants over on-line spaces will be deleted[32].

(vi) Article 13, and its sibling Article 11 could destroy the internet as we know it. . It's been referred to as the "meme ban", as well as censorships. It is dark day for internet freedom (Julia Reda)[33].

Conclusion

The question why this legal action is necessary lies in the fact that till now onus is on right holders to flag copyright violation with tech firms. It has been shifted to tech giants who will have to ensure that their platforms are not breaking copyright. The EUCL has created a wall between creators and publishers and users. The onus of breach has shifted to service providers for any breach of copyright in digital media who will have to ensure that their platforms are not breaking copyright. Technical giants such as Google, U Tube etc. have to develop and use technology to filter the contents. They are liable to ensure licensing and share the part of the benefits so earned'. At present Digital media provided wide gap in use and pay of others contents without any restrictions and penalty. The suffers are creators and gainers are users. This value gap has to be filled.

Right holder can claim for any breach. The law will have great impart, especially in Europe where contents from other countries cannot be used in European countries. As for the immediate future, nothing's going to change. State leaders within the European Union still need to sanction the changes before individual countries start hashing out the legal minutiae of the change.

EUCL surely have great impact on every nation. The existing law of the other countries of worked have to be changed. Enforcing agencies have to be reinforced in each country which will require lot of money and efforts to provide justice. At the moment nothing is going to harm much for technical giants such as Internet, Google, U tube, Face book etc. but there is an alarming future for them. India will have to take steps in this regard. Countries within European Union and other countries including India with copyright laws in the country and constituent states require amendments to include digital publications along with printed material.

European Union Copyright Law is updated in trimester rounds ups. In these round ups EU take note of progress of the law and give directions to the member countries for further actions with regard to copyright and related rights and Digital Single Market. A few member states have approached Court of Justice of the European Union for some grievances. Recently it has been directed to implement the law without further delay so that beneficiaries start benefiting from them. In February 2022 the European Commission issued Data Act for a regulation on harmonized rules on fair access and use of data. In March 2022 European Parliament and Council dealt with Digital Market. Similarly, many other such proposals are discussed by members in each trimester meetings updates please visit website[34].

References

1. *https://copyrightalliance.org/ca_faq_post/difference-copyright-patent-trademark/*
2. *https://smallbusiness.findlaw.com/intellectual-property/what-is-copyright.html*
3. *https://www.plagiarismtoday.com/stopping-internet-plagiarism/your-copyrights-online/1-what-is-a-copyright/*
4. *https://www.lexology.com/library/detail.aspx?g=66ca3452-647f-48ad-aa06-509223be33d2*
5. *https://en.wikipedia.org/wiki/Monkey_selfie_copyright_dispute*
6. *https://en.wikipedia.org/wiki/European_Union*
7. *https://www.indiatoday.in/technology/news/story/eu-parliament-approves-copyright-law-in-a-big-blow-to-google-facebook-1338841-2018-09-13*
8. [Op. cited 4]
9. *https://www.theverge.com/2019/3/26/18280726/europe-copyright-directive*
10. [Op. cited 4]

11. *https://www.eff.org/deeplinks/2019/01/article-13-and-11-update-even-compromises-are-compromised-copyright-trainwreck*
12. *https://www.forbes.com/sites/masonsands/2018/12/30/why-copyright-will-be-the-biggest-issue-for-youtube-in-2019/#178ee9c41c12*
13. *https://www.alphr.com/politics/1009470/article-13-EU-what-is-it-copyright*
14. [Op. cited 12]
15. [Op. cited 14]
16. [Op. cited 9]
17. [Op. cited 7]
18. [Op. cited 12]
19. [Op. cited 14]
22. [Op. cited 14]
21. *http://www.businessworld.in/article/EU-Parliament-Approves-Copyright-Law-In-Blow-To-Big-Tech/12-09-2018-159911/*
22. Op. cited 14]
23. [Op. cited 14]
24. [Op. cited 14]
25. [Op. cited 14]
26. *https://en.wikipedia.org/wiki/Directive_on_Copyright_in_the_Digital_Single_Market*
27. [Op. cited 9]
28. [Op. cited 11]
29. [Op. cited 9]
30. [Op. cited 14]
31. *https://www.cnbc.com/2019/03/28/article-13-what-eu-copyright-directive-means-for-the-internet.html*
32. [Op. cited 9]
33. [Op. cited 9]
34. *https://www.mondaq.com/copyright/1163326/important-changes-in-copyright-law-in-2022.*

❑

(contd. from pg. 9)

movement (better say craze) of students resulted in the proliferation of mega immigration-based businesses like study and visa consultants, language proficiency training centers, study financers, traveling managers, currency exchangers, health and life insurers, etc., among the source countries. Thus, besides integrating the economies of host and source countries, the international education market has made noticeable inroads into the functioning of their respective economies which calls for designing of appropriate policy framework so that the country can translate the demographic dividend into social, economic, and community dividend.

Note

1. The World Bank, on the basis of demographic dividend, classifies countries into four categories, viz. (a) Pre-Dividend countries-mostly low income countries with fertility levels above four births per woman, (b) Early-Dividend countries-mostly lower-middle-income countries with fertility rates below four births per woman and the rising share of the working-age population, (c) Late-Dividend countries-mostly upper-middle-income countries with fertility rates typically above replacement levels of 2.1 births per woman (d) Post-Dividend countries-mostly high-income countries where fertility has transitioned below replacement levels *(https://data.worldbank.org/country/demographic-dividend).*

2. The four modes of GATS are: (1) cross-border supply (2) consumption abroad (3) commercial presence (4) presence of natural persons.

References

1. Altbach, P. G., & Teichler, U. (2001): Internationalization and Exchanges in a Globalized University. *Journal of Studies in International Education*, *5*(1), 5–25. https://doi.org/10.1177/102831530151002.
2. Arthur, N., & Flynn, S. (2011): Career Development Influences of International Students who Pursue Permanent Immigration to Canada. *International Journal for Educational and Vocational Guidance*, *11*(3), 221–237. *https://doi.org/10.1007/s10775-011-9212-5.*
3. Beech, S. E. (2017): Adapting to Change in the Higher Education System: International Student Mobility as a Migration Industry. *Journal of Ethnic and Migration Studies*, *44*(4), 610–625. *https://doi.org/10.1080/1369183x.2017.1315515*
4. Canmac Economics Limited (2020): *Economic Impact of International Education in Canada-2020 Update Final Report*, Presented to International Affairs Canada, Government of Canada, August, Nova Scotia, Canada
5. Kraler, A., Schmoll, C., Kofman, E., & Kohli, M. D. R. (2012): *Gender, Generations and the Family in International Migration (IMISCOE Research)*. Amsterdam University Press.

❑

Decision-making in the Context of Classroom Transactions: Styles and Needed Perspectives

Amita Pandey Bhardwaj**

The total teaching act may be construed to emerge from the point of decision of a teacher to teach a particular item to a particular group of pupils and end at a point where in retrospect, she/he can analyse the events which swayed the process of interaction with pupils. The decision-making process which largely involves a planning strategy on the part of a teacher is called the *pre-active* stage, the implementation phase where the teacher and pupil action are inter-related in terms of content with the help of perception, diagnosis and action on the part of both is known as *interactive* stage and the reflection on the events and activities of the self and the pupil(s) during the interactional setting constitutes the *post-active* stage. The nature and quality of mental activity and the skills involved in each of the three stages differ in a substantial manner. The activities of teaching and learning may also be organized at various levels of abstraction ranging from the use and application of simple mental powers to the most complex ones viz. Memory, Understanding, Reflection, etc. During all these stages and levels of teaching, decision-making figures as an important activity. The quality of decisions adopted in the pre-active stage influences to a large extent the quality of interaction in the face-to-face setting among the teacher, the students and the subject matter. The results accomplished during the process of interaction exercise a direct and indirect influence on the post-active operations of the teacher.

Basically, decision-making involves a choice among two or more available alternatives. Considering the teacher as a leader, decision-making assumes a pivotal role. Napoleon Bonaparte once said, "Nothing is more difficult and therefore, more precious than being able to decide". This holds good in respect of explaining the predicament of a teacher as well, *mutatis mutandis,* in respect of planning, organizing, monitoring and managing classroom transactions in general and the activities which accompany the classroom roles in particular. In the present paper, an attempt has been made to examine the decision-making processes attempted by a teacher during classroom transactions and to lay bare the determinants and styles adopted by him/her with a view to making teaching-learning systems effective, efficient and quality-oriented. The focus of the present paper has been on improving the decision-making processes germane to effective teaching-learning systems. As such, the emphasis has been laid on the styles of decision making as in vogue largely in management systems. It is believed that the approaches to designing an effective educational system will gradually reflect and facilitate a paradigm shift for making education a useful and powerful instrument. Towards the end, a few suggestions have also been offered in order to highlight the attenuation of hindering forces and accentuation of driving forces with a view to render our classrooms the most useful and autogenic space for ensuring learning outcomes.

** Professor, School of Education, Director-TLC (under PMMMNMTT scheme, GOI), Shri Lal Bahadur Shastri National Sanskrit University (Central University), New Delhi-16. Email- amita@slbsrsv.ac.in*

What is Decision-making?

Teachers and educational administrators need to recognize and rely on their emotions as well as their reasoned thinking if they are to make decisions that can hold up in the wake of growing complexities in planning and organizing today's diverse and unpredictable contexts. There is increasingly inadequate input, conflicting information, resource crunch, time pressures, heterogeneous cultural and social forces and technological inroads that tend to cloud the issues and threaten the quality of decisions. Viewed in this context, the process of decision-making is quite complex. There are several factors which impinge during the decision-making process that will be examined here in terms of the most important ones in relation to teachers' role in organizing these teaching-learning processes.

It may be pointed out that decision-making is both rational or emotional, intellectual or intuitive in nature. The well-known psychological instruments such as MBTI (Myers Briggs type indicators) validate these dichotomies by describing decisions as based on a significant preference for either thinking or feeling. With the emergence of Emotional Intelligence (EQ)

it has been observed how brain structure and its functions shape our decisions. Daniel Goleman (1995) described how the emotional brain can act faster than and, in some cases, independently of the neo-cortex or 'thinking brain' in response to strong stimuli whether they are real crises or perceived threats.

The latest findings in Neuroscience suggest that long-standing, 'either'— 'or' views of decision-making processes are untenable. Jonah Lehrer (2009) has explained that the "old" and "new" parts of the brain are in constant communication. Our best decisions are finely tuned blend of both feelings and reason shaped by specific situations.

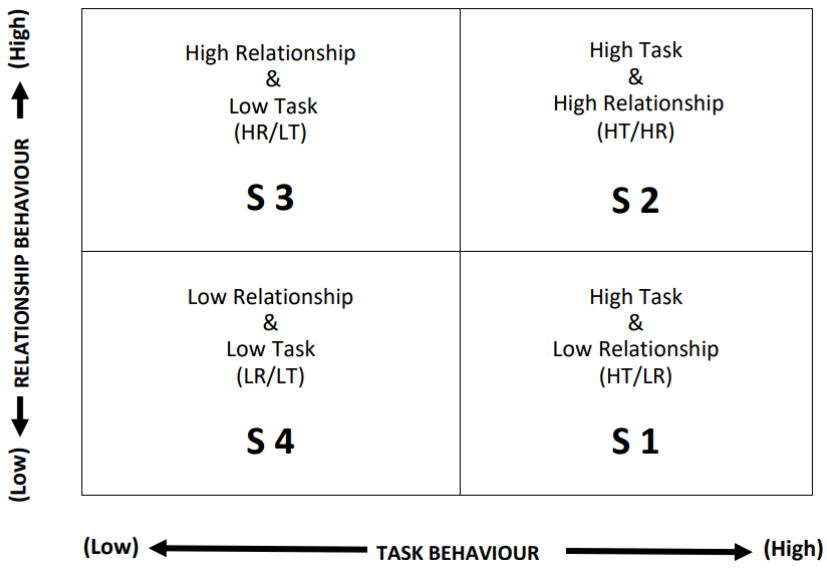
Snowden & Boone (2007) have recently explored the relevance of "Complexity science" for decision making. According to them, decision-making is influenced by four different contexts- simple, complicated, complex and chaotic. These contexts may be identified in teaching-learning situations as well. In simple situations the conventional steps involved in decision-making are collecting and analyzing data, giving weightage to alternatives, testing possible solutions and arriving at a course of action. As the teaching-learning situations are getting more complex and simplicity is diminishing, the teachers are more likely to struggle between several "right answers" than between simple "right or wrong choices". In view of Snowden and Boone, it may be averred that there is a need for teachers to engage in more pattern-based thinking, to encourage competing ideas, and choices to unique and empathize more than ever. They also underscore the need for a deep understanding of context, the ability to embrace complexities and paradoxes, and a willingness to flexibly change the influencing style of leadership. This has become urgent with the onset of a constructivist framework to organize teaching-learning situations. The decision-making in this orientation becomes invariably learner-centred and it avowedly presupposes the use of inquiry procedures and emphasis on concept learning.

In the developing perspective as of now, our teachers have to be trained and oriented in making their roles manifest more in respect of decision making focused on the environment and engagement of learners, with emphasis on self-regulation and self-evaluation as important ingredients. In playing an effective role as a teacher, it is imperative that teachers should acquire the competencies to effectively design teaching-learning systems and promote a culture of cooperative learning, action research-based interventions and self-study grounded activities. In order to focus on effective decision-making for teaching-learning systems, the teacher has to assume a leadership role in respect of the decision-making processes of various types of learning structures. This will also imply using a suitable strategy for diagnosing the Performance Readiness level of students. It will be in the fitness of things if the various types of decision-making styles and their effectiveness are not described first.

Decision-making Styles

Decision-making styles may be identified in the context of a situational approach to influencing students by drawing a parallel from Situational Leadership Style (SLS) (Hersey and Blanchard, 2015). In this framework, four styles of leadership have been stipulated which are based on-task behaviour and relationship behaviour of the leader (teacher) in influencing the followers (students). Task behaviour is the extent to which the teacher engages in spelling out the duties and responsibilities of an individual or group of students. These behaviours include telling students what to do, how to do it,

Fig. -1: Styles of Decision-making & Influence Behaviour



when to do it, where to do it and who is to do it. While relationship behaviour is the extent to which the teacher (leader) engages in two-way or multi-way communication. This type of behaviour includes listening, encouraging, facilitating and explaining the why's of something while offering support to others. It may be noted that these two types of behaviour are separate and distinct dimensions, but they have been shown by placing them on a separate axis of the two-dimensional graph through the four quadrants as indicated in Fig.-1.

These four quadrants represent the four styles of influence used as the basis for assessing effective influence patterns of behaviour. These are described as follows:

- **Style 1 (S1)** which is characterized by high task behaviour and low relationship behaviour (HT/LR).
- **Style 2 (S2)** which represents a high task and high relationship behaviour (HT/HR).
- **Style 3 (S3)** which is characterized by high relationship behaviour and low task behaviour (HT/LT).
- **Style 4 (S4)** which is characterized by low relationship and low task behaviour (LR/LT).
- The four decision-making styles can be postulated in accordance with the four influencing styles which are as follows:
- *Authoritative/Directive Decision-Making Style* in which the teacher (leader) makes decisions and provides specific instruction. It corresponds to Style – 1 (S1).
- *Consultative/Guidance Decision-Making Style* in which the teacher (leader) makes and explains decisions and provides opportunities for dialogue and clarification. It corresponds to Style 2 (S2).
- *Facilitative/Supportive Decision-Making Style* in which the teacher (leader) shares problems and mutually makes decisions with students (followers). It corresponds to Style 3(S3).
- *Delegative Decision-Making Style* in which the teacher (leader) turns responsibilities for decisions over to students (followers). It corresponds to Style 4 (S4).

These styles of decision-making are being briefly examined now in terms of the stages of teaching and the various contexts of the teaching environment and intended learning outcomes.

Authoritative Decision-making Style

In this style, the processes of teaching and learning are planned and variables involved in terms of situation-specific characteristics and learning outcomes are identified. The style is prima facie teacher-centred and assumes a desirable level of expertise on the part of the teacher both in accordance with content and methods of transaction. The specific situations in which this style figures are as follows:

- The planning of the teaching-learning system during the pre-active stage of teaching.
- Taking decisions about the instructional outcome.
- Deciding the relevant content for the teaching-learning systems.
- Identifying the direct and indirect teaching strategies which may be put in place.
- Taking a decision about formative and summative assessment strategies to be deployed.

Consultative Decision-making Style

It is a valuable decision-making strategy in so far as the teacher as a manager of the learning condition recognizes that students can also contribute to deciding what is to be taught and how it is to be taught in terms of their experience or knowledge. The students are called upon to give their inputs in terms of the content, process and evaluation aspects of teaching-learning situations. The following activities are considered a prerequisite in this style of decision-making:

- Identifying the groups of students who fall in the category of both able and willing.
- Those students who come forward to give suggestions have to be encouraged and given positive feedback and socio-emotional support.
- The teacher can consult the students in respect of the preferred learning spaces and the illustrations which they like.
- Although students offer suggestions which may be wide-ranging, the decision has to be taken by the teacher in terms of what, how and when in respect of teaching-learning activities.
- The ambience of the class climate has to be student-friendly so as to enlist positive support

from those students who are considered to be capable ad motivated.

Facilitative Decision-making Style

In this mode of decision-making, it is assumed that the maturity level of students is pretty high but they are hesitant in offering suggestions and support spontaneously. In such a situation the teacher has to do the following:

- Providing positive socio-emotional support to the group of students who are very capable and knowledgeable.
- Encouraging students to take initiative in respect of suggesting the specific content which will be useful and relevant to them.
- Eliciting action plans from students to make anecdotal presentations considered relevant for a large gamut of content.
- Helping students to develop ownership of the teaching-learning system and a sense of responsibility.
- Enabling students to take a decision in respect of appropriate content-specific strategies and methods of learning.

Delegative Decision Style

In this decision-making style, an endeavour is made to adopt and practice a learner-centered instructional approach in toto. Hence, the objective and content congruent transactional strategies and evaluation, are purported to be planned and decided by the students themselves. This style assumes a high level of ability and willingness of students. The following features are specifically relevant in respect of the teacher's role in this regard.

- Although teaching-learning systems take the form of self-set goals, content and strategies, the teacher cannot abnegate his/her responsibility for ensuring relevance and quality.
- The teaching-learning process has to be developed more in terms of being activity-based wherein the role of students becomes especially relevant.
- The entire teaching-learning system has to assume the form of self-learning characterized by self-management and self-monitoring.
- The emphasis has to be on promoting student initiative and hence the motivational triggers have to be provided mostly during the course of participation of students in the processes of problem-raising and problem-solving sessions.
- As the teaching-learning system becomes highly decentralized, the responsibility, the sense of ownership and accountability of students in the processes of learning get considerably underscored.

Decision-making Latitude and Its Effect on Learning Outcomes

In the process of decision making the role of the teacher as a leader is optimum in the authoritarian style whereas it gets relaxed gradually when the teacher as decision-maker moves to consultative and facilitating decision making up leading to delegative style wherein complete latitude is provided to the participating students. Thus, there are four degrees of teacher decision-making latitude which may be identified as Little or No Latitude (L1), Low to Moderate Latitude (L2), Moderate to High Latitude (L3) and High Latitude (L4). These four decision-making latitudes provided by the teacher may be combined with the four styles of influencing the students as follows:

- Style 1 (S1) Directing style (HT/LR) with L1
- Style 2 (S2) Guiding style (HT/HR) with L2
- Style 3 (S3) Supporting style (HR/LT) with L3
- Style 4 (S4) Delegating Style (LR/LT) with L4

These four styles of influencing can be effective in terms of the decision-making readiness levels of students. It may be noted, that determining the performance readiness for decision taking on the part of students depends on two indicators- ability and willingness. Here the indicators of ability are considered to be Knowledge, Skill and Experience while indicators of willingness are Confidence, Commitment and Motivation. Thus, the four levels of readiness may be decided on the following basis:

(a) Low Readiness Level (R1) which implies that students are low in knowledge, skill and experience and also low in confidence, commitment and motivation. In other words, low in all six indicators.

(b) Moderately Low Readiness Level (R2) which implies that students are low in any of the two

indicators of abilities and low in any two of the indicators of willingness.

(c) Moderately High Readiness Level (R3) which implies that students are high in any two indicators of abilities and high in any two indicators of willingness.

(d) High Readiness Level (R4) which implies that students are high in respect of all the three indicators of ability and high in all the three indicators of willingness.

It is important to note that when it comes to developing performance readiness everyone is unique. It is not a linear function but dynamic in nature. At the lower level of Performance Readiness (R1 & R2) the teacher is providing the direction about what, where, when and how and therefore, the decisions are teacher-directed. At the higher levels of Performance Readiness (R3 & R4) students become responsible for task direction and hence the decision is students directed. As students move from lower levels of Performance Readiness to higher levels of Performance Readiness the combination of task and relationship behaviour begins to change in consonance with the situation. Consequently, these four decision-making Readiness levels of students can be related to four types of influencing styles and decision-making latitudes of the teacher. They may be identified as follows:

- Low-Performance Readiness Level R1 with S1 and L1
- Moderately Low-Performance Readiness Level R2 with S2 and L2
- Moderately High-Performance Readiness Level R3 with S3 and L3
- High Performance Readiness Level R4 with S4 and L4

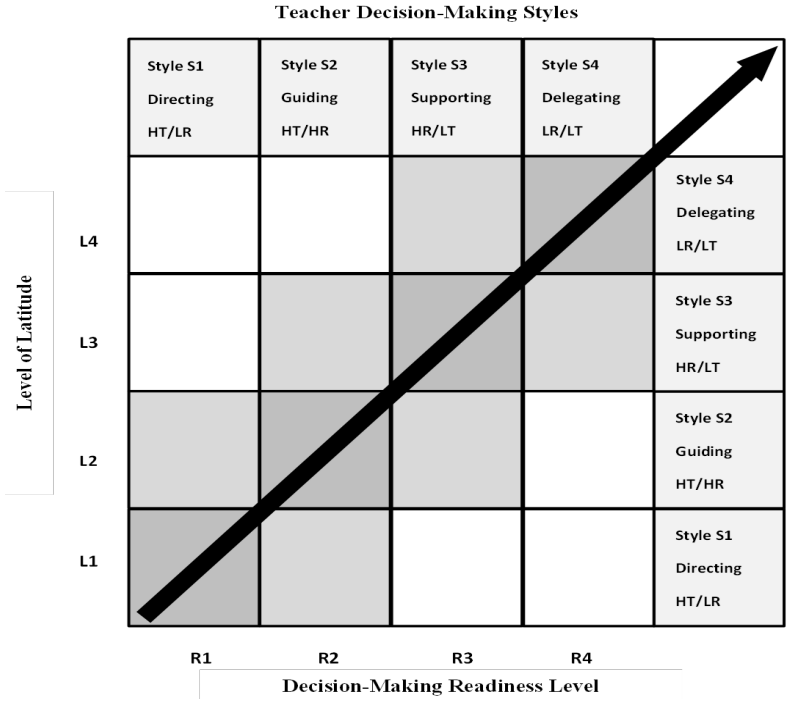
Thus, a teacher may decide to make decisions by considering the three components viz. decision styles of the teacher, latitude provided by the teacher in decision-making processes and the decision-making readiness levels of students. The effectiveness of the decision-making style of a teacher in consonance with his/her decision-making latitude and decision-making readiness levels of students is depicted in Fig.-2.

A perusal of Fig.-2 reveals that the teacher's influencing style 4 (delegating style- LR/LT) involves high latitude (L 4) in situations where the readiness level of the student is R4 whereas influencing style 3 (Supporting style HR/LT) involves moderate to high latitude L3; the readiness levels of the student is at R3. Likewise, Style 2 (Guiding style- HT/HR) implies a low to moderate level of latitude (L2) at the performance readiness level of students being R2 and Style 1 (Directing Style- HT/LR) involves low latitude (L1) wherein the performance readiness level of students is R1. Thus, a shifting paradigm from teacher-centeredness to leaner-centeredness the effectiveness can be ensured in terms of the four decision-making styles- Authoritarian, Consultative, Facilitating and Delegating by providing the four levels of latitude L1, L2, L3 and L4 respectively and the same latitudes to resonate with four performance levels of students R1, R2, R3 and R4 respectively.

Suggestions for Decision-making Process Effective for Needed Paradigm Shift

The paradigm shift from teacher to learner-centric approaches is more often discussed and

Fig.-2: Decision-making Style, Readiness Level and Teacher Latitude



debated in our educational systems for more than seven decades. It goes without saying that teacher is the key player in designing teaching-learning systems but the role specification for the student as a key player has been almost neglected. This has led to the domination nay saturation of direct instructional strategies and methods in our systems. In order to ensure optimum learner participation and learner-initiated moves in the teaching-learning processes, it is imperative to closely understand, appreciate and expand the scope of intelligent use of decision-making processes with the stress laid on the involvement and ownership of the learner in this process. The following suggestions are worthy of attention in this regard:

(a) The authoritarian decision-making processes should not be interpreted as the preferred mode of organizing teaching-learning interactions.

(b) The shift from authoritarian decision-making to consultative, facilitative and delegation should be made gradual and continuous in so far as the designing and implementation of various teaching-learning systems are considered.

(c) The decision-making processes should be integrated with the scope for the latitudes provided by the teacher from being low to moderately low, moderately high to a high degree for designing an effective teaching-learning system. The purpose of doing this should be to encourage more and more learner involvement and ownership.

(d) The influencing teaching styles should be attuned and integrated with the decision-making and performance readiness level of students from R1, R2, R3 to R4 respectively.

(e) An effort should be made by the teacher to ensure conformance and congruence among teaching style, decision-making style and degree of latitude provided and performance readiness levels perceived.

(f) Teacher education departments should induct courses on organizing orientations and skill development focused on the pragmatic use of decision-making processes and styles.

(g) Both content and process of education should be revisited with an eye on promoting and optimizing participatory approaches to teaching, learning and evaluation.

(h) Situational leadership model proposed by Hersey and Blanchard should be adopted so as to make it an integral part of the training strategy for teacher education programs.

(i) Suitable self-perception and rating scale instruments at a stage-specific level of education should be developed, designed and put in place for undertaking short-term projects in the form of action research.

(j) Teacher Education programme should include both pre-service and in-service components and it should encompass various leadership skills as indicated in the situational leadership model (SLM).

In a nutshell, it can be said that there is no one best decision-making style as it depends upon the situation within which they attempt to influence take place. The more teachers can adapt their behaviours to the situations, the more effective their attempts to influence will be. Consequently, the relationship between teacher and taught is considered to be crucial in a classroom decision-making situation. In order to maximize the teacher-taught relationship, the teacher must determine the task-specific outcomes which the students have to accomplish. By creating this clarity on outcomes, the teacher has the basis for determining the students' level of Performance Readiness in relation to the appropriate style of decision making and latitude level. Thus, diagnosing the correct performance level of students will facilitate going for the right style of decision making and latitude level which will not only pave the way for meaningful classroom transactions but also for effective roles of teachers.

References

1. Snowden J. David & Boone E. Mary, (2007). A leader's Framework for Decision Making, *Harvard Business Review*.
2. McCosh, M. Andrew. (1978). Management decision Support Systems. New York: Wiley.
3. Hersey, Paul & Blanchard, H. Kenneth & Johnson, Dewey E. (2015). Management of Organizational Behaviour. Pearson Education, Inc., Publishing as Prentice Hall, Noida, India.
4. Pandey, K.P., (2008). Advanced Educational Psychology; Vishvidyalaya Prakashan, Varanasi.
5. Pandey, K.P., (1997). Modern Concepts of Teaching Behaviour; Anamika Publishers & Distributers, New Delhi.
6. Pareek, Udai. (2004). Understanding Organizational Behaviour; Oxford University Press, New Delhi. ❑

ICT in Education and Blended Learning: Contemporary Practices in Indian Higher Education

Dhiraj Ambade*

Information and Communication Technology (ICT) has had a major impact on education in the twenty-first century (Núria Llevot-Calvet., 2018) (Schneckenberg, 2010) (Kumar, 2006). Globally, there is a growing consensus that Information and Communication Technologies, particularly the Internet, provide a new framework and huge prospects for economic, political, educational, and social development. Achieving social development goals requires access to new information technologies and new ways of accessing and using technology by those living in poverty. The World Summit for Social Development (united states 2004) recognised the need for educational institutions to provide such access. Ensuring equal access to education, information, technology, and knowledge is vital for increasing communication and student empowerment while safeguarding civil and political rights(2004).

The usage of ICT in higher education institutions, particularly in India, is more of an inevitability than an emerging trend, showing the institution's standard. Especially during the epidemic, when internet teaching, learning, and evaluation were required (Isaias, 2020). This is because ICT has long since superseded and may soon undermine traditional teaching-learning processes (Bach, 2006).

In recent years, the use of ICT has increased in India, notably with the Kothari Commission's recommendation to reinforce the use of technology in HEI academics. In the post-pandemic era, higher education has taken on a new meaning, focusing on skills acquisition, which corporations and professionals need. Unlike traditional teaching and learning techniques, ICT promises efficiency, accuracy, skill development, and transparency. It facilitates faster delivery and transaction of knowledge, keeping pace with the time and demand, more so with education seem to seek employment based on skills. Thus, adoption and integration of ICT is crucial in procuring access to information and new advances (Law, 2006).

ICT has emerged as one of India's most potent tools for addressing development and poverty issues (Venkatesh, 2020)(Bajpai). With ICTs in education, teachers, learners, and professionals may access and stake research resources from anywhere. Using ICT, we can improve and comprehend the learning process, collaborate across time and space, and address 'complex real-world challenges' (UNESCO., 2018). Increasingly, ICT tools are used in teaching. Many technologies, notably ICT, are now being accepted and integrated into our daily lives and educational institutions (Tomei, 2012). Globally, ICT has influenced teaching and learning practises (UNESCO, 2020).

Using ICT in our universities is increasingly crucial, especially after a pandemic. It's become a vital part of our instructional activities. Educators are increasingly employing ICT to teach students, a sign of progress in a highly competitive and 'globalised digital world'. Whether in the classroom, administration, or online, ICT has the potential to improve education. ICT can help teachers and students in the classroom. ICT improves individual, group, and societal learning. Teaching and learning may now take place "anytime, anywhere, especially with the rise of ICT" (Manichander, 2018, p. 34). Teachers and students can use ICT to improve classroom experience.

ICT has recently revolutionised education globally. ICT improves information and knowledge quality while increasing awareness. Educators increasingly see ICT as a tool to improve classroom quality, engagement, and flexibility. Lifelong learners can choose what, when, and where they wish to learn (UNESCO, 2020), Students can use ICT to collaborate with peers globally. Networking and communication equalisation are a key feature of ICT, according to a UNESCO report. Most countries priorities ICT adoption, integration, and implementation to improve teaching and learning (World development report 2018: Learning to realize education's promise., 2018).

Using ICT in the classroom teaches students how to work in the digital age. Traditional educational environments seem unsuitable for educating learners for level of employee. Without ICT, no educational

* *Faculty, Annasaheb Gundewar College, Nagpur- 441302 (Maharashtra). E-mail: abdees2017@gmail.com.*

institution can prepare students for 'the twenty-first century' challenges in academics (Wright, 2008) (Erdem, 2019). Several researches have proven that ICT may considerably improve the educational process.

Wong, et al…(Looi C. W., 2019) state that technology can support face-to-face learning. Teachers can educate students with special needs by using computers, according to many experts (Gunter, 2014). Using ICT can help both professors and students improve their teaching. Lawrence (2012) claims that ICT can boost learned competence, motivation, and knowledge. ICT can help students learn and deliver information. Byrne (2013) says it depends on the curriculum, region, and class. ICT has shown benefits in various science education domains. For example, Reid states that employing ICT requires teachers to change and customise their own materials and practises (Manson, 2006).

Bosch, C., et al., (2021) stated that more the student learning centric pedagogy is, the more access to online resources is required to support students in managing their own learning. According to Amin, ICTs are supposed to supplement traditional teaching and learning (2018, p. 171). Integration of ICT with a new age curriculum is and will be the benchmark of progressive academic institutions which have long accepted hybrid learning (Gisbert, 2015). For Bolstad (2004), ICT is "any electronic or digital technology that allows people to obtain information, connect, or change the environment." A type of education that uses ICT to improve, support, and optimise teaching and learning process (Looi C. Z., 2020). E-Learning incorporates the effective use of ICTs to learn. ICT tools thus provide impetus to e-learning.

However, earlier research (Kamei, 2016); (Koh, 2015), 2010; (Latwal, 2020) has highlighted some of the potential benefits of using ICT in education, notably in enhancing teaching and learning activities:

- allow learners to learn from experts across the world;
- provide opportunities for students to develop understanding and cultural sensitivity; through collaborating with students from different nations;
- facilitate the access to digital information efficiently;
- support student-centric and self-directed learning;
- produce a creative learning environment;
- enhance teaching and learning quality;
- provide problem solving and critical high-order thinking abilities development;
- encourage teacher-student communication;
- encourage student collaboration;
- instant feedback;
- allow things to be completed on time;
- communicate positive expectation;
- value different ways of learning and capacities;
- bridge social diversity;
- prepare students to develop the '21st century competencies; and
- support social development by sharing knowledge, enhancing democratic participation, access to government services, and social cohesiveness.

ICT is becoming more ingrained in teaching. Everyday interactions with Smart Phones, laptop, computer and programmable toys expose students to digital tools. Because research shows that early exposure to technology can benefit students, today's youth live in an ICT-rich era.

In 2004, the Government of India launched the ICT@Schools scheme, combining two earlier schemes, Educational Technology 1972 and Computer Literacy and Studies in Secondary School (CLASS) 1984, to help secondary students develop ICT skills and learn through computer-aided learning, thus bridging the digital divide. (India, 2017). Online teacher training and professional development programmes are being employed by the Central and State Governments to ease some issues associated with in-person training such as time away from school, dilution of instructions and limited training scope and instructors covered. To make an online course useful for teachers, education institutes can integrate recorded expert sessions, practitioner perspectives, and classroom films.

As part of the new education policy 2020, ICT is emphasised for 'community engagement' and academic enrichment (NEP 21.6). It envisions technology enhancing educational endeavours. There will be apps, online courses/modules, satellite TV channels, online books, and ICT-equipped libraries and Adult Education Centres to make education more accessible through government and philanthropic initiatives (MHRD I., 2020)(21.10).

UNESCO assists its Member States in developing evidence-based ICT education policies and master plans. Ensure instructors have the abilities and competencies to use ICT to promote student outcomes and digital skills development. ICT can enhance and improve education. UNESCO, as the UN's chief educational body, leads international efforts to help countries understand how technology may help them achieve SDG (Sustainable Development Goals) (UNO, 2017).

The Ministry of Education (MoE), Government of India emphasises the use of ICT in its educational transaction, providing impetus in education, learning and teaching, and evaluation process both in school and higher education. the ICT in school education is facilitated through introducing the ICT based applications and portals, such as Shala Siddhi, Shala Darpan, e-path Shala, Swachh Vidyalaya, school GIS, Digital Gender Atlas (Table-1). Considering the growing mobile use in education, government also launched ICT based Mobile applications such as Shala Darpan, Saaransh portal (MHRD D. o., 2020).

The National Assessment and Accreditation Council (NAAC) makes higher education procedures more robust, objective, transparent, scalable, and ICT enabled by ensuring that they are in step with local, regional, and worldwide trends. It emphasises the need for institutions to be well-prepared to employ ICT. It intends to increase ICT use in higher education institutions by implementing ICT-enabled administrative processes and resource sharing and networking. It urges the institution to develop technology deployment policies and plans (ICT use).

To facilitate E-learning in social sciences, the National Mission on Education through ICT (NMEICT) has established a curriculum-based interactive multimedia portal called e-PG Path Shala. While e-Shod Sindhu provides current and archival access to over 15,000 core and peer-reviewed

Table -1: ICT Based Application in Schools

ICT Based Application	Description	Website
Shala siddhi	In India, the National Programme on School Standards and Evaluation (NPSSE) is known as Shala Siddhi. The National University of Educational Planning and Administration (NUEPA) designed it to help schools evaluate their performance more strategically and make professional improvements.	*http://shaalasiddhi.nuepa.org/*
Shala Darpan	Shala Darpan, is an ICT programme operated by India's Ministry of Human Resource Development, mainly designed to evaluate students' progression. This data is only available to students in public schools. The Shala Darpan Portal is being implemented by the Rajasthan Education Department.	*https://rajshaladarpan.nic.in/*
saransh	The Central Board of Secondary Education (CBSE) of India launched the Saransh web portal to promote ICT in schools.	*saransh.nic.in*
e-pathshala	ePathshala is a CIET and NCERT portal/app. The Ministry of Human Resource Development, CIET, and NCERT. introduced it in November 2015. It includes instructional tools for instructors and students. The portal includes NCERT textbooks for grades 1-12, NCERT audio-visual resources, journals, supplements, teacher training modules, and other print and non-print materials.	*https://epathshala.nic.in//*
School GIS	School GIS is a government web platform for monitoring school coordinates, village, taluka, and district information, and grading.	*https://schoolgis.nic.in*
Digital Gender Atlas	The Digital Gender Atlas was created to discover low-performing geographic regions for girls, particularly from marginalised groups including scheduled castes, scheduled tribes, and Muslim minorities.	*https://www.india.gov.in/spotlight/digital-gender-atlas-advancing-girls-education*

Table -2: ICT in Higher Education

ICT Application	Description	Website
swayam	Swayam (Study Webs of Active-Learning for Young Aspiring Minds) is an Indian MOOC platform launched by the Ministry of Human Resource Development (MHRD),(now Ministry of Education),	*https://swayam.gov.in/nc_details/AICTE*
swayamprabha	The SWAYAM PRABHA is a group of 34 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite	*https://swayamprabha.gov.in/*
National digital library	The National Digital Library of India (NDLI) is a virtual repository of learning resources that offers a variety of services to the learning community.	*https://ndl.iitkgp.ac.in/*
e-PG Pathshala	e-PG Pathshala is an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) being executed by the UGC.	*http://epgp.inflibnet.ac.in/*
shodhganga	The Shodhganga@INFLIBNET is powered by DSpace, an open source digital repository software developed by MIT in collaboration with Hewlett-Packard (HP).	*https://shodhganga.inflibnet.ac.in/*
e-shodhsindhu	INDIA'S SHODH SINDHU provides universities, colleges, and centrally funded technical institutions with access to e-resources.	*https://ess.inflibnet.ac.in/index.php*
e-yantra	e-Yantra is a Ministry of Education-funded robotics outreach programme based at IIT Bombay.	*e-yantra.org*
FOSSEE	The FOSSEE (Free/Libre and Open Source Software for Education) project encourages academics and researchers to use FLOSS tools.	*https://fossee.in/*
Spoken tutorial	Spoken tutorial is a MoE, GoI. project on ICT educationto encourage Open Source Software literacy in India.	*https://spoken-tutorial.org/*
Virtual lab	The Virtual Labs project is an initiative of the Ministry of Human Resource Development (MHRD) of India (NMEICT).	*https://www.vlab.co.in/*
vidwan	A premier database of scientists, researchers, and other faculty members from top academic institutions and other R & D organisations in India.	*https://vidwan.inflibnet.ac.in/*
Shodh siddhi	e-National ShodhSindhu's Steering Committee (NSC) has established a programme "ShodhShuddhi" which provides access to Plagiarism Detection Software (PDS) to all universities/institutions in India.	*https://pds.inflibnet.ac.in/*

journals and several bibliographic, citation and factual databases in different disciplines from many publishers and aggregators to its member institutions, we can imagine the inclusion of ICT in higher and school education in India

ICT in School Education

GOI, in its endeavour to introduce ICT in education, started the applications such as shala siddhi, e-pathshala, and other, facilitating ICT enabled access to learning, teaching and evaluation.

Despite many claims by educational technology companies, agencies, and the government, the reality in India's 1.30 million schools, 611 universities, and 31,000 colleges is quite different. More so with the imbalance in income, poverty, access to food and education as being the challenges for the people, the buzzword of development become meaningless (Hemalatha, 2020).

As per the AISHE's report 2020, which enlists 1043 Universities, 42343 Colleges, and

11779 standalone Institutions, there are 396 private universities, and 420 universities are rural. There are 522 General, 177 Technical, 63 Agriculture & Allied, 66 Medical, 23 Law, 12 Sanskrit, 11 Language Universities, and 145 Other Universities. Uttar Pradesh, Maharashtra, Karnataka, Rajasthan, Andhra Pradesh, Tamil Nadu, Madhya Pradesh and Gujarat have the most colleges. The number of colleges per lakh eligible population (aged 18 to 23) varies from 7 in Bihar to 59 in Karnataka. Only 10 per cent of colleges are exclusively for women, yet 60 per cent of colleges are in rural areas. Only 2.7 per cent of colleges provide Ph.D. programmes, while 35.04 per cent offer graduate programmes. 32.6 per cent of institutions only provide one curriculum, with 84.1 per cent privately owned. 37.4 per cent of these private colleges exclusively provide B. Ed. (Ministry of Education, 2020)

In India, 78.6 per cent of colleges are privately operated, while 65.2 per cent are privately aided. Andhra Pradesh and Telangana have almost 80 per cent private unaided colleges, whereas Chandigarh has 8 per cent. 16.6 per cent of Colleges have fewer than 100 students and only 4 per cent have over 3000.

In India, the Gross Enrolment Ratio (GER) in higher education is 27.1, based on the 18-23 age group. The male population has a GER of 26.9, while the female population has a GER of 27.3. Compared to the national GER of 27.1, it is 23.4 for Scheduled Castes and 18.0 for Scheduled Tribes. Scheduled Casts students make up 14.7 per cent of the total enrolment, while Scheduled Tribes students make up 5.6 per cent. Other Backward Classes account for 37 per cent of students. Muslim minorities account for 5.5 per cent of students, while other minorities account for 2.3 per cent (2020).

Without a doubt, ICT as an essential necessity in education proves to be beneficial in information access and learning. However, given the socio-economic geography, lack of funds, and privatisation of institutions, ICT enabled teaching presents more challenges than solutions. In a country where most education is delivered in a regional language and English is taught only as a second language, implementing comprehensive ICT in education could be unproductive. Considering the aforementioned statistics, which show that most students (32%) choose to study in the Arts faculty, and the institutional infrastructure associated with ICT, blended learning can aid in the acquisition of educational skills and competence.

Table-3 Percentage of Institutions having ICT Related Infrastructure

Infrastructure	University	College	Standalone
Theatres	49	21	21
libraries	94	99	98
Laboratories	85	82	93
Conference Halls	94	79	81
Computer Centres	81	86	92
Connectivity NKN	55	23	23
Connectivity NMEICT	40	22	22
Skill Development Centre	66	53	54
ICT cell	NA	NA	NA

***Source**: AISHE19-20 page 33.*

Complete Adoption of ICT in Indian Education: Some Barriers

Although Information and Communication Technology (ICT) has the potential to alter Indian education, there are several problems and challenges that must be addressed before we can adopt ICT education in schools and educational institutions. Internal and external hurdles stand in the way of ICT adoption. The following are some of India's internal barriers to ICT integration:

- Lack of qualified teachers- Fewer dynamic instructors and technocrats are trained in ICT. This underlines the need for frequent quality ICT training for instructors participating in ICT education.
- Inadequate infrastructural support and resources- Inefficient training modules, computers, study materials, software, infrastructural availability, inadequate expertise regarding incorporating ICT in courses, technological issues, lack of administrative aid, and poor curriculum fit are obstacles in ICT adoption.
- Most instructional software produced globally is in English. Most web information is in English. English proficiency is low in underdeveloped countries, especially outside of urban areas, limiting the educational benefits of ICT.

- A lack of awareness of the role of ICT in improving education is a common occurrence in developing countries. Teacher attitudes and views are also obsolete. They are oblivious, dogmatic, and unwilling to evolve. Incorrectly believing that ICT is primarily made for children, they doubt its effectiveness and utility in the classroom.
- Time constraint: Instructors frequently get extra duties. They also teach other subjects. They lack time to create and apply educational technology.
- Education institutions have limited financial resources to maintain and upgrade ICT equipment. Budgetary constraints severely limit government endeavours. Rural school ICT projects are not self-sustaining. When government or private sector initiatives expire, students must maintain equipment. Students from low-income families are unable to afford maintenance and computer costs.
- Lack of ICT service centres and trained technicians in schools. Technical support workers, whether school-employed or contracted, are essential to a school's ICT use. Without on-site technical help, technical failures cost time and money. Lack of timely technical help severely impeded the use of ICT in the classroom.
- Internet and resource issues Rural schools typically lack ICT resources such as supporting infrastructure, uninterrupted electricity, multimedia, projectors, scanners, smart boards, and so on. Despite its importance in ICT, internet is absent in most classrooms. High internet provider fees and slow or inconsistent access weaken the meaning and impact of ICT.
- Lack of interest among the stakeholders: Lack of interest among stakeholders, local management, teachers, and parents, is a key hurdle to ICT programs in education. With most institutions privatised, stakeholders are unwilling to fund ICT and other technological projects.

Blended Learning as a Contemporary Practice in HEI in India

Blended learning is the 'buzzword in emerging training world' (Thorne, 2003). Blended learning in higher education shows how blended learning embraces traditional ideals of face-to-face teaching while incorporating online learning best practises, helping learners and teachers improve teaching-learning across disciplines (Garrison, 2008). Blended learning, particularly in education, allows trainers and staff developers to combine online and conventional learning methods. It is a blend of classic and innovative learning strategies that could improve classroom experience for both students and teachers.

Academics and educators must evaluate whether digital platforms are credible alternatives or, at best, complementary. Higher education must ensure valuable and liveable experience of learning to ensure efficient yet human face of learning. In the era of higher education industry 4.1, an over-reliance on ICT-based machine learning can weaken the creative spirit that institutions value. Blended learning allows for incremental digital transition without removing the live learning experience.

In a world of rapidly developing technology, people's communication, learning, and thinking styles are evolving. Blended learning is a rapidly growing trend in worldwide education (00). It is a blended method of teaching in which teachers must combine traditional classroom skills with new skills generated by ICT learning demands.

In the early 2000s, it became a popular instructional concept. Blended learning appears enticing since it preserves old learning methods while incorporating modern technologies. En route, it provides for a compromise in integrating modern technologies into instruction, following the trend of the twenty-first century.

Blended learning is founded on the idea that learning is a continuous process, where the teacher employs tools to support and facilitate learning activities. Combining several ways of delivery can optimise programme, time, and cost (Garrison and Kanuka 2004; Nazarenko 2015). ICTs support blended learning. Also, students and teachers can use cognitive explanatory tools to create a dynamic learning environment with many options (Tseles, et. al., 2011).

To conform with the NEP's new teaching-learning educational process, the UGC stressed blended learning in its document (page 8). blended learning offers additional flexibility and can be used in programmes that combine traditional learning with technology. It is preferred by all stakeholders: teachers, students, parents, and policymakers. Blended

learning helps smooth the transition from classroom to computer. Thus, research reveals that is the "best of both worlds" learning method. Globally, many learning platforms have adopted blending learning as a popular learning modality (9).

As digital technologies emerge and become increasingly important in teaching and learning at all levels, from K-12 to higher education, the NEP–2020 proposes the usage of blended learning approaches. The NEP-2020 acknowledges the importance of face-to-face learning while boosting digital learning and education.

Multiple national studies have proven that implementing blended learning enhances student achievement and satisfaction because it promotes good relationships and self-directed learning. This approach preserves traditional learning methods while enhancing them with ICT. Blended learning increases student engagement, teacher-student interaction, and student ownership of learning. It is adoptive with its flexible time management. It helps all pupils, rich or poor, study better. It provides a more flexible teaching and learning environment that promotes experiential learning (21).

ICT implementation requires a staged approach (Faber, 2017, p. 189). Wang (2005) used ICT Implementation Process model to enable ICT in HEIs. However, the approach does not consider concerns like socio-economic inequality or finance. The model outlines five contextual elements that affect processes and products in each implementation stage: user community, organisation, technology being adopted, task, and organisational environment. Yildiz (2020) claims that ICT alone does not boost organisational output. They should incorporate human abilities, talents, direction, and a proactive attitude. Increasing output requires these attributes plus ICT.

According to the definition, HRM is a strategic, comprehensive, and unified approach to employment, growth, and well-being of people working in organisations. Employee relations, well-being, and safety are all addressed. Adopting this technique with right strategy backed by finances in ICT, HRM, particularly in India, seems faraway.

Today, there are few skill frameworks that specify the aptitudes, dispositions, and attitudes required to succeed in diverse communities and professions. Despite the GoI's reduced role in higher education management and its expectations from corporate sectors to infuse blood into demoralised Indian education, ICT, in its want of complete implementation, can prove inefficient. Bourne (2018)stresses the importance of global competences, intercultural interaction, and understanding(p. 248). These skills are envisioned to characterise the modern workforce, but because of inefficient structural development and absence of fundamental support system in India, these skills are challenging to develop.

According to the National Institute of Educational Planning and Administration, one out of every five Indian schools lacks computers (NIEPA). Public schools (only 18.7%, or 243,000) have mostly escaped the ICT revolution. Through the National Mission on ICT in Education (NMEICT), 390 universities and 14,578 colleges in India now have internet access (ICT: Magical opportunity to leapfrog Indian education, 2019).

ICT-enabled teaching ignores conventional learning's role in shaping personality and character. In a culturally diverse environment like Indian schools, comprehensive ICT adoption may appear useless. Ilana Snyder advises about enforcing corporate agendas into education.She says:

I am not a 'technology booster' ... dedicated to pushing technologies into the education sector. That job is being done effectively by governments and administrators, often in direct collaboration with corporate interests. Such powerful forces do not need any help. In contrast, I believe teachers need to approach the technologizing of education with caution, understanding and scepticism. Effective education should always be the priority, and technologies must remain in the service of that priority(p. 43).

The gradual privatisation of schools in the UK and the USA has allowed Microsoft, Apple and other firms to become more involved in education. Companies like these have promoted computers as symbols of social distinction, signifying modernity, intellectual superiority, and other traits. However, despite the government schools and colleges' lukewarm response to the high-potential ICT revolution, ICT education companies are flooding the market with teaching-learning technology like interactive. Experts predict that the Indian ICT in

the education market will reach Rs.570,000 crore ($100 billion) by 2014(ICT: Magical opportunity to leapfrog Indian education, 2019).

The education discourse employed to support the representation of corporate interests in education made it look like school communities' interests were the same as corporate interests. This is because theirs educational ICT solutions "empower teachers, thrill students, and allow everyone to attain their full potential (Snyder, 1996)."Marketing assertions that items will meet the needs of key stages and SATs are used to sell products. In this "public-private collaboration," the absence of critical conversation ensures that the private is far stronger than the public. Teachers, parents, and students are all exposed to these post-event pressures and practises.

The pedagogy of learning can only be the transformation of learning in a more holistic way, which the blended learning mode does. Learning is not only a technique adoption exercise, as the pure ICT votaries propose. Over-reliance on charts, maps, and graphics can lead to educational hyper-reality due to the likelihood of "The function of visual and hypermedia representations of information visibly overlaying reality." In the classroom, there is a scarcity of high-quality critical literature on ICT (Ellis, 2001).

Conclusion

In higher education, ICT is undeniably an effective alternative to traditional face-to-face teaching and learning methods. However, given the current socio-economic and other variables, India has a long way to go before fully adopting ICT in education. Blended learning complements Indian education better than comprehensive ICT adoption. The research shows that because of India's geographical and sociological variety, and an unwilling workforce to adopt new technology, a completely globalised and digitised online learning paradigm is incompatible.

References

1. Amin, S. N. (2018). *ICT integration in education: A smart concept of teaching and learning.* Delhi: Educreation Publishing.
2. Bach, S. H. (2006). *Online learning and teaching in higher education.* London: McGraw-Hill Education (UK).
3. Bolstad, R. (2004). *The role and potential of ICT in early childhood education: A review of New Zealand and international literature.* Auckland: international literature.
4. Bosch, C. L.-B. (2021). *Re-envisioning and restructuring blended learning for underprivileged communities.* IGI Global.
5. Bourne, D. (2018). *Understanding Global skills for 21st Century Profession.* Oxford: Palgrave MacMillan.
6. Byrne, E. (2013). *Cross Curricular Teaching and Learning in the Secondary School.* London: Routledge.
7. Ellis, A. L. (Ed.). (2001). *ICT, Pedagogy and the Curriculum: Subject to Change.* London: Routledge Falmer.
8. Erdem, C. B. (2019). *21st century skills and education.* Cambridge Scholars Publishing.
9. Faber, E. V. (2017). *Secure ICT service provisioning for cloud, mobile and beyond: ESARIS: The answer to the demands of industrialized IT production balancing between buyers and providers.* New York: Springer.
10. Garrison, D. R. (2008). *Blended learning in higher education: Framework, principles, and guidelines.* London: John Wiley & Sons.
11. Gisbert, M. (2015). *Teaching and learning in digital world: Strategies and issues in higher education. .* Virgili: PUBLICACIONS UNIVERSITAT ROVIRA I VIRGILI.
12. Group., W. B. (2018). *World development report 2018: Learning to realize education's promise.* World Bank Group.
13. Gunter, G. A. (2014). *Teachers discovering computers: Integrating technology in a changing world. Cengage Learning.* Cengage Learning.
14. Hemalatha, R. S. (2020). *ICT: Magical opportunity to leapfrog Indian education.* Education World Special Report. Retrieved from *https://www.educationworld.in/ict-magical-opportunity-to-leapfrog-indian-education/*
15. *ICT: Magical opportunity to leapfrog Indian education*. (2019, July 22). Retrieved from https://www.educationworld.in: *https://www.educationworld.in/ict-magical-opportunity-to-leapfrog-indian-education/*
16. India, M. o. (2017). *Digital report.* Delhi: MoE.
17. Isaias, P. S. (2020). *Online teaching and learning in higher education.* Springer Nature.
18. Kamei, M. (2016). *Translation of ICT for education towards a knowledge society. .* Anchor Academic Publishing.
19. Koh, J. H. (2015). *Design thinking for education: Conceptions and applications in teaching and learning.* Springer.
20. Kumar, D. (Ed.). (2006). Education for the 21st Century -

Impact of ICT and Digital Resources. Santiago: Springer US.

21. Latwal, G. S. (2020). *Role of ICT in higher education: Trends, problems, and prospects.* CRC Press.
22. Law, N. P. (2006). *Law, N., Pelgrum, W. J., & Plomp, T. (2008). Pedagogy and ICT use in schools around the world: Findings from the IEA SITES 2006 study. .* NewYork: Springer Science & Business Media.
23. Looi, C. W. (2019). *Seamless learning: Perspectives, challenges and opportunities. .* NewYork: Springer.
24. Looi, C. Z. (2020). *ICT in education and implications for the Belt and Road initiative. .* Springer Nature.
25. Manichander, T. and (2018). *ICT in Education.* Delhi: Lulu.com.
26. Manson, G. and (2006). *A2 level GCE applied ICT for OCR.* Heinemann Educational Books.
27. MHRD, D. o. (2020). *INDIA REPORT: Digital Education.* New Delhi: Digital Education Division.
28. MHRD, I. (2020). *National Education Policy 2020.* Delhi: MHRD, GoI.
29. Ministry of Education, G. (2020). *AISHE 2019-20 Report.* New Delhi: MoE, India.
30. Núria Llevot-Calvet., O. B.-C. (2018). *New Pedagogical Challenges in the 21st Century: Contributions of Research in Education.* Intech Open.
31. (2004). *Report on the Follow-Up of the World Summit on Social Development: State and Globalization, Challenges for Human Development.* United States.
32. Schneckenberg, D.-D. E. (2010). *Changing Cultures in Higher Education :Moving Ahead to Future Learning.* Berlin: Springer Berlin Heidelberg.
33. Snyder, I. (1996). *Hypertext: The electronic labyrinth.* Mebourne: Melbourne University.
34. Thorne, K. (2003). *Blended learning: How to integrate online and traditional learning.* London: Kagan Page.
35. Tomei, L. (2012). *Learning tools and teaching approaches through ICT advancements.* IGI Global.
36. UNESCO. (2020). *education monitoring report 2020: Inclusion and education - All means all. .* United Nations.: UNESCO,United Nations.
37. UNESCO. (2018). *UNESCO ICT competency framework for teachers. .* UNESCO Publishing.
38. UNO. (2017, 2 17). *Quality Education*. Retrieved from *https://www.un.org/:https://www.un.org/sustainabledevelopment/education/*
39. Venkatesh, V. T. (2020). ICT for development in rural India: A longitudinal study of women's health outcomes. *MIS Quarterly: Management Information Systems*, 2-7. doi:*10.25300/MISQ/2020/12342*
40. Wang, Z. (2005). *Technology innovation and Hrm.* Emerald Group Publishing.
41. Wright, J. (2008). *The primary ICT & E-learning Co-ordinator's manual: Book two, a guide for experienced leaders and managers.* SAGE.
42. Yildiz, O. (2020). *Recent developments in individual and organizational adoption of ICTs.* NewYokr: IGI Global. ❑

The Need to Maximise the Potential to Enhance Knowledge

M Venkaiah Naidu, Hon'ble Vice President of India delivered the Convocation Address at the 69th Convocation Ceremony of the Panjab University, Chandigarh on May 06, 2022. He said, "As you know, knowledge has no limits. Equipped with requisite skills and knowledge, in a sense, you are now embarking on a quest as explorers of higher levels of expertise in your chosen domains. Aim high, and devote yourself to building a bright future for yourself and for the nation at large. Success and fulfillment will then follow." Excerpts

"I am pleased to be here amidst all of you to address this 69th Convocation ceremony of Panjab University. As our country celebrates "Azadi Ka Amrit Mahotsav" and recounts its achievements, I would like to underscore that education has played a major role in national development and will continue to do so in the future also. It is truly the most powerful catalyst that can change the pace and quality of a country's development.

I am happy to preside over this University- a university with a glorious past, a very impressive present and a bright future. It is a university that has earned for itself a pride of place in the higher education landscape of the country. Thanks to the visionary leadership of successive Vice Chancellors and faculty members, the University has shaped the lives of many young men and women who have gone onto become leaders in various fields and have done the country proud.

At the outset, I would like to congratulate all graduating students on reaching a milestone of great significance in their lives and careers. Indeed, it is your diligence complemented by the strong support of your parents and the dedication of your gurus that has paved the way for this achievement.

This graduation ceremony should be a stepping stone for the students to continue learning and the faculty to improve the educational process. Universities, like yours, must be at the forefront of knowledge revolution, through path breaking innovations and cutting edge research. At the same time, there should be a closer interaction between Universities and government so that more robust policies can be formulated.

I am very happy that today the University has honoured Prof Ajay Kumar Sood ji, Principal Scientific Advisor to the government, who is one of the brightest alumnus produced by this University. In conferring on him the honorary doctorate, you have demonstrated to the entire academic community the essential spirit of excellence that the University has stood for. I am also delighted that Dr Krishna Ella and Smt Suchitra Ella, the pioneers of indigenous vaccine manufacturing have been chosen for the award. It is gratifying that Dr Krishna Ella had mentioned in a conversation about the excellent work being done by the chemistry department of this University.

I am pleased that excellence has been the touchstone in selecting the distinguished awardees today, each of whom have excelled in their respective fields whether it is Prof. Rajput in Education, Vaidya Kotecha in Indian medicine, Ms Rani Rampal in sports, Prof. Jagbir Singh in literature, Shri Onkar Singh Pahwa in industry and Shri Khandu Wangchuk Bhutia in fine arts. What you have honoured is the extraordinary talent from all corners of our motherland and the ceaseless quest for excellence dedicated to building a new vibrant India. It is most appropriate that we should celebrate excellence in the convocation of a University which has set high benchmarks and is constantly making all round efforts to achieve them.

Dear sisters & brothers, Education of a good quality must become accessible to all, be affordable and should lead to a positive transformation in an individual's outlook, societal cohesion and inclusive national development. We must harness this power of education, and unleash the creative energies of young minds, hands and hearts. The new India we are dreaming of will be built on soaring aspirations and acquisition of new competencies. It will be built on the knowledge, skills and attitudes we impart in our classrooms and the innovation we foster in our workshops and laboratories. That's where the future

of our nation lies and is being shaped every day.

Education should transform the way we look at the planet we live in and how we interact with the people who live with us on it. This University is in a sacred land where Guru Nanak and other Gurus showed that our lives should be illumined by five Virtues, "Sat" or honest, truthful behaviour, "Santokh" or contentment, not being greedy, "Daya" or compassion, “Nimrata” or humility and “Pyaar” or love, love of humanity, love of divinity. I hope these principles will continue to inspire us to be better human beings.

My dear students, Today is indeed a special day in your lives as you stand poised on the cusp of a major transition—a point of intersection of the accumulated knowledge of formal education of the past and the promise of a wonderful future which lies ahead.

As you know, knowledge has no limits. Equipped with requisite skills and knowledge, in a sense, you are now embarking on a quest as explorers of higher levels of expertise in your chosen domains. Aim high, devote yourself to building a bright future for yourself and for the nation at large. Success and fulfilment will then follow.

Remember that the knowledge you have acquired has the power to change the world. Panjab University occupies a place of pre-eminence among institutions of higher learning. All of you are stepping out today with your head held high—proud to belong to an institution of excellence dedicated to the discovery, sharing and application of knowledge. An institution at which the academic environment promotes both holistic learning and personal growth.

Sisters and brothers, The National Education Policy-2020 provides a roadmap for engaging educational institutions directly in national development. The NEP seeks to reorient the higher educational institutions of the country towards the challenges of the knowledge economy. It is set to bring about a sea-change in the education sector with its strong emphasis on interdisciplinary learning, research and knowledge generation and multi-lingual education. In particular, the NEP document rightly emphasizes the role of imparting education in one’s mother tongue. I am pleased to learn that NEP-2020 is being implemented by this University in right earnest.

Friends, Universities must create an environment of continuous professional development for teachers, while faculty members must focus on ground-breaking research and getting their research papers published in reputed international journals.

Universities should accord greater importance to implementable patents under Intellectual Property rights (IPR) to give a fillip to economy and industry. It is necessary to strengthen industry-institute linkages for better research outcomes.

Dear faculty members and students, We should move away from mediocrity and not be satisfied with what we have achieved. I wish you to work towards future improvements so that in the course of the next decade, Panjab University ranks in the first 10 in the Universities across the globe.

I am sure that Panjab University will grow from strength to strength and become a leader in collaborative research.

I am also hopeful that Panjab University, in the days to come, will emerge as a leader for internationalization of education by creating mechanisms for collaborative research, faculty and cultural exchange programmes, dual degree programmes, and off-shore university campuses, among others.

I am happy that the University is making progress in all aspects of higher education under the able leadership of Prof. Raj Kumar, the Vice Chancellor.

I am hopeful that the Senate members will support the growth of this historic University by lending their time and sharing their expert advice to make PU one of the best Universities in the world.

I compliment the Vice Chancellor, the faculty members and the Senate members for steering the University so well. I wish all of you the very best in your future endeavours.

Thank you.

Jai Hind!”

National Seminar on Education for Sustainable Development

A two-day National Seminar on 'Education for Sustainable Development' was organized by the School of Education, Central University of Haryana (CUH), Mahendergarh, Haryana, recently. The event was sponsored by the Indian Council of Social Science Research (ICSSR), New Delhi. Prof. R P Tiwari, Vice Chancellor, Central University of Punjab, Bathinda was the Chief Guest, while Prof. Saroj Sharma, Chairperson, National Institute of Open Schooling (NIOS), Noida was the Guest of Honour of the event. The welcome speech was delivered by Prof. Sarika Sharma, Dean, School of Education, while the outline of the two-day seminar was presented by Prof. Pramod Kumar.

The programme was presided over by Prof. Tankeshwar Kumar, Vice Chancellor, Central University of Haryana, Mahendergarh. Prof. Tankeshwar Kumar said that today, when the National Education Policy has come, it is very important that an education system should be developed that is conducive to sustainable development. He said that today, emphasis is being laid on mother tongue-based education, skill development focused education, which will lead us to the path of sustainable development. Prof. Kumar said that the University is determined for the successful implementation of the National Education Policy and it is our endeavour to prepare such youths who take an active part in the development of the country in order to achieve the goals of the National Education Policy.

Prof. Saroj Sharma mentioned that the ancient Indian form of education, highlighted its usefulness and its need in today's time. She mentioned the ongoing changes on the education front through various examples and emphasized skill development as well as value education. *Sarve Bhavantu Sukhinah*' as the basic aim of education, Prof. Saroj Sharma said.

Prof. R P Tiwari referring to the development of Indian civilization and the education tradition described in it. He spoke in detail about the changes in the existing education system and their utility. He said that the *Gurukul* tradition of India always teaches the lesson of considering the whole world as one. The result of the same educational tradition was that India was the centre of education in ancient times. In his address, referring to the changes brought in the education system during the British rule, Prof. Tiwari also drew attention to the new National Education Policy and said that this education policy is the nurturer of the Indian knowledge tradition and the ancient education system. He drew the attention of the participants to the opportunities for multidisciplinary approaches, skill development, and sustainable development provided in the New Education Policy. He appreciated the efforts made under the guidance of Prof. Tankeshwar Kumar and said that the university would definitely ensure the successful implementation of the education policy.

At the end of the programme, the vote of thanks was proposed by the organizing secretary of the event, Dr. Aarti Yadav. The Registrar of the University, Prof. Sunil Kumar; Prof. Ranjan Aneja, and Prof. Anand Sharma also contributed to the event.

Webinar on Understanding Gender Mainstreaming

The one-day Webinar on 'Understanding Gender Mainstreaming' was organized by the Centre for Banking and Financial Laws, National Law University (NLU), Delhi, recently. Dr. Sanghamitra Dhar, Expert in gender-responsive budgeting for the State of Manipur by UN Women, was the resource person for the event. Prof. (Dr.) Srikrishna Deva Rao, Vice Chancellor, NLU Delhi delivered his Presidential Address while the Vote of Thanks was delivered by Prof. Anupama Goel, Registrar, NLU.

In her brief introductory note, Prof. Ritu Gupta, Research Director of the Centre**,** spoke about the mission of CBFL and the story behind the change in the name and objectives of the Centre. Earlier, the centre had been named the Centre for Banking and Financial Laws. The ongoing COVID-19 pandemic brings to the forefront the changing nature and growing importance of business and commercial transactions. Prof. Gupta said that there has been an increasing need to make Indian policy impactful and effective at the ground level—a journey that begins with making it more

inclusive and stakeholder-oriented. The concepts of gender-based budgeting and policy-making aim to fill this vacuum between theory and practice. The webinar was a short introduction to the importance of gender mainstreaming in public policy; the removal of gender biases at every step of a policy's formation; and including the voices of marginalised stakeholders to achieve lasting change.

The mission statement was taken forward by NLU Delhi's Vice Chancellor, Prof. Srikrishna Deva Rao, who shared his valuable insights on the connection between gender equality and the law. He drew influence from the 'golden triangle' of the Constitution of India – Articles 14, 19, and 21 – to establish that equality is not the sole mission of gender justice initiatives, but is also the primary mandate of education, especially legal education. He believes that education is the key to breaking free from our social baggage that comes from caste, gender, and religion. He hoped that through the webinar, all the attendees could unlearn and challenge the narrow notions of the past to participate enthusiastically in an experience that reaffirms the position of women as free, independent, autonomous citizens.

Dr. Dhar started the conversation with a basic, fundamental question – what is gender? As per her view, gender is a social construct, a spectrum, that forms the basis of how we view people and relationships. Over time, the inequality that has been normalised as a result of stereotypical perceptions creates a hierarchy that deprives and oppresses certain stakeholders within it, which strategies such as gender-responsive budgeting aim to change. Dr. Dhar talked about the cynosure of this strategy, the 'equity approach' and characterised her argument using real-life, societal examples, such as how women are often seen in a unidimensional, problematic light—as victims or repositories of filial honour, which limits their potential and their power. She makes a connection between the invisibility of discrimination for a few as a direct product of their social privilege, which reinforces inequality and causes a ripple effect by creating 'gaps' in several important areas, such as the absence of women's concerns while attempting to effectively allocate resources. Dr. Dhar briefly outlined the strategies that she uses in her work and the shortcomings she faces as a practitioner working with inadequate data, failures in government machinery, and a resultant lack of a baseline to construct long-term sustainable programmes. She addressed questions on the inclusivity of the strategy as a whole and on enhancing the capacity of a multitude of stakeholders to bring more people into the conversation. The event ended with a Vote of Thanks, proposed by the Registrar, NLU Delhi, Prof. (Dr.) Anupama Goel.

International Conference on Emerging Digital Library Platforms

A four-day International Conference on 'Emerging Digital Library Platforms: Shaping Digital Transformation and National Data Exchange' is being organized by the Documentation Research and Training Centre, Indian Statistical Institute, Bangalore, Karnataka in association with Sarada Ranganathan Endowment for Library Science and The Digital Information Research Foundation during August 09-12, 2022.

While the COVID-19 pandemic shook the world, many lockdowns have not stopped the spirit from thriving and competing. India has witnessed a gradual spike in qualified IT personnel and library professionals, embracing remote work and cloud infrastructure as the mantle to their industry sustenance. Industries like the automotive industry, construction, finance, logistics, and leisure took a massive hit during steps taken to control the pandemic. Small and medium businesses were among the worst affected by the lockdowns and stringent measures to curb the spread of the virus. Healthcare found it challenging to meet the demands of a vast Indian population. Libraries worldwide face hard choices around which services to offer and how ranging from minimal restrictions to complete closure. We are aware that governments are taking different approaches, sometimes ordering the closure of all institutions, others indicating that life should continue as usual, and others simply leaving decisions up to library administrators. The Topics of the event are:

Digital Libraries: System Focused

- Knowledge Discovery and Representation in Digital Archiving and Preservation.
- AI /Machine Learning/ Data Mining for DLs.
- Digital Humanities and Heritage.
- Semantic Web Technologies and Linked Data for DLS.

Digital Libraries: User and Service Centric

- Infrastructure and Service Design.

- Web and Mobile Enabled Library Services, Social Media.
- Quality and Evaluation of Digital Libraries.
- Ontology and Knowledge Organization.
- Extract Transform and Load (ETL) Process Service as by Library.
- Health Informatics and E-Governance.

Digital Libraries: Metadata, Search and Retrieval

- Metadata (Management, Curation, Integration).
- Navigational and Exploratory Search § SCORM.
- (Sharable Content Object Reference Model).
- Extracting Semantics, Entities, and Patterns from Large Collections.
- Data Curation and Stewardship.
- Linked Data and it's Applications.

Digital Open Data: Open Science

- Research Data Management (RDM).
- Data Repositories and Archives.
- Fair & Research Data Management (RDM).
- Big Data and Data Analytics and Data Exchange and Interoperability.

Open Data and Open Science

- Models, Practices, Mandates, and Policies.
- New Models for Open Access Publications.
- Open Education Platforms and Resources.
- Swayam/MOOCS/MOODLE/VLE.
- Learning Management System – Learning Service Platform (LSP).
- Ontological Tools- Protégé, Owl Language & RDF Metadata Standards.
- Open IoT Technologies React, Polymer Template, Webpack.

Social Media and Libraries

- Socializing Library Services/Social Media Applications.
- Social Media, Community Building, and Applications.
- Social and Human Elements of Information Security.
- Analyzing Social Media Networks.
- Social Sharing/Social Networking Services/Idea Generation/Mobile Based Services.
- Media and Society.

For further details, contact Dr. M Krishnamurthy**,** Associate Professor and Head, Documentation Research and Training Center, Indian Statistical Institute, Mysore Road, Bangalore-560059 (Karnataka), Phone No: 91-80-26985493, Mobile No.: 09980035933, E-mail: *mkrishnamurthy1304@gmail.com*. For updates, log on to: *https://drtc.isibang.ac.in/*

International Conference on Industrial Engineering and Operations Management

A three-day International Conference on 'Industrial Engineering and Operations Management' is being organized by the IEOM Society International during August 16-18, 2022 through hybrid mode. Hosts are the National Institute of Technology, Warangal and Jawaharlal Nehru Technological University, Hyderabad at NIT, Warangal. The event aims to provide a forum for academics, researchers and practitioners to exchange ideas and recent developments in the field of Industrial Engineering and Operations Management. The conference is also expected to foster networking, collaboration and joint effort among the conference participants to advance the theory and practice as well as to identify major trends in Industrial Engineering and Operations Management. The Topics covering industrial issues/ applications and academic research include, but are not limited to:

Industrial Engineering and Operations Management

- Engineering Management.
- Inventory Management.
- Lean.
- Production Engineering.
- Supply Chain/Supply Chain Sustainability/Green Supply Chain.
- Operations Research.
- Product Lifecycle Management (PLM).
- Six Sigma.
- Sustainable Manufacturing.
- Healthcare Operations and Services.
- Technology Management.

- Environmental Systems Engineering.
- Production Planning and Management.
- Quality.
- Reliability.
- Project Management.
- Statistical Process Monitoring.
- Logistics.
- Construction Management.

Computer Integrated Manufacturing

- Automation and Agility
- Cellular Manufacturing.
- Modelling and Simulation.
- Sensors and Sensing.
- Transportation and Traffic.
- Automotive Manufacturing Systems.
- Mechatronics and IIoT.
- Industry 4.0.
- Robotics.
- Systems Engineering.
- CAD, Applications and Computing.
- Systems Dynamics.
- Manufacturing Science.

Business Management

- Human Factors and Ergonomics.
- Information Systems and Management.
- Financial Engineering.
- Statistics.
- Industrial Services.
- Innovation.

Artificial Intelligence

- Cyber Security.
- Data Analytics/Business Analytics.
- Decision Sciences.

Energy

- Renewable Energy Sources.
- Oil and Gas.
- Fuel Cells.
- Electric Vehicles.
- Heat Transfer Analysis of Energy Systems.
- Defense and Aviation.
- Automobile Engineering.
- IC Engines and Alternate Fuels.

Manufacturing

- Additive Manufacturing.
- Subtractive.
- Nontraditional Manufacturing Process.
- Advanced Materials Process.
- Composite Materials.

Special Tracks

- Global Engineering Education (GEE).
- Global Business Management Education.
- Industry 4.0.
- Industry Solutions.
- Diversity and Inclusion Panel Sponsored by Ford Motor Company.
- Women in Industry and Academia (WIIA).

For further details, contact Conference Chair, Dr V Vasu, Associate Professor, Department of Mechanical Engineering, National Institute of Technology, Warangal-506004 (Telangana), Mobile: 8019789214, E-mail: *vasu@nitw.ac.in*, *vasuapplepc@gmail.com*. For updates, log on to: *www.jntuh.ac.in*

International Conference on Heritage in the Post COVID-19 World

A three-day International Conference on 'Heritage in the Post COVID-19 World' is being organized by the Centre of Heritage Management, Ahmedabad University, Gujarat during December 02-04, 2022.

We have lived through a historic moment in the past two years, which has made us pause, protect, ponder, and plan forward for the future. This applies to all walks of life, knowledge and practices. Heritage sector has much to reflect-both in terms of how heritage could or could not offer to be a source of resilience in these difficult times, as well as in terms of how we should think of, and act on the idea of heritage in the coming years and decades. We are consciously saying 'decades' and not 'centuries' because it seems

we have a cycle of such pandemic moments almost every century. The Themes of the event are:

- Heritage as a source of resilience during the COVID-19 pandemic;
- Heritage of Pandemic (recent as well as historical ones with sub-themes like Mapping the memories of pandemic experience, Innovations in response to the pandemic, etc.);
- Digital heritage (with emphasis on the positive impact of COVID-19);
- Digital and virtual perspectives and processes on heritage;
- Health, Hygiene and Heritage Management;
- Heritage education during the pandemic: lessons learned;
- Preparedness for sustaining heritage during distress (both pandemic, economic crisis and wars, among others); and
- Socio-ecological systems and pandemics.

For further details, contact, Conference Secretary, Ms Bharvi Chheda, Ahmedabad University, Commerce Six Roads, Navrangpura, Ahmedabad–380009 (Gujarat), Phone: 079-61911200/ 079-61911201, E-mail: *heritage.conference@ahduni.edu.in*. For updates, log on to: *www.ahduni.edu.in/events.* ❑

AIU NEWS

Professor Suranjan Das Takes Over as New President of AIU

Prof Suranjan Das, Vice Chancellor, Jadavpur University, Jadavpur has taken over as the New President of the Association of Indian Universities (AIU) on July 1st, 2022. An eminent and highly acclaimed Professor of History, Prof Das is the 101st President of the AIU.

Earlier, he served the University of Calcutta as a Professor of History and also as Vice Chancellor for the period between 2008 and 2015. Professor Das is also an Honorary Visiting Professor at the University of Exeter. A graduate of Presidency College, Kolkata, Professor Das has a distinguished academic record -- securing First Class First positions in BA (History Honours) and MA (History) of the University of Calcutta and D.Phil. degree from Oxford University. He specialises in South Asian History and Politics, especially identity politics, socio-cultural transformation and nation-building. He has authored six monographs, co-authored four books, co-edited six volumes, edited two volumes, and published thirty-four articles in refereed journals and edited volumes, which are widely cited. He has been associated with research projects funded by such international bodies as the British Council, Wellcome Trust, Leverhume Foundation and Frederick Stiftung. He was a recipient of the USIS International Visitorship Programme. He successfully completed prestigious collaborative projects with two British institutions: one with King's College London, on 'Mapping Domestic Drivers of Indian Foreign Policy' and the other with the University of Hull on 'From Periphery to the Centre: Federalization of the Indian Foreign Policy Making process'.

Professor Das was a Distinguished Fellow, Australia India Institute, University of Melbourne; Honorary Professor at the Hull University; Visiting Professor of the British Academy in 2000; and a Visiting Scholar among others at the *Maison Des Sciences De L'Homme* (Paris), Mershon Centre of Ohio State University, the University of New Mexico, the University of Illinois at Urbana-Champaign; and the Oxford Brookes University. He was President of the Modern India Section of the Indian History Congress (2003) and the General President of the Punjab History Congress for the 2014 session. He is a recipient of many national and international awards and fellowships.

Professor Das has served in policy formulation bodies concerned with higher education in India like the University Grants Commission, and the Indian Council of Historical Research. He was Vice Chairman, Board of Trustees of Indian Museum, Kolkata; Member of the Executive Committee of the Nehru Memorial Museum and Library, New Delhi; Member of the Governing Council, Indian Council of World Affairs, New Delhi; Member of the Executive Council of the National Assessment and Accreditation Council, Bengaluru; and Member of the Executive Council of Maulana Abul Kalam Azad Institute of Asian Studies, Kolkata. He is a member of the Higher Education Council of West Bengal.

AIU fraternity congratulates him on his taking over as the new President and looks forward to working under his able leadership for the cause of Indian Higher Education. ❑

THESES OF THE MONTH

SCIENCE & TECHNOLOGY
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of April-May, 2022)

AGRICULTURAL & VETERINARY SCIENCES

Veterinary Science

1. Sharma, Rashmi. **Genetic variation and health impact of *Taenia solium* cysticercosis in Punjab**. Department of Veterinary Public Health & Epidemiology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

BIOLOGICAL SCIENCES

Biochemistry

1. Thacker, Shital Chaturbhai. **Microbial process for valuable metal recovery from discarded mobile PCBs**. (Dr. D R Tipre), Department of Microbiology, Gujarat University, Ahmedabad.

Biotechnology

1. Husain, Athar. **Pharmacokinetic and herb-drug interaction studies of conventional drugs coadministered with herbal extracts/products**. (Dr. Jiaur Rahaman Gayen), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

2. Karegaonkar, Shrikant. **Chemical and de novo transcriptomic analysis of medicinal plants, *Amomum aculeatum* Roxb. and *Couroupita guianensis* Aubl**. (Dr. Thulasiram H V), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

3. Nasiruddin, Nalban. **Evaluation of selected phytochemicals against cardiovascular diseases by targeting oxidative stress and inflammation in rodent models**. (Dr. Sistla Ramakrishna), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

4. Paliya, Sonam. **Studies on contamination and microbial degradation of Polybrominated Diphenyl Ethers (PBDEs)**. (Dr. Suresh Kumar M), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

5. Patial, Vikram. **Studies on the renoprotective effects of selected medicinal plants and underlying molecular mechanism**. (Dr. Y S Padwad), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

6. Russel, Jasmin G. **Development and scale-up of bioremediation technology for perchlorate contaminated water and soil**. (Dr. Krishnakumar B), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

Botany

1. Ahmad, Tanveer. **Diversity, community structure and plant growth-promoting potential of bacterial endophytes associated with *Crocus sativus Linn*.**. (Dr. Syed Riyaz- UI-Hassan), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

2. Bhingradiya, Vibhaben Kantilal. **Synthesis of silver nano particles from *Butea monosperma Var lutea* and their cytototoxicity against *Hela cell line***. (Dr. N R Modi), Department of Botany, Gujarat University, Ahmedabad.

3. Gajjar, Juhiben Dineshbhai. **Interaction between selected freshwater wetlands and agriculture of Khambhat-Tarapur Taluka, Anand, Gujarat**. (Dr. Hitesh A solanki), Department of Botany, Gujarat University, Ahmedabad.

4. Mandal, Hrisikesh. **Isolation and characterization of *Ralstonia solanacearum* (Smith) Yabuuchi *et. al* causing bacterial wilt of tomato from sub-Himalayan West Bengal and its management**. (Prof. A Saha and Dr. D Saha), Department of Botany, University of North Bengal, Darjeeling.

5. Naik, S Naveen Kumar. **Nutritional and cytotoxic studies on wild mushrooms of Western Ghats in Karnataka**. (Dr. Raja Naika), Department of Botany, Kuvempu University, Shankaraghatta.

Life Science

1. Agrawal, Sonia. **Characterization of nitrite induced viable but non-cultivable *Mycobacterium tuberculosis bacilli***. (Dr. Dhiman Mrinal Sarkar), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

2. Kashyap, Rajnandani. **Structural and functional characterization of β-barrel proteins involved in inter-molecular Diels-Alder reaction**. (Dr. Anthony Addlagatta), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

3. Malik, Tanveer Ahmad. **Deciphering molecular basis of UV-B induced skin photodamage in experimental models: Therapeutic role of plant based alkaloid, IIIM-TG**. (Dr. Sheikh Tasduq Abdullah), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

4. Nagori, Aditya Kumar. **Critical event prediction in critically ill patients and asthmatic children: Leveraging artificial intelligence and domain expertise**. (Dr. Anurag Agrawal), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

5. Ram, Singam Amarnath. **Studies on development of polymeric nano-systems for delivery of anti-cancer bioactive molecules**. (Dr. Rathna V N Gundloori), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

6. Rangani, Jaykumar Rameshbhai. **Comparative proteomics and metabolomics studies in the xero-halophyte *Salvadora Persica* L. for elucidation of drought tolerance mechanisms**. (Dr. Asish Kumar Parida), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

7. Raza, Mohsin. **Studies on biochemical composition and antimicrobial activity in food insects of Arunachal Pradesh**. (Prof. Jharna Chakravorty), Department of Life Science, Rajiv Gandhi University, Itanagar.

8. Shukla, Bhaskar. **To identify long-coding RNAs in medicinal and aromatic plants**. (Dr. Ajit Kumar Shasany), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

9. Vaghela, Krishnakumar Bharthaji. **A study of priority sector lending by commercial banks in Central Gujarat**. (Dr. N K Jain), Department of Life Science, Gujarat University, Ahmedabad.

10. Yadav, Vinay Kumar. **A study on polymorphism in drug metabolizing enzymes influencing susceptibility to head and neck cancer and treatment outcome**. (Dr. Devendra Parmar), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

Zoology

1. Malla, Muneer Ahmad. **Integrating metagenomics and culture-dependent approaches to augment the bioremediation of pesticide contaminated agricultural soils**. (Prof.Shweta Yadav and Dr. Ashwani Kumar), Department of Zoology, Dr Harisingh Gour Vishwavidyalaya, Sagar.

EARTH SYSTEM SCIENCES

Environmental Science

1. Nawaz, Ahmad. **Full solar light harvesting nano hybrid photocatalysts for removal of aquatic pollutants**. (Prof. Saravanan Pichiah), Department of Environmental Science & Engineering, Indian Institute of Technology, Dhanbad.

ENGINEERING SCIENCES

Chemical Engineering

1. Bhongale, Priyanka Vishwanath. **An investigation into alkylation of hydroxybenzenes to industrial useful chemicals**. (Dr. Sunil Joshi), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

Civil Engineering

1. Nair, Shalini R. **Predictive system for wind induced response on tall structures using machine learning**. Department of Civil Engineering, Hindustan Institute of Technology & Science, Chennai.

Computer Science & Engineering

1. Agrawal, Himanshu. **Decentralized learning for opportunistic spectrum access in cognitive works**. (Prof. Krishna Asawa), Department of Computer Science & Engineering, Jaypee Institute of Information Technology, Noida.

2. Ali, Amani Ali Ahmed. **Arabic handwritten character recognition using machine learning approaches**. (Dr. Suresha M), Department of Computer Sciences, Kuvempu University, Shankaraghatta.

3. Kalaivani, Y S. **Detection of DDoS attack using optimized machine learning technique**. Department of Computer Applications, Hindustan Institute of Technology & Science, Chennai.

4. Pamod Kumar. **A robust approach for dependability analysis of safety critical systems**. (Prof. Chiranjeev Kumar), Department of Computer Science & Engineering, Indian Institute of Technology, Dhanbad.

Electrical & Electronics Engineering

1. Ameen, Mohammad. **Design and development of circularly polarized metamaterial based miniaturized antennas with improved performance for advanced**

wireless applications. (Prof. Raghavendra Kumar Chaudhary), Department of Electronic Engineering, Indian Institute of Technology, Dhanbad.

2. Dhar, Priyadarshiny. **Bio-electrical signals classification using cross wavelet and machine learning**. (Prof. Vivekananda Mukherjee), Department of Electrical Engineering, Indian Institute of Technology, Dhanbad.

3. Lata, Anamika. **Development of flow and level transducers, their performance evaluation and optimization using Ann**. (Prof.Nirupama Mandal), Department of Electronic Engineering, Indian Institute of Technology, Dhanbad.

4. Mukesh Kumar. **Model reference adaptive system for sensorless speed control of brushless doubly fed reluctance machine drives**. (Prof.Sukanta Das), Department of Electrical Engineering, Indian Institute of Technology, Dhanbad.

5. Sinha, Shambhu Sharan Kumar. **Studies on the absorption spectra of III - V semiconductor quantum dots**. (Prof. Subindu Kumar), Department of Electronics Engineering, Indian Institute of Technology, Dhanbad.

Electronics & Communication Engineering

1. Dutta, Ritam. **Performance study of quantum transport in tunnel junction devices for low power logic applications**. (Dr. Nitai Paitya), Department of Electronics & Communication Engineering, Sikkim University, Ganktok, Sikkim.

2. Shanmuganathan, T. **Design and implementation of traffic-congestion aware network on chip for automotive system on chips**. Department of Electronics & Communication Engineering, Hindustan Institute of Technology & Science, Chennai.

Fuel & Mineral Engineering

1. Ajita Kumari. **Beneficiation and misplacement studies of coal and iron ore fines by liquid - solid fluidized bed separator**. (Prof.N R Mandre), Department of Fuel, Mineral & Metallurgical Engineering, Indian Institute of Technology, Dhanbad.

2. Patel, Jai Prakash. **Techno-economic performance analysis and revisiting the process flowsheet of a coal preparation plant**. (Prof. Shravan Kumar), Department of Fuel, Mineral & Metallurgical Engineering, Indian Institute of Technology, Dhanbad.

Mechanical Engineering

1. Tiwary, Badyanath. **Thermofluidic investigation of oblique fin heat sinks with nanofluids**. (Prof. Pawan Kumar Singh), Department of Mechanical Engineering, Indian Institute of Technology, Dhanbad.

Petroleum Engineering

1. Naidu, Botch Neelam. **Oxidative conversion of methane to fuels**. (Dr. V V D N Prasad), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

2. Paswan, Bhola Kumar. **Development of emulsion based drilling fluid system for shale formation**. (Prof. Vikas Mahto), Department of Petroleum Engineering, Indian Institute of Technology, Dhanbad.

3. Sharma, Rohit. **Study the effects of nanohybrid polymers/ polymer nanocomposites on the flow behaviour of Indian waxy crude**. (Prof.Vikas Mahto and Dr. Hari Vuthaluru), Department of Petroleum Engineering, Indian Institute of Technology, Dhanbad.

MATHEMATICAL SCIENCES

Mathematics

1. Chaurasia, Mehul Arunbhai. **Analytical thinking approach to graph theoretical problems**. (Dr. Mehul P Rupani), Department of Mathematical Sciences, Saurashtra University, Rajkot.

2. Goyal, Suman. **Dynamics of surface and quasi - P waves in anisotropic composite structures involving piezomagnetic, functionally graded, thermoelastic and viscoelastic materials**. (Prof. Sanjeev Anand Sahu), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

3. Maan, Jeetendrasingh. **A comprehensive analysis of certain operators related to the index Whittaker transform**. (Prof. Akhilesh Prasad), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

4. Pawan Kumar. **Study of propagation of waves through micropolar elastic medium**. (Prof. Neelam Kumari), Department of Mathematics, Chaudhary Devi Lal University, Sirsa.

5. Tamang, Jharna. **Bifurcation, quasiperiodic and chaotic behaviours of nonlinear acoustic waves in plasmas**. (Dr. Asit Saha), Department of Mathematics, Sikkim University,Ganktok, Sikkim.

6. Usman, Mahamood. **Some estimation procedures with adjustment of non - response in sample surveys**. (Prof. G N Singh), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

MEDICAL SCIENCES

Biotechnology

1. Jawalekar, Snehal Sainath. **Development of**

engineered human arginase for cancer therapy. (Dr. Abhay H Pande), Department of Biotechnology, National Institute of Pharmaceutical Education and Research, Mohali, Punjab.

2. Ravishankara, B. **A study on phytochemical and pharmacological evaluation of *Chloroxylon Swietenia* DC**. (Dr. Riaz Mahmood), Department of Biotechnology, Kuvempu University, Shankaraghatta.

3. Vinaykumar, N M. **Phytochemical and pharmacological studies on *Gardenia Gummifera linn***. (Dr. Riaz Mahmood), Department of Biotechnology, Kuvempu University, Shankaraghatta.

Medicine

1. Mane, Shailaja Vijaykumar. **Screening and clinical study for non-communicable diseases in school going adolescents in urban Pune**. (Dr. S R Agarkhedkar), Department of Medicine, Dr D Y Patil Vidyapeeth, Pune.

Pathology

1. Gupta, Archana A. **The potential use of cisplatin coated scaffolds for local drug delivery in cancer cell lines**. (Dr. Supriya Kheur), Department of Oral Pathology & Microbiology, Dr D Y Patil Vidyapeeth, Pune.

2. Raj, A Thirumal. **Assessing the effect of dental pulp mesenchymal stem cells on oral, breast and melanoma cancer cell lines**. (Dr. Supriya Kheur), Department of Oral Pathology & Microbiology, Dr D Y Patil Vidyapeeth, Pune.

Pharmaceutical Science

1. Daniel, Divine P. **Synthesis of ellipticine structural modulated analogs as potential antiproliferative agents**. (Dr. Shankar K Guchhait), Department of Medicinal Chemistry, National Institute of Pharmaceutical Education and Research, Mohali.

2. Rafiq, Zahid. **Lysine methyl transferase NSD1 in cancer epigenetics: Target validation, design of ligands, anticancer activity and molecular mechanisms**. (Dr. Kulbhushan Tikoo), Department of Pharmacology and Toxicology, National Institute of Pharmaceutical Education and Research, Mohali.

3. Venkataharsha, Panuganti. **Investigation of the role of small molecules and pharmacological agents on aggregation of α synuclein**. (Dr. Ipsita Roy), Department of Biotechnology, National Institute of Pharmaceutical Education and Research, Mohali.

4. Verma, Ekta. **Synthesis and characterization of novel 4-quinolones derivatives in allergic asthma**. (Prof. Asmita Gajbhiye), Department of Pharmaceutical Science, Dr Harisingh Gour Vishwavidyalaya, Sagar

Physiotherapy

1. Kalra, Sheetal. **A study of physical fitness, psychological health of post menopausal women and associated factors in urban and rural Gurugram**. (Prof. Joginder Yadav Dr. Bijender Sindhu and Dr. Puneeta Ajmera), Department of Physiotherapy, Shree Guru Gobind Singh Tricentenary University, Gurugram.

PHYSICAL SCIENCES

Chemistry

1. Anisetty, Lakshman Kumar. **Bioelectrochemical and biogeochemical insights into microbial manganese oxidation**. (Dr. S Vengatesan), Department of Chemical Science, Academy of Scientific and Innovative Research, Ghaziabad.

2. Bahe, Anil Kumar. **Design, synthesis QSAR studies and biological evaluation of some new N and O containing hetrocyclic compounds**. (Prof. Ratnesh Das), Department of Chemistry, Dr Harisingh Gour Vishwavidyalaya, Sagar.

3. Biswas, Bijoy. **Hydrothermal liquefaction of lignin and aquatic biomass for the production of functional chemicals**. (Dr. Thallada Bhaskar), Faculty of Chemical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

4. Dash, Sibananda Gourisankar. **Computational screening of API solid forms and quantum crystallography applications in studying the role of intermolecular interactions in molecular recognition**. (Dr. Tejender's Thakur), Faculty of Chemical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

5. Lohia, Naina. **Studies on micro, nano and colloidal quantum dot based luminescent materials for solid-state lighting**. (Dr. Shailesh N Sharma), Faculty of Chemical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

6. Monika. **Synthesis of polypyrrole, tungstate and titanium oxide doped polypyrrole composites and comparative study of their properties**. (Dr. Gita Rani), Department of Chemistry, Chaudhary Devi Lal University, Sirsa.

7. Pathak, Navendu Prakash. **Stereoselective synthesis and exploration of some pentose sugar phenolic glycosides as organogelators and chiral auxiliary for asymmetric synthesis of bicyclo 2.2.2 octanones**. (Prof. Somnath Yadav), Department of Chemistry and Chemical Biology, Indian Institute of Technology, Dhanbad.

8. Poonam Kumari. **Synthesis and spectral studies of 4- functional pyrazolylthiazoles and their biological investigation**. Department of Chemistry, Eternal University, Sirmour.

9. Porwl, Govind. **Insights on the synthesis of fine chemicals and its upscaling on heterogeneous catalysts**. (Dr. Vinod Chathakudath Prabhakaran), Faculty of Chemical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

10. Sohgaura, Ashish. **Synthesis, characterization and acoustical parameter of some new Cu (II) metal complexes**. (Dr. R S Nigam), Department of Chemistry, AKS University, Satna.

11. Swamy, Raman. **Synthesis and characterization of polyurethane rigid foam with different reinforcing agents**. (Dr. Gita Rani), Department of Chemistry, Chaudhary Devi Lal University, Sirsa.

Physics

1. Leena Kumari. **Study on heavy metal contaminants and artificial colorants in saffron**. (Dr. S Swarupa Tripathy), Faculty of Physical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

2. Nair, Sreenath Narayanan. **Microprocessors-controllers based innovative physics experiments**. (Dr. P D Lele), Department of Physics, Gujarat University, Ahmedabad.

3. Pandit, Tanmaykumar Rajeshbhai. **Study of dielectric and some physical properties of amide drug molecules**. (Dr. V A Rana), Department of Physics, Gujarat University, Ahmedabad.

4. Sharma, Bharti. **Template synthesis of some metal nanowire arrays and investigation of their structural, optical, electrical and field emission behaviour**. (Prof. Sushil Kumar and Dr. Ram Mehar Singh), Department of Physics, Chaudhary Devi Lal University, Sirsa.

5. Silori, Saumya. **Organic matter dynamics associated with physicochemical variability in the eastern and the central Arabian Sea**. (Dr. Haimanti Biswas), Faculty of Physical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

6. Vijay Kumar. **Investigations on various physical properties of rare earth doped iron oxide**. (Dr. Dharamvir Singh Ahlawat and Dr. Parmod Kumar), Department of Physics, Chaudhary Devi Lal University, Sirsa. ❑

THE BORIVLI EDUCATION SOCIETY'S
MATUSHRI PUSHPABEN VINUBHAI VALIA COLLEGE OF COMMERCE
Sheth M.K. High School Complex, Factory Lane, Borivali (W), Mumbai - 400 092

MINORITY

Applications are invited for the Post of **PRINCIPAL** from the **ACADEMIC YEAR 2022-23**

AIDED

The advertisement are approved subject to the final decision in the Writ Petition No. 12051 / 2015.

The above post is open to all however candidates from any category can apply for the posts. Reservation for women will be as per **University Circular No. BCC/16/74/1998 dated 10th March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05th July, 2019.**

Candidates having knowledge of Marathi will be preferred.

"Qualification, Pay Scales and other requirement are as prescribed by the UGC Notification dated 18th July, 2018, Government of Maharashtra Resolution No. Misc-2018/C.R.56/18/UNI-1 dated 8th March, 2019 and University Circular No. TAAS/(CT)/ICD/2018-19/1241 dated 26th March, 2019 and revised from time to time." The Government Resolution & Circular are available on the website : mu.ac.in

Applicants who are already employed must send their application through proper channel. Applicants are required to account for breaks, if any, in their academic career.

Application with full details should reach the **HON. SECRETARY, THE BORIVLI EDUCATION SOCIETY'S, Sheth M. K. High School Complex, Factory Lane, Borivali (W), Mumbai - 400 092 within 15 days** from the date of publication of this advertisement. **This is University approved advertisement.**

Sd/-
Hon. Secretary

Shri Balasaheb Mane Shikshan Prasarak Mandal Ambap's

Womens College of Pharmacy

(Permanent Non-Grantable)

Peth Vadgaon, Tal. Hatkanangale

Dist. Kolhapur – 416 112 Maharashtra)

Ph.: 0230-2471414,60 ● Fax : 0230-2471361

website: www.wcoph.org, email: copdpharm@gmail.com

Affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere- 402103

Recruitment

Applications are invited from eligible candidates for the following **Permanent Non-Grantable** position:

Designation of the Position	Total Vacancies	Category wise Vacancies
Principal	01	Open - 01

Conditions:

1. Educational qualifications, Experience, Pay Scales etc. applicable for the post is as per the norms specified by PCI, Govt. of Maharashtra & Dr. Babasaheb Ambedkar Technological University, Lonere, Dist. Raigad & as modified from time to time.
2. Those who are in service they should apply through proper channel.
3. In case of the post of Director/ Principal, the appointment is on tenure basis for the period of five years or date of superannuation, whichever may be earlier, and may be extended by one more year.
4. Application received after the last date will not be considered. The college will not be responsible for any delay including postal delay, if any.
5. Incomplete application or applications without the attested copies of supporting documents will not be entertained.
6. No T.A., D.A. will be paid for attending the interview.
7. The applications giving full particulars and attested copies of all the supporting documents should reach to the undersigned **within 15 days** from the date of publication of this advertisement.

Sd/-

Place: Peth Vadgaon **President**

Date : 05/07/2022 Shri Balasaheb Mane Shikshan Prasarak Mandal, Ambap

Dempo Charities Trust's
SS DEMPO COLLEGE OF COMMERCE AND ECONOMICS

Integrated Education Complex, Cujira, St. Cruz, Goa-403 005

invites applications for appointment as

COLLEGE PRINCIPAL & PROFESSOR

Eligibility:

i) Ph.D. degree

ii) Professor/Associate Professor with a total service/ experience of at least fifteen years of teaching/research in Universities, Colleges and other institutions of higher education.

iii) Minimum 10 research publications in peer reviewed journals as approved by Goa University from time to time, or UGC-listed journals, out of which at least two should be in Scopus/Web of Science Journals.

iv) Minimum Research Score of 110 as per Appendix II, Table-2.

Essential requirements:

a) Certificate of minimum 15 years of residence in Goa.

b) Knowledge of Konkani. Additionally, knowledge of Marathi shall be desirable.

Tenure: The College Principal shall be appointed for a period of 5 years, extendable by another term of 5 years on the basis of assessment of performance.

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

Applications, along with self-attested copies of academic records, publications, experience, API score sheet, and other relevant certificates should reach the Administrator, SS Dempo College of Commerce and Economics, Cujira, St. Cruz, Goa-403005 **within 21 days** from the date of this advertisement.

Candidates who are already employed shall forward their applications through proper channel.

Prabodhan Shikshan Prasarak Sanstha's
INDIRA INSTITUTE OF PHARMACY

At/Post. Sadavali, Devrukh, Tal. Sangameshwar, Dist. Ratnagiri - 415804

APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS FROM THE ACADEMIC YEAR 2022-23

UN-AIDED

Sr. No.	Cadre	Subject	Total No. of Posts	Total No. of Posts	Posts Reserved for
1	Principal	—	01	01	01 - OPEN
2	Professor	**Pharmaceutical Chemistry**	01	01	01 - OPEN
3	Associate Professor	**Pharmaceutics**	01	04	01 - SC 01 - DT/NT 02 - OPEN
		Pharmaceutical Chemistry	01		
		Pharmacology	01		
		Pharmacognosy	01		
4	Assistant Professor	**Pharmaceutics**	02	07	02 - SC 01 - ST 01 - DT/NT 02 - OBC 01 - EWS
		Pharmaceutical Chemistry	02		
		Pharmacology	02		
		Pharmacognosy	01		
5	Librarian	—	01	01	01 - SC

The posts reserved for the Backward class candidates will be filled in by backward category candidates (Domicile of State of Maharashtra) belonging to that particular category only.

Reservation for women will be as per **University Circular No. BCC/16/74/1998 dated 10th March, 1998. 4% reservation shall be for the person with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05th July, 2019.**

Candidates having knowledge of Marathi will be preferred.

The Education Qualification, Experience & Pay - scale for posts of Principal, Professor, Associate Professor, Assistant Professor & Librarian are as prescribed by the University of Mumbai & AICTE from time to time.

Please refer University Circular No. मशिमाक/विशिमाक/तंत्रशिक्षण/11/2020–2021 दिनांक 11 जनवारी, 2021 **for qualifications and experience at the time of interview.**

Applicants, who are already employed, must send their application through proper channel. Applicants are required to account for breaks, if any, in their academic career.

Applications with full details should reach to the **CHAIRMAN, INDIRA INSTITUTE OF PHARMACY, At/Post. Sadavali, Devrukh, Tal. Sangameshwar, Dist. Ratnagiri-415804 within 15 days** from the date of publication of this advertisement.

This is University approved advertisement.

Sd/-
CHAIRMAN

DAKSHIN SOLAPUR TALUKA SHIKSHAN MANDAL'S
V. G. SHIVDARE COLLEGE OF ARTS, COMMERCE & SCIENCE, SOLAPUR

Phone No: 0217-2303411

E-mail ID : vgs.biotechnology@rediffmail.com

Kannada Linguistic Minority Institute

(Affiliated to P.A.H. Solapur University, Solapur)

WANTED
(Permanent Non Grantable)

Applications are invited from eligible candidates for the following Permanent Non-grantable post.

Sr. No.	Designation	Total Vacant Post	Open Post
1	**PRINCIPAL**	**01 Full Time**	**01**

Conditions:-

1. Educational Qualification, Experience & Pay scale, etc. applicable for the post are as per norms specified by UGC, Govt. of Maharashtra & Punyashlok Ahilyadevi Holkar Solapur University, Solapur & as modified from time to time.
2. Shortlisted Candidates will be advised to qualify the API (Academic Performance Indicator) by the committee constituted for the said purpose by PAH Solapur University. Solapur before interviews.
3. Application received after the last date will not be considered. The College will not be responsible for postal delay, if any.
4. Those who are in service should apply through proper channel.
5. Incomplete application will not be entertained.
6. T.A. D.A will not be paid for attending the interview.
7. Apply giving full particulars **within 30 days** from the date of publication of this advertisement to the undersigned.
8. Apply in the prescribed form, available in the college office on payment of **Rs. 250**/- Cash paid if required by post to pay **Rs. 275/-** by DD/NEFT to college bank a/c 3840291762 IFSC Code CBIN0282702 Central Bank of India, Jule Solapur Branch. A Xerox copy of DD/NEFT Payment counterfoil should be attached with the application form. The application form with relevant copies of documents sent to **President, Dakshin Solapur Taluka Shikshan Mandal's V. G. Shivdare College of Arts, Commerce and Science, Jule Solapur - 1, Vijapur Road, Solapur 413004, (Phone No. 0217-2303411) within 30 days** from the publication of the advertisement.
9. Please note that the recruitment procedure initiated by this advertisement shall be subject to the out of the Writ Petition No.12051/2015 pending before the Hon. Bombay High Court, Aurangabad bench.

Place : Solapur

Date : **President**

ANJUMAN-I-ISLAM'S
AKBAR PEERBHOY COLLEGE OF EDUCATION

Plot No. 15, Sector – 10/A, Vashi, Navi Mumbai

MINORITY INSTITUTIONS

APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS
FROM THE ACADEMIC YEAR 2022 - 23

UNAIDED

Sr. No.	Cadre	Subject	Total No. of Posts	Post Reserved for
1.	Assistant Professor	Education in Mathematics/Geography Methods	2	2-OPEN
2.	Librarian	—	1	1-OPEN

The above posts are open to all, however, candidates from any category can apply for the posts.

Reservation for women will be as per **University Circular No. BCC/16/74/1998 dated 10th March 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019 – 20/05 dated 05th July, 2019.**

Candidates having knowledge of Marathi will be preferred.

"Qualification, Pay-Scale and other requirements are prescribed by the UGC Notification dated 18th July, 2018, Government of Maharashtra Resolution No. Misc-2018/C.R.56/18/UNI-1 dated 26th March, 2019 & revised from time to time."

The Government resolution and circular are available on the website: mu.ac.in.

Applications who are already employed must send their application through proper channel. Application are required to account for breaks, if any, in their academic career.

Application with full details should reach the HON. GENERAL SECRETARY, ANJUMAN-I-ISLAM, AKBAR PEERBHOY COLLEGE OF EDUCATION, PLOT NO. 15, SECTOR 10/ A, VASHI, NAVI MUMBAI – 400 703 within 15 days from the date of publication of this advertisement. This is University approved advertisement.

Sd/-
HON. GENERAL SECRETARY

HARMAL PANCHAKROSHI SHIKSHAN MANDAL'S
GANPAT PARSEKAR COLLEGE OF EDUCATION
Harmal, Goa - 403524
website: www.ganpatparsekarcollegeofeducation.com
email: ganpatparsekareducation@hotmail.com

Applications in the prescribed format complete in all respects with relevant documents such as educational qualifications, experience etc. are invited from eligible Indian Citizens for the following posts to be filled in for B.A.B.Ed/B.Sc.B.Ed. Integrated Programmes in Ganpat Parsekar College of Education, Harmal, Goa – 403 524.

Sr. No	Designation of the posts	No. of posts	Nature of posts	Category of the Post
1	Assistant Professor in Methodology of Teaching History or Geography	01	Regular	Reserved for OBC
2	Assistant Professor in Methodology of Teaching Marathi or Konkani	01	Regular	Reserved for ST
3	Assistant Professor in Botany	02	Regular	01 Reserved for OBC 01 UR
4	Assistant Professor in Zoology	02	Regular	Reserved for OBC
5	Assistant Professor in Mathematics	01	Regular	UR
6	Assistant Professor in Physics	02	Regular	01 Reserved for OBC 01 Reserved for EWS
7	Assistant Professor in English	02	Regular	01 Reserved for OBC 01 Reserved for EWS
8	Assistant Professor in Hindi	01	Regular	Reserved for EWS
9	Assistant Professor in History	03	Regular	01 Reserved for OBC 01 Reserved for ST 01 Reserved for SC
10	Assistant Professor in Geography	01	Regular	Reserved for EWS
11	Assistant Professor in Marathi	02	Regular	UR
12	Assistant Professor in Performing Art	01	Regular	Reserved for ST

Applications should reach above address **within 21 days** from date of publication of this advertisement. Persons already in service should send their application through proper channel. Persons belonging to reserved category should submit the relevant certificates from the competent authority. If there are no candidates belonging to reserved category, candidates from unreserved category will be selected on Contract Basis.

Essential: -

1. Knowledge of Konkani.
2. 15 years residence in Goa.

Desirable:-

1. Knowledge of Marathi.

Kindly refer to the website: **www.ganpatparsekarcollegeofeducation.com** for detailed advertisement.

Sd/-
Chairman
Harmal Panchakroshi Shikshan Mandal

Guidelines for Contributors

To submit the manuscripts for publication of articles, the contributors need to follow the guidelines given below:

- Articles submitted for the Journal should be original contributions and should not be under consideration for any other publication at the same time. A declaration is to be made by the author in the covering letter that the paper is original and has not been published or submitted for publication elsewhere.
- Manuscripts including tables, figures and references should be around 3000-4000 words for articles, 2000 – 5000 words for Convocation Addresses, 1000 words for Book Reviews and 600 words for Communications.
- All the manuscripts should typed in double-space with 12 point font and ample margin on all sides on A 4 size paper.
- The cover page should contain the title of the paper, name, designation, official address, address for correspondence, contact phone/mobile numbers and e-mail address of all the authors.
- One author should be designated as the corresponding author.
- Notes, if any, should be given as Endnotes not as Footnotes.
- Figures include relevant captions, tables include titles, description, source etc.
- Figures and table citations in the text match the files provided
- Manuscript has been 'spell checked' and 'grammar checked'
- References should be given at the end of the manuscript and should contain only those cited in the text of the manuscript. The full reference should be listed at the end in alphabetical order running the following style:

  - **Books**
    Miles, M., and Huberman, M., (1994). Qualitative Data Analysis. London: Sage.
  - **Articles**
    Over, R.(1982). Does research productivity decline with age?
    Higher Education, 11, 511-20.
  - **Chapter in a Book**
    Rendel, M. (1986). How many women academics 1912-1977? In R. Deem (ed.), Schooling for Women's Work. London: Routledge.
  - **Article Retrieved from Website**
    Mazumdar, T (Year, Month, Date Published). Article Title. Retrieved from URL.

Dr. S Rama Devi Pani
Editor
University News
Association of Indian Universities
AIU House, 16 Comrade Indrajit Gupta Marg
(Kotla Marg) New Delhi- 110 002

Licenced to post without prepayment under WPP No. U(C)-109/2021-23
Postal Regd. No. DL (C)-05/1241/2021-23
UNIVERSITY NEWS 60 (28) July 11-17, 2022
Regd. No. RNI-7180/1963
Published on Monday: 11-07-2022 No. of Pages 48 including covers Posted at LPC Delhi RMS, Delhi-6 on Tuesday/Wednesday every week

Edited, Printed and Published by Dr Sistla Rama Devi Pani, on behalf of the Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi-110 002. Phones: 23230059 (6 Lines). Fax: 011-23232131, E-Mail : sgoffice@aiu.ac.in, advtun@aiu.ac.in, publicationsales@aiu.ac.in, subsun@aiu.ac.in (for subscription), unaiu89@gmail.com, universitynews@aiu.ac.in, Website: http://www.aiu.ac.in
Printed by Chandu Press, D-97, Shakarpur, Delhi-110 092 Phone: 42448841, chandupress@gmail.com