

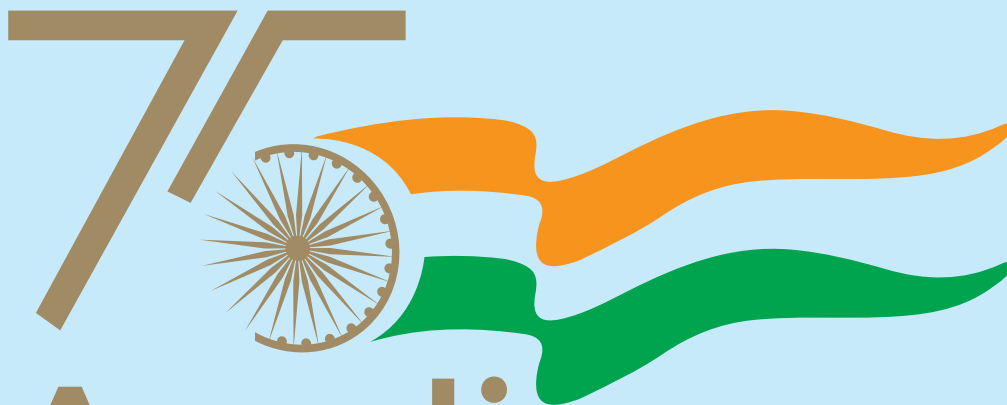
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Azadi Ka
Amrit Mahotsav

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International Diploma Programme in Educational Leadership- Higher Education- Fourth Batch

The Background

The Centre for Higher Education and Training (CHEST) of Society for Education the Economic Development (SEED) has conducted three batches of International Diploma Programme in Educational Leadership- Higher Education. Twenty Two heads of institutions of higher education had completed the diploma programme by submitting their project reports. They, as a part of the programme visited Headquarters' of UNESCO, OECD and International Institute of Educational Planning, UNESCO Paris and interacted with experts and officials of these apex organizations. A group of participants also visited Geneva. And other group visited Maastricht School of Management, Netherlands and interacted with faculty members. After evaluation of project reports and personal discussion they have been awarded International Diploma in Educational Leadership – Higher Education.

IDEL-HE

Methodology

The Programme is an on-line –cum personal discussion for one year. Modules are made available in Digital Form. One week interaction to discuss project design and deliberation with experts in Delhi. One week international exposure and interaction with experts and official in other countries.

Contents

Modules (Proposed)

Six Modules are Mandatory and Two elective Modules out of 14 modules.

1. Higher Education Staff Development and Management
2. Higher Education
3. Strategic Management of Higher Education
4. Financial Management and Mobilization of Resources-Best Practices
5. Academic Freedom, Autonomy and Accountability
6. Quality Assurance- Internal and External Quality Assessment and Accreditation and University Ranking
7. Regulatory Measures for Maintenance and Coordination of Standards
8. Institutional Development Plan and Implementation Strategies
9. Space Planning, Design and Efficient Utilization
10. AI in: Teaching & Learning, Evaluation and Certification and Educational Management
11. Educational Enterprises: Entrepreneurship, Branding, Reputation Management
12. Managing Self Financing Institutions – Negotiating with Quality, Regulations, Students, Faculty and Society Expectations
13. International Mobility of Students, Research Collaboration and Networking
14. Open Module to be decided by the participant

Eligibility

Masters degree in Social Sciences, Sciences and Engineering
Preference will be given to Ph.D. Degree and Years of experience in Higher Education
Proposed Date of starting – April, 2022

Interested persons may send e-mail on IDELHE@gmail.com or seedicf@gmail.com



EDITORIAL

NEP 2020 – CHALLENGES AHEAD



NEP 2020 has raised a lot of hope for reforms in higher education. One year has passed since the announcement of the Policy. Many states have celebrated the implementation of NEP-2020 through the issue of an advertisement in the press. Some Universities, particularly, the central universities have attempted to implement it in a piecemeal manner. The Delhi University which experimented with four-year Under Graduate Degree programme and done away with it under pressure from teachers and government, has again announced for implementation of the four-year degree programme.

It is not the number of years in a degree programme, but the challenge is to frame course structure, methods of transaction of courses, evaluation of students and finally outcome of learning of students. This outcome of learning has to respond to the present and likely future need of economy and society - local as well as global. Economy and society, local and global are not homogenous. The economic and societal expectations are very wide between global capitalism and Indian distributed capitalism, mixed with an urge for addressing the problems of mass poverty. The indigenous socio-cultural values and practices and global values and practices widely differ. To deal with vast diversities would need a deeper study of courses, methods of delivery, evaluation of outcome of learning of students. The policy statements do mention about social values and want to balance between global and local. Implementation of this balanced approach would need deeper analysis, preparation of courses and preparation of teachers and orientation of students. Present system, however, is an appendage of global education processes, poorly implemented in schools, colleges and universities in varying degree in the country. This is, therefore, the key challenge and no celebrations of implementation in newspapers can help meet this challenge.

Another important policy statement is consolidation of system of higher education by creating three tier structure of universities, namely (i) Research focused teaching University, (ii) Teaching and Research Universities and, (iii) Teaching Universities and degree awarding autonomous colleges. And all have to be multidisciplinary with flexible entry--exit system. India has vast system of colleges in the country, say 42 thousand spread throughout the country. Almost 30 percent of them are single-faculty colleges having enrolment of say 100-300. India also have stand- alone single-faculty Management Institutions. To make them multidisciplinary, merging them as viable degree awarding institution is another major challenge. The Government of India and state government have to come out with a concrete plan to address this issue.

Linked aspect of consolidation and giving degree granting status to colleges is according an autonomous status to affiliated colleges. The grant of autonomous status to colleges was one of the key reform envisaged in NEP-1986 revised in 1992. The progress on this concept is highly disappointing. In the last more than three decades the number of colleges seeking and getting autonomous status is just 832 or so. A large number of them are in Tamil Nadu - the state which initiated this concept as early as 1975. This started by Dr. Malcom Adishesaya then Vice Chancellor of Madras University. This concept was introduced in NEP 1986, revised 1992. The Programme of Action of 1986 policy envisaged that there should be at least 500 colleges seeking and getting autonomy by next five years. But this did not happen. It was opposed by teachers' unions as also some of the state government. However, some progress continued in southern states of India in particular Tamil Nadu. With the emergence of self-financing colleges, the concept gained importance and a good number of them sought autonomy and got the autonomous status. The present status (as per AISHE report) is that the highest (227) number of autonomous colleges are in Tamil Nadu. This is followed by Maharashtra (119) , Andhra Pradesh (116) , Karnataka (81) and Madhya Pradesh (44). These account for 70 percent of total autonomous colleges. Of the total number of colleges in the country the ratio is for

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Editor

G.D. Sharma

Co-editor

Baldev Mahajan

A meeting of State Secretaries of ICF State Chapters was held virtually on 7th October, 2021. Among the several matters proposed, the new governing structure of ICF was put for discussion. The proposed governing structure of ICF as agreed in the meeting is as follows:

GOVERNANCE OF ICF

- There can be a Working President if it is essential and he/she shall be nominated by SEED.
- National Level Committee of ICF -15 members - to be constituted by the representative of State Presidents/State Secretaries (Total -12), Nominated by President SEED (2), Nominated by working President ICF (1)-(SEED can reserve the right to enhance the number of members of National Level Committee at any time. (The possibility of including State Presidents and Secretaries from all unrepresented states as Special Invitees without voting power may be explored).
- State Level Committee of ICF- 5 members - State President -1, State Secretary -1 (Both Nominated on seniority basis/elected by members - Executive Committee Members-3- to be elected/nominated by State President-provision for Special Invitees to be made.
- District Level Committee of ICF- 3 members to be nominated by State Committee .One Member to be designated as District Coordinator.
- MEETINGS
- At least two meetings should be held by each committee annually as per convenience.
- Funds for ICF
Membership fee, donation, specific purpose fee/ donations/grants
- Sharing of funds with state/district chapters to be decided by the National Level Committee.

OTHER SUGGESTIONS

Dr. M. Usman from Kerala State Chapter made the following suggestions:

- All state Chapters to conduct at least one program bi monthly and report to the National Committee.
- State Committees to monitor the functioning of District Committees.
- Membership drive and subscription drive for College Post at state level to be conducted within the next three months.
- State Chapters may be permitted to collaborate/sign MoUs with colleges, as per the guidelines issued by SEED/National Level Committee.
- Two Days/Three Days National Annual Conference in the virtual mode in November 2021 (2 hours per day including business).
- Organise a week long FDP for Principals at national level @ 2 hours a day preferably 7pm to 9 pm.

- The International Diploma Program is to be revived subject to the number of applicants.
- Focus on various issues related to the implementation of NEP & Technology Enabled Teaching Learning.
- College Post Special Number on NEP.
- Advance planning for an offline National level Conference after the restructuring of committees on the above lines.

Keeping in view special situation in Jammu and Kashmir union territories after the abrogation of article 370, new need of following adherence to central government regulation has become essential. To help Member Colleges and other colleges, ICF may organise special programmes in the following areas:

1. Preparation of colleges for NCTE
2. NAAC
3. Autonomous status to colleges' preparation and hand holding.

The above suggestion was made by Er. M.S. Katoch from J&K. He also said if we conduct 1-2 activities in month or so it will increase the membership also.

Dr. Budhin Gogoi after taking new assignment at Technology University Meghalaya suggested for restarting of the IDEL-HE programme. He said he is working for collaboration to implement in North Eastern region through his university.

Dr. Ajay Sareen, State Chapter Punjab wished for strengthening the organization and supporting it to play a role in development of Colleges.

Dr. Kiran Arora from Punjab State Chapter suggested for organization of the national conference as early as possible.

Dr. Mrs. Nirmal Pandi from Punjab suggested that special programme for rural areas colleges be organized.

Dr. Prabhudev from Karnataka suggested that there should be College -Industry interaction so as to make education more practical and problem solving.

Dr. Kiran Hazarika from Assam State Chapter and former Member UGC, strongly pleaded for strengthening ICF organization. He said we should make our "sangton" strong. He also suggested for training of teachers in implementing the policy, training of leaders of higher education for quality assurance, consolidation, interdisciplinary orientation and value orientation in institutions of higher education.

Dr. C. Massar from State Chapter Meghalaya promised to work for strengthening the ICF organization.

Dr. Pratyus Vatsala from Delhi State Chapter said our college will be happy to host training programmes as suggested by Dr. Hazarika and any other seminar/ workshop for the development of teachers and leaders of colleges.

ICF will welcome any other suggestions from its members and principals of the colleges in the country.

NEP-2020 AND THE CHALLENGE OF ACHIEVING 50% GER IN HIGHER EDUCATION

DR. G.D. SHARMA *

One of the policy targets is achieving Gross Enrollment Ratio of 50 percent in higher education by the year 2035. The paper analyses the present situation in states and union territories and makes a plea for consideration of Quality GER and challenges of achieving the same.

The New Education Policy 2020 rightly lays down that education is fundamental for achieving full human potential. It has made certain recommendations that are intended to transform higher education to generate human wealth resources and promote research and development. In the final analysis, it is a key resource for transforming India. The higher the level of human wealth resources and R&D, the higher the level of economic, social, scientific, technology base, and political understanding of a democratic society. It is precisely, for this reason, most of the countries invest (through public and private sources) in the development of higher education and R&D. An analysis of educational facilities of developed countries reveals that they have considerably developed higher education and human wealth resources and R&D through higher G.E.R.

Therefore, **one of the** key features of the NEP, 2020 is to achieve a Gross Enrolment Ratio (GER) (age-group population: 18-23 years) to 50 percent from nearly 27 percent by the year 2035. This is the first indicator of the trajectory of participation of the eligible age-group population in higher education.

The **second** and crucial indicator is quality GER for creating human resource wealth and R&D. The quality GER could be defined as a level of participation in terms of (i) students' enrolment at Graduation, Post-Graduation, and Research-degree level (ii) subject-level participation, that is, the enrollment of students in Arts and Social Sciences, Sciences, Engineering & Technology, and other professional courses.

The **third** crucial indicator of quality GER is the responsiveness of the system to new quality-enhancing processes, such as autonomy, the potential of excellence and assessment and accreditation, and participation of faculty in research and development.

The **fourth** and most important parameter of influencing quality GER is the allocation of funds for higher education by the Government of India. The policy proposes to increase the allocation of funds to education to the tune of 6 percent of GDP. Accordingly an enhancement of allocation of funds to higher education is expected through UGC or any alternative agency.

Keeping in view some of these broad parameters an attempt is made to examine the status of GER and quality GER in higher education in India. To begin with, an analysis of GER in higher education in states and union territories

of India and the level of participation by the subject stream is presented here. Followed by this, an analysis of factors/processes that influence quality GER concerning colleges, which constitute 80 percent of the higher education system, is attempted.

Inequitable participation (GER) in States and UTs:

The National Average GER (age group 18-23 years) -higher education, 2020 is 27.1%. In comparison to this the status of GER in Union Territories and States in different regions is analyzed here.

Union Territories: In general, the attainment of GER in higher education (including universities and colleges) among states and Union Territories is highly skewed. All the three sea-side UTs, namely, Daman and Diu, Dadra and Nagar Haveli, and Lakshadweep had very low GER i.e., 6.1%, 9.4%, and 7.5%. However, A&N island had 20% GER. Ladakh - a hill side UT -Ladakh had 7.5 % GER. Among states and Union Territories, these UTs have the lowest GER. whereas, plain land-based and capital towns' UTs have reached the target or near the target of 50% GER. These are Chandigarh (52.1%), Delhi (48.0%), and Puducherry (46.3%). Thus the challenge is to bridge the huge gap in participation in higher education among Union Territories. (PI. See Table No.1)

The higher the level of human wealth resources and R&D, the higher the level of economic, social, scientific, technology base, and political understanding of a democratic society. It is precisely, for this reason, most of the countries invest (through public and private sources) in the development of higher education and R&D.

* Former Secretary, UGC, Director, CEC and Professor NIEPA

**Table No. 1 GER- Higher Education
(18-23 Age Group), 2020**

Sl No.	GER-Higher Education 2020 Union Territories	%
1	Andaman and Nicobar Islands	20.00
2	Chandigarh	52.10
3	Dadra and Nagar Haveli	9.40
4	Daman and Diu	6.10
5	Delhi	48.00
6	Jammu and Kashmir	32.40
7	Ladakh	7.90
8	Lakshadweep	7.50
9	Pondicherry	46.30

States: Among the states, GER in the **Southern States** is much higher than the national average. Tamil Nadu has already reached the target of 50% GER. The states namely, Kerala, Karnataka, Andhra Pradesh, Tamil Nadu, and Telangana have 38.8, 32.0, 51.0, and 35.6 percent GER respectively. (PI. See Table No.2)

**Table No.2 GER - Higher Education,
Southern States, 2020**

	GER -Southern States	%
1	Andhra Pradesh	35.2
2	Karnataka	32
3	Kerala	38.8
4	Tamil Nadu	51.4
5	Telangana	35.6

Among the North- Eastern States, Sikkim has the highest 75.8% GER in the country. Manipur with 38.3% and Arunachal Pradesh with 35.4% have GER higher than the national average. Meghalaya and Mizoram with 26.1% each are near the national average. Tripura with 20.2%, Assam with 17.3% and Nagaland with 18.5% GER are way below the national average. (PI. See Table No.3)

**Table No. 3 GER- Higher Education,
North-Eastern States, 2020**

	North Eastern States	%
1	Assam	17.3
2	Sikkim	75.8
3	Manipur	38.3
4	Arunachal Pradesh	35.4
5	Meghalaya	26.1
6	Mizoram	26.1
7	Nagaland	18.5
8	Tripura	20.2

The Eastern States namely, Uttarakhand with 41.3% and Himachal with 40.8%, GER are above the national average. Similarly Punjab and Haryana -West Eastern state also had GER higher than national average i.e, 28.2 and 29.3 respectively. (PI. See Table No.4)

**Table No. 4 GER- Higher Education,
West Eastern States, 2020**

	West -Eastern States	%
1	Himachal	40.8
2	Uttarakhand	41.5
3	Haryana	29.3
4	Punjab	28.2

The Western States, namely, Goa and Maharashtra and Gujarat with 28.4% and 32.3 % are above the national average. But Gujarat had less than national average i.e. 21.3 percent. (PI. See Table No.5)

**Table No. 5 GER- Higher Education,
Western States, 2020**

	Western States	%
1	Goa	28.4
2	Maharashtra	32.3
2	Gujarat	21.3

In the Eastern States namely, West Bengal with 19.9%, Odisha with 21.7%, Jharkhand with 20.9%, and Chhattisgarh with 18.5% have GER below the national average. (PI. See Table No.6)

**Table No. 6 GER - Higher Education,
Higher Education, Eastern States, 2020**

	Eastern States	%
1	West Bengal	19.9
2	Odisha	21.7
3	Jharkhand	20.9
4	Chhattisgarh	18.5

On the other hand, in Northern States UP with 25.3%, MP with 24.2%, Rajasthan with 24.1%, are nearing the national average. But Bihar with 14.5% GER is way below the national average. (PI. See Table No.7)

**Table No.7 GER- Higher Education,
Northern States, 2020**

	Northern States	%
1	Madhya Pradesh	24.2
2	Rajasthan	24.1
3	Uttar Pradesh	25.3
4	Bihar	14.5

The target of 50% GER in higher education could be achieved by the year 2035 through a strategic policy initiative that may bridge the gap of participation among the states. The challenge is, therefore, to draw incentive schemes and financial support to bridge the gap among the states and union territories.

QUALITY GER PARAMETERS:

1. Level of participation: About the level of participation, most of higher education participation (of 373 million students) is consisting of under-graduate education. It accounts for almost 80 percent of students enrolled in higher education. Post-graduate accounts for 10 percent and Research less than one percent. To attain a quality GER the level of participation at the PG level needs to increase at least three times and at the research level five times in the coming decade.

It will be a challenge given the income level of the population, affordability of students to study in private higher education, and the possibility of employment after the studies. To remove these roadblocks UGC / MHRD needs to enhance PG and Research scholarships. Alternatively, the Government of India should come out with other incentive schemes like employment in public and private sectors with post-graduate degrees.

2. Participation in Subjects of Studies/Streams: Most of the higher education participation is in Arts and Humanities. This stream accounts for almost 80 percent of the students enrolled in higher education. Sciences account for another 13 percent. Engineering and Technology for 5 percent and the rest for other diploma and certificate programs.

Thus the bulk of our higher education system is preparing students for employment in the services sector. A good number nearly one-third, remain unemployed for a long period or get relatively low-wage employment.

The focus of many developed countries is on STEM. Science, Technology, Engineering, and Mathematics. For historical reasons, India is having a heavy emphasis on Arts and Humanities. These offered lucrative jobs in administrative services. Presently also the administrative services are rated high in the society. Administrative services offer secured job and time-based career advancement.

The challenge of transformation of participation of students in STEM streams would need specific policy incentives and growth of manufacturing and R&D both in public and private sectors. The growth of manufacturing and R&D would push the demand for these streams and, in turn, students educated in these streams would hopefully push the growth of these sectors and the economy.

FACTORS / PROCESSES INFLUENCING QUALITY GER IN COLLEGES:

An analysis of factors and processes that influence the quality of GER in colleges is attempted here.

1. Inclusion of Colleges in UGC Development Radar System:

Through the Act of the parliament, the University Grants Commission is mandated to coordinate and maintain the standard of higher education. The role and functions of the UGC contribute to quality GER. Therefore, institutions of higher education should be under the UGC radar of the development of higher education.

As per the Ministry of Human Resource Development's Survey of Higher Education, 2018-19 and statistics released by University Grants Commission show there are about 40 thousand colleges in the country. Of this, about 30 percent are in the list of UGC-approved colleges under the section 2(F) and about 24 percent are eligible to receive UGC financial assistance under section 12 (B) of the UGC act 1956.

Thus less than one-third are on the UGC radar of development. The question arises about the remaining 66 percent of colleges. The data reveals that of the 40 thousand colleges, nearly 30 percent (nearly 13 thousand) are single faculty colleges and standalone degree and diploma-granting institutions.

Data also reveal that 80 percent of these institutions are under a private sector as (full-cost recovery) self-financing colleges. The remaining 40 percent may be offering several diploma and certificate programs. All these may be helping to enhance GER in higher education, but they being out of the UGC development radar, have a direct bearing on quality GER.

2. Responsiveness of Colleges to quality-enhancing processes:

The quality GER also depends on the responsiveness of colleges to the processes that enhance the quality GER. Some of these include: (i) seeking autonomy from the affiliating university, (ii) seeking accreditation from a third-party assessment agency, (iii) seeking the status of potential of excellence, and (iv) seeking and getting funds for faculty development and research projects. An analysis of the status of these processes is attempted here.

(1) Autonomous Colleges: The responsiveness of colleges to the quality-enhancing process is highly skewed. The thrust of NEP 2020 is also on autonomy to colleges. The situation is that despite, the 1986 policy to grant autonomy to colleges there has been very poor responsiveness of colleges in India. For more than 3 decades, India is having only 832 autonomous colleges approved by UGC till 2010. Of this majority of colleges are in five states. These are Tamil Nadu (277), Maharashtra

(119) Andhra Pradesh (116), Karnataka (81), and Kerala (22). UP with the highest number of colleges has only 12 autonomous colleges. West Bengal, which was earlier opposed to the concept, has 18 autonomous colleges. Gujarat and Rajasthan have only 5 and 7 autonomous colleges, respectively. In terms of ratio of autonomous colleges to total colleges there is 1 autonomous college for nearly 51 colleges in the country. Among Union Territories, except for Pondicherry, status of quality GER is very disappointing. (PI. See Table No.8).

The concept of autonomy to colleges envisages that colleges are free to frame the curriculum and evaluate students' performance. It also implies the willingness of colleges and their teachers to seek autonomy. It envisages: (i) the willingness of state government, affiliating universities to grant autonomy to colleges, and (ii) the provision of adequate funding by central government/UGC for implementing the concept. The lack of willingness on the part of any of the above-stated agencies would impede the transformation of higher education.

The challenge of granting autonomy to a large number of colleges will, therefore, be high. The central government, state governments, and Universities managing the system and the UGC supporting the concept should be on the same page. It would require a reorientation of policy/approach at the states and central governments/ UGC level. It is a daunting task and would require a mission-mode approach.

(2) Participation in External Quality Assurance - NAAC. Yet another parameter of responsiveness of the colleges to quality GER is the willingness of colleges to work for quality assurance and seek an external quality assessment from the National Assessment and Accreditation Council. Here the system is highly skewed. Among the colleges that have offered themselves to external quality assessment in the country is very dismal. Only about 6 thousand colleges have been assessed by external quality assessment agency-the National Assessment and Accreditation Council (NAAC) with different grades and in different cycles. Among the colleges assessed and accredited by NAAC, Maharashtra tops the list with 1396 colleges. It is followed by Karnataka with 679 colleges and Tamil Nadu with 463 colleges. West Bengal 308 Colleges, Andhra Pradesh 252, Kerala 228 colleges. Gujarat 206 colleges and Rajasthan 124 Colleges. UP with the highest number of colleges in the country, only 119 Colleges have been assessed and accredited by the NAAC. PI. see Table No.8

(3) Participation in Potential of Excellence Colleges: Colleges are selected as the potential of excellence by University Grants Commission for special support. Here also, the system is highly skewed. The number of colleges selected as the "potential of excellence colleges" is very

small. i.e., 314 colleges. The majority of these colleges are in six states namely, Maharashtra (68), Karnataka (39), Tamil Nadu (23), UP (22), and Andhra Pradesh (22), and West Bengal (18). These account for more than 61 percent of colleges. Kerala (17), Punjab (15), and Gujarat (11). This makes almost 70 percent. Rest are in a few states in single digit. The challenge is to increase the support for a large number and fairly distribute them among the states. One of the conditions to qualify for the potential of excellence should be that the college is autonomous or it should seek autonomy within a specified period. PI. See Table No. 8

(4) Level of Financial Support to Colleges: Financial support to colleges poses a very challenging situation. Data presented in UGC annual Report, 2020 gives the details on financial assistance. The data reveal that out of 42906 colleges, presently nearly 30 percent (12453) of colleges are recognized by the UGC under section 2(F). Of this, 9993 Colleges are recognized under section 12(b) of its Act, 1956 to receive financial assistance from UGC. Of the eligible colleges, only 155 colleges got financial assistance to the tune of Rs. 1340 million in 2018-19. Approximately Rs 0.8 million per college.

Over 7 years 2012-2019, 5853 colleges are provided funds to the tune of Rs. 79787 million. It works out to 836 colleges and Rs. 1.36 million to each college annually. It accounts for less than 1 percent (0.8 percent) of the colleges eligible to receive financial assistance from UGC. Thus development assistance to colleges is very small. The major challenge is providing financial assistance to colleges to transform and to implement curricular reforms and outcomes-based learning processes of education. It would require providing a reasonable level of assistance and to a large number of colleges. The UGC or any other funding agency needs to be financially supported by the Government of India for this purpose.

(5) Level of Financial Assistance for Faculty Development: The data pertaining to financial assistance for faculty development by UGC reveal that of the nearly 1.4 million teachers in higher education only 8455 teachers received financial assistance to the tune of Rs.2.39 million over 7 years i.e. 2012-19. It works out as 1212 teachers per year and Rs. 28 thousand per teacher. Those who received financial assistance for faculty development annually account for 1.1 teacher per one lakh teachers. To expect a teacher to play an important role in the transformation of higher education with this kind of assistance speaks very poorly of our policy of funding.

(6) Level of Research Assistance to Colleges: College Teachers are eligible for financial assistance for minor research project. Data pertaining to Research Assistance by UGC reveal that a total of 255 research proposals

Table No. 8 Parameters of Quality GER - Higher Education, All UTs & States, 2020

SI No.	State/ Uts	Colleges	Ratio	CPE/CE	Ratio	NAAC A&A	Ratio	
	Colleges	Autonomous						
1	Andaman and Nicobar Islands	8	-	-	-	3	2.6	
2	Andhra Pradesh	2750	116	23.7	22	125	253	10.8
3	Arunachal Pradesh	39	-	-	1	39	6	6.5
4	Assam	558	3	186	4	139.5	152	3.6
5	Bihar	874	2	437	5	174.8	132	6.6
6	Chandigarh	25	-	-	1	25	15	1.6
7	Chhattisgarh	810	13	62.3	4	202.5	99	8.1
8	Dadra and Nagar Haveli	8	-	-	-	-	3	2.6
9	Daman and Diu	10	-	-	-	-	2	5
10	Delhi	179	-	-	-	-	80	2.2
11	Goa	58	1	58	2	29	24	2.4
12	Gujarat	2275	5	455	22	103.4	207	10.9
13	Haryana	1087	1	1087	9	120.7	124	8.7
14	Himachal	344	5	68.8	1	344	50	6.8
15	Jammu and Kashmir	316	4	79	5	63.2	60	5.2
16	Jharkhand	323	5	64.6	3	107.6	103	3.1
17	Karnataka	4047	81	49.9	39	103.7	680	5.9
18	Kerala	1417	22	64.4	17	83.3	233	6
19	Ladakh	5	-	-	-	-	-	-
20	Lakshadweep	0	-	-	-	-	-	-
21	Madhya Pradesh	2411	44	54.7	7	344.4	233	10.3
22	Maharashtra	4494	119	37.7	69	65.1	1397	3.2
23	Manipur	102	2	51	3	34	20	5.1
24	Meghalaya	67	-	-	1	67	16	4.1
25	Mizoram	35	-	-	1	35	20	1.7
26	Nagaland	67	3	22.3	1	67	29	2.3
27	Odisha	1087	48	22.6	2	543.5	200	5.4
28	Pondicherry	79	4	19.7	1	79	16	4.9
29	Punjab	1079	12	89.9	16	67.4	146	7.3
30	Rajasthan	3380	7	482.8	5	676	125	27
31	Sikkim	22	-	-	-	-	7	3.1
32	Tamil Nadu	2610	227	11.5	24	108.7	466	5.6
33	Telangana	2071	74	27.9	8	258.8	192	10.7
34	Tripura	53	-	-	-	-	17	3.1
35	Uttar Pradesh	7788	12	649	23	338.6	200	38.9
36	Uttarakhand	454	4	113.5	2	227	30	15.1
37	West Bengal	1411	18	78.4	16	88.2	309	4.5
	Total	42335	832	50.88	314	134.82	5649	7.49

Compiled from - AIHES, UGC, NAAC state wise tables on respective aspect

were given funds in the year 2018-19 with a total amount of Rs. 9.1 million. On average, it works out as Rs. 35 thousand per proposal. This speaks very poorly of research funding to college teachers in our higher education system. Thus the financial assistance to colleges, on the key factors, that help to attain the quality GER is un-believably low.

3. LEVEL OF BUDGETARY ALLOCATION TO HIGHER EDUCATION:

The provision of funds by the Government of India to higher education influences the quality of GER. The budgetary allocation to higher education in the year 2021-22 has declined by 6% from the previous year. It is reduced from Rs. 99,311 Crores to RS.93, 233Crores to Education. On higher education it increased by 2 percent from previous year. But in terms percentage of GDP, in the year 2010 it was lower than one percent 0.7 percent. But 2021-22 it is now only 0.45 percent. It sounds odd. It is particularly so because the policy statement proposes to enhance the budgetary allocation to reach the six percent of GDP on education over the next ten years. Accordingly, an

enhancement of allocation of funds to higher education is expected.

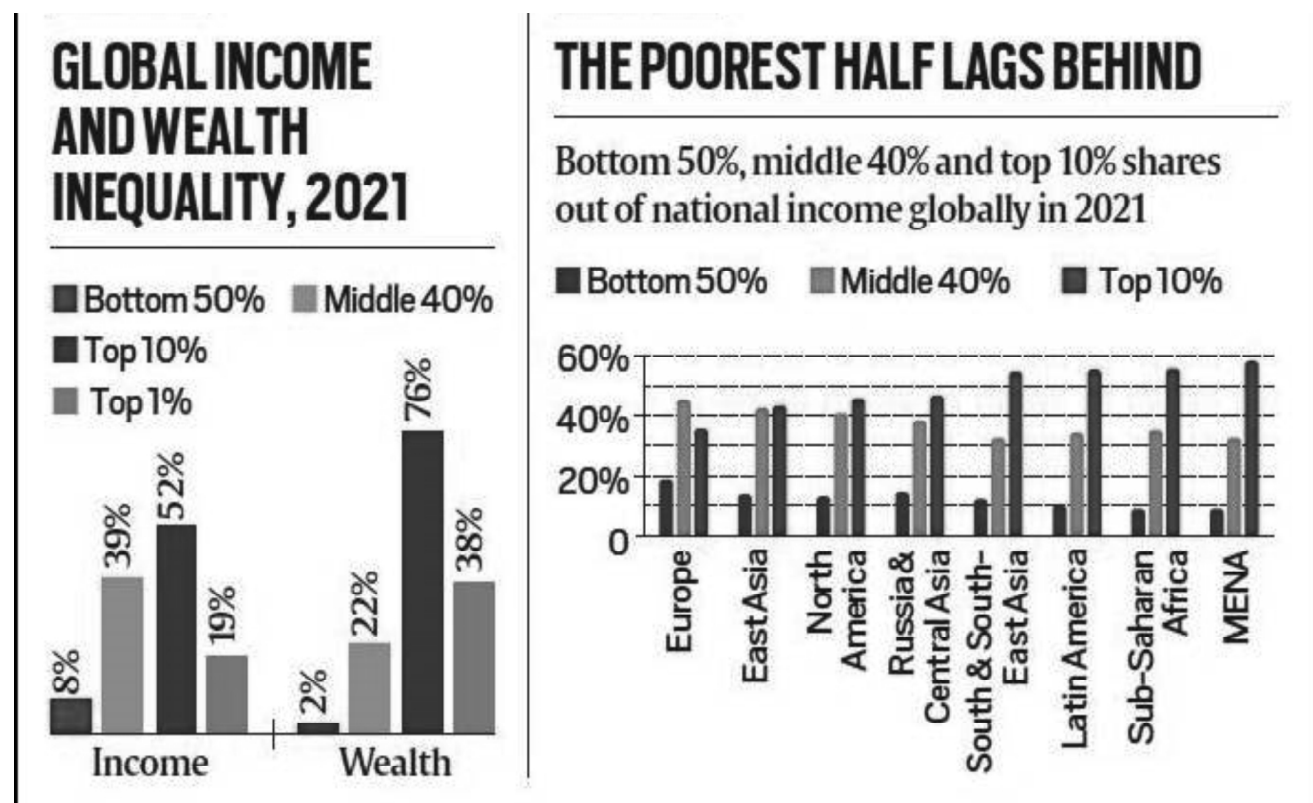
The trend of budgetary allocation to education for the last four years has been somewhat disappointing. It casts doubt about the seriousness of the government of India to implement the policy. Adequate budgetary allocation to education and increase in provision of funds to higher education is a challenge for the overall implementation of NEP, 2020, and reaching the targeted GER and quality GER.

NEP, 2020 is an innovative and out of the box idea for the transformation of higher education. It would, therefore, need an out-of-the-box and sincere approach to funding and managing the system. I think this is the foremost of the challenges.

SOURCES AND REFERENCES:

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2. All India Higher Education Survey, 2020
3. University Grants Commission - Annual Report, 2020
4. National Education Policy, 1986 (revised, 1992)
5. National Assessment and Accreditation Council, 2019.

College post is reproducing some figures of Global Income and Wealth Inequality, 2021 Report by Thomas Piketty, Emmanuel Saez and Gabriel Zucman for the benefit of readers. Source :and Courtsey - Indian Express `10th Dec,21



ARTIFICIAL INTELLIGENCE BASED ASSISTIVE TECHNOLOGIES

DR. BHAVNA CHIBBER*

AI is likely to influence education, production, distribution, services and way we live and communicate. This paper highlights features and advantage of AI. The paper also gives details of various available AI software and their functions.

1.1 AI HISTORY AND INTRODUCTION:

History of artificial intelligence is not a new invention. It started in the year 1950. The history of AI is fascinating with many landmark inventions. In the summer of 1956, scientists gather for a conference at Dartmouth College in New Hampshire. They believe that aspects of learning, as well as other characteristics of human intelligence, can be simulated by machines. The programmer John McCarthy, proposes the term artificial intelligence. The world's first AI program "Logic theorist" which manages to prove several dozen mathematical theorems and data is also written during the conference.

According to *John McCarthy*, *Artificial intelligence* is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence.

1.2 What is Artificial Intelligence?

Artificial Intelligence is an area of computer science that

KEY ASPECTS OF ARTIFICIAL INTELLIGENCE

Automation

In different parts of your business, you can automate various manual jobs that will save your precious time and money. A variety of process automation jobs can be addressed by employing an artificial intelligence framework. The entire process can become simple due to its visual modeling exercise. Without extra labor or skills, you can carry out this task. You can automate several tasks like job applications, marketing, invoicing and scheduling with artificial intelligence.

Natural Language Understanding (NLU) and Natural Language Processing (NLP)

For complete interaction and speech recognition, you can make use of these two processes. Every business owner can allow the customer to call, talk and leave a message if you can convert the audio to precise text, then you can get the full benefit of this process. By improving the business services and products, you can introduce personalized marketing platform.

Machine Learning

It is similar to AI and considered a portion of the same. You require sufficient data to make it functional. It recognizes what people like to execute, identify the restrictions and make out what is accessible. Machine learning can work on various problems with smart understanding.

Figure 1 Key Features

goes behind the creation of intelligent machines which can function and respond like a human. They aim to produce smart devices. In the technology industry, AI is considered an indispensable part. The core facet of AI is Machine learning.

1.3 What are Key Aspects of Artificial Intelligence?

The key aspects of artificial Intelligence solutions are as shown in Fig 1.

2.1 AI BASED ASSISTIVE TECHNOLOGIES

The advanced process of a machine to make decisions on the basis of logic involves the Artificial Intelligence technology. The creation of conversational chatbots, self-driving cars and recommendation systems clearly highlights the global impact of AI. It pervades in many parts of our lives and is considered one of the hottest areas of technology research.

Systems that have incorporated AI technologies not only act as a coded mechanized system but they also start thinking like humans. They are super powered to the level that they can execute tasks like; planning, strategizing and making decisions.

In business software, you will find the increasing use of Artificial Intelligence (AI) that helps in creating smart applications. Deep learning and machine algorithms are incorporated into the functionality of smart applications that automate business tasks.

Studies indicate that by 2024, the global artificial intelligence market is expected to reach \$71 billion. It also points out that from 2019 -2024, the CAGR will be 26%. Let's gain in-depth knowledge and understanding of artificial intelligence.

2.2 How is Artificial Intelligence beneficial for your business?

Artificial intelligence is becoming a regularly used competitive tool. As per the research by Forrester /IDC/ Narrative Science - this year across all businesses there is a 300% increase investment in AI methodology, 80% of executives say AI creates new positions and boosts productivity, 57% of businesses expect that AI will help improve customer experience and support, 20% of major retailers will use AI to personalize the brand experience from awareness through purchase, and 20% of all workers will use automated assistance technologies to make decisions and get work done.

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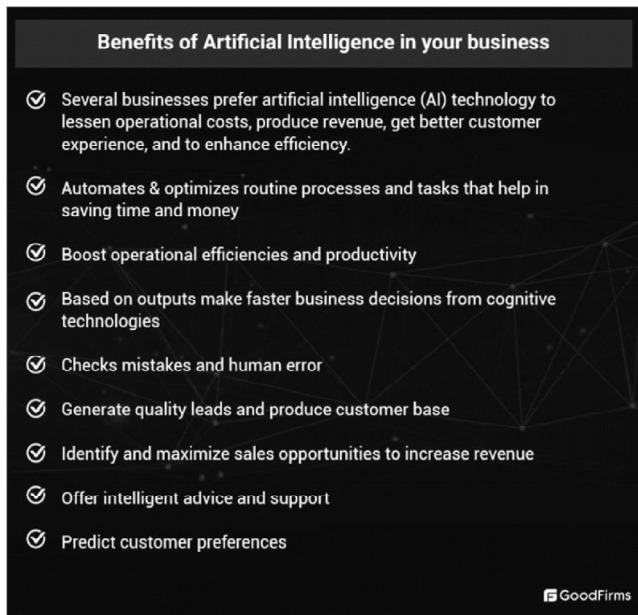


Figure 2 AI benefits

2.3 What is Artificial Intelligence Software?

The software that is competent of intelligent behavior is known as artificial intelligence software. AI software is packed with a number of capabilities that can address key areas like reasoning, problem-solving, knowledge representation, learning, and perception.

You can see the involvement of artificial intelligence software in applications like smartphone assistant, voice and image recognition software and ATMs that read checks.

3.1 AI AND SDG'S- AI FOR SOCIAL GOOD:

The sustainable development goals are also known as global goals. All united nation member states adopted these in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030.

Artificial intelligence is contributing to fast forwarding the process to achieve these sustainable development goals.

There are numerous artificial intelligences based assistive technologies that are helping communities to achieve all these sustainable development goals.

3.2 What is Artificial Intelligence Software?

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The constant advancements in artificial intelligence applications have transformed the way of working. It enables faster, innovative new products and services, and more informed decisions which were missing in the absence of AI.

Artificial Intelligence technology is blooming to a great extent. You will find its contribution in natural language generation, speech recognition, virtual agents, machine learning platforms, AI-optimized hardware, deep learning platforms, decision management, biometrics, robotic process automation and text analytics and NLP.

If you are looking for open-source artificial intelligence tools as they are often free to use and customize, then you have landed on the apt page. From the following sections of this article you should be able to gather the knowledge and understanding of free, open-source artificial intelligence software.

The software that is competent of intelligent behavior is known as artificial intelligence software. AI software is packed with a number of capabilities that can address key areas like reasoning, problem-solving, knowledge representation, learning, and perception.

4.1 AI TECHNOLOGIES TO ADMINSTRATE DEVELOPMENT AND HEALTH SECTOR:

Recognizing the causes of poverty is vital in looking at how to tackle the problems using technologies. From natural disasters, war and conflict, affordable food, lack of education and life skills.

Satellite imaging, artificial intelligence teachers, chat bots and so many assistive technologies I working in the area do administers the development of a nation.

Researchers have you a deep learning algorithm to detect lung cancer accurately from CT scans the results of this study indicate that artificial intelligence can outperform human evaluation of these scans. Robots are being used in medicine for a long time now. They range from laboratory robots to highly sophisticated surgical robots that can either aid a human surgeon or execute operations by themselves.

4.2 AI IN DAILY LIFE:

Every time you do a Google search, book a trip online, receive a product recommendation from Amazon, open your Facebook newsfeed, which is just a few everyday instances- hey is working in the background. There are many applications of AI in daily life:

Google Maps and directions two offers directions based on the fastest routes according to the usual traffic.

Uber and Ola ridesharing applications to let you know when to expect a driver to pick you up and what

will be the amount you will be paying for your ride.

Banks use AI to send mobile alerts to help prevent against fraud.

Google Play, Spotify are few music services that use AI to track your listening habits. Their AI- powered suggestions take into account factors like weather and time of day to offer music that can set the mood for activities

When you upload photos to Facebook, the service automatically highlights faces and suggests friends to tag. Facebook uses AI to recognize faces.

Textbooks add digitized with the help of AI. virtual tutors assist human instructors, and facial analysis gauges the emotions of students to determine who is struggling or bored, and Tailor the experience to their individual needs.

Microsoft has followed suit with Cortana, its own AI assistant that comes preloaded on windows computers and Microsoft smartphones.

5.1 FREE AND OPEN-SOURCE ARTIFICIAL INTELLIGENCE SOFTWARE

5.1.1 TensorFlow:

TensorFlow is an open-source artificial intelligence software that helps you develop and train Machine learning models. It presents the library for high-performance numerical computation. Across a variety of platforms (CPUs, GPUs, TPUs) this free AI software allows easy deployment of computation due to its flexible architecture.

With this software, you can accomplish the power of data in your business by building advanced predictive modeling applications. This software makes use of data flow graphs to build models. In perception, understanding, prediction, creation, and classification, you can make use of this software. You will find the primary use of this software in voice/sound recognition, text-based applications, image recognition, video detection, and time-series data. The time series algorithms of TensorFlow are mainly used in the field of finance, accounting, and enterprise /resource planning.

Several companies, like Dropbox, eBay, Twitter, Uber, and Intel, make use of this application. Behind several Google tools, this AI tool works as the engine. It contains Google photos and the speech recognition found in the Google app. This software works on various platforms like desktops, clusters, mobile, and edge devices, CPUs, GPUs, and TPUs due to its easy-to-use interface and architecture.

Link: <https://www.tensorflow.org/>

5.1.2. IBM Watson:

IBM Watson is a free, open-source AI software that provides authority to the companies to speed up the research and discovery, calculate disruptions, and improve

interactions. Several businesses are taking advantage of this software to study their data, gather intellectual property, insights, and predict their future performance easily. By using cloud-based IBM platform, organizations can make more informed decisions.

It is designed for enterprises from various sectors like IoT, consumer engagement, education, healthcare, energy, finance, work, and transportation. By using advanced AI and machine learning, enterprises can discover new opportunities and update themselves about possible regulations and risks. This app will allow you to increase your productivity.

Link: <https://www.ibm.com/watson>

5.1.3. Apache Mahout:

Apache Mahout is a distributed framework that efficiently handles the processing of the data. You can proficiently use this free AI tool for data mining in conjunction with Hadoop. Facebook, Foursquare, Twitter, LinkedIn, and Yahoo are all massive corporations that make use of this software for data mining.

Amazon and Facebook make use of recommender engines, also known as collaborative filtering to attract users and offer products by mining user behavior. In one place, this open -source artificial intelligence software groups objects of similar nature by making use of clustering feature. Summly is a Google app that shows the news from different news sites.

Facebook's face detection and spam checker use the technique of classification that helps in deciding whether a thing justifies being a part of some type or not. Applications can analyze data faster and more effectively by using this software. You will find excellent community support in this software.

Link: <https://mahout.apache.org/>

5.1.4. OpenNN:

OpenNN is the free, open-source artificial intelligence software that is written in C++ programming language. It provides a higher processing speed. For advanced analytics, this app works as a free neural network library. In energy, health, and marketing, this app gets to the bottom of many applications.

This free artificial intelligence software deals with machine learning solutions due to the presence of sophisticated algorithms and utilities. The machine learning solutions that are covered is regression, classification, forecasting, and association.

With universal approximation properties, this software allows the design of neural networks. The high performance of this software is its main advantage. It offers technology evaluation, proof of concept, design, and implementation.

Link: <https://www.opennn.net/>

5.1.5. Scikit-learn:

Scikit-learn is the free artificial intelligence tool that provides a variety of supervised and unsupervised learning algorithms through a consistent interface. It is considered a simple and efficient tool for data mining and data analysis. In various contexts, this free open source AI software is reusable and accessible to everybody. You can consider this app if you want to bring machine learning into a production system.

This software serves as a convenient platform that can predict consumer behavior. Around the world, Scikit-learn is extensively used by commercial and research organizations. The business entities and research organizations find the module of this software easy to use as it allows performing the multitude of processes. *Link: <https://scikit-learn.org/stable/>*

a seamless manner that allows you to converse with her. You can also ask her any questions you may have and also ask her to execute various commands. Siri accesses all the applications on your phone like messages, contacts, safari, mail, maps, etc. Siri is also useful when you want to find a particular place like sports information, entertainment joints, making phone calls, and sending messages. She's also quickly able to check your emails and let you know what movies or plays are available, text a friend, and let them know you will be late. Additionally, she's able to shuffle your music on iTunes, reschedule and arrange your meets and tell you in advance about the weather condition in an area you are thinking of visiting.

6.2 Cortana

Designed for Microsoft Windows phones, this voice-

AI Software	Platform	Digital Assistants	Machine Learning	Adaptive	Data Ingestion	Chatbot	Predictive Analytics	Speech Recognition
Tensor Flow	Linux, macOS, Windows, Android, iPhone/iPad	✓	✓	✓	✓	✗	✓	✓
IBM Watson	Windows, Mac, Linux, Web-based	✓	✓	✓	✓	✗	✓	✓
Apache Mahout	Windows, iPhone/iPad, Web-based	✓	✗	✓	✗	✓	✗	✓
OpenNN	Windows, Android, Web-based, iPhone/iPad	✓	✗	✓	✗	✓	✓	✓
Scikit-Learn	Windows, Web-based	✓	✓	✓	✓	✗	✗	✗
accord.Net	Windows, Android, iPhone/iPad, web-based	✓	✗	✓	✓	✗	✗	✓
Torch	Windows, android, iPhone/iPad, web-based	✓	✓	✓	✗	✓	✓	✓

Figure 3 Comparative chart

5.2 COMPARISON CHART OF ARTIFICIAL INTELLIGENCE SOFTWARE

6. ARTIFICIAL INTELLIGENCE (AI) PERSONAL ASSISTANTS

6.1 Siri

Siri is only available to Apple users. It is mainly designed to help users better interact with their Apple Watch, iPhone, iPad, or iPod Touch. This interaction is done in

controlled assistant is highly useful for users. The AI makes various personalised recommendations based on the data stored in the Smartphone of a user. This tool makes use of the Bing search.

6.3 Xai

This tool can come in handy for you because it helps in planning meetings. Wondering how Amy works? Well, as soon as you get meeting requests or an email, Amy

handles it. It pins down the location and time. Amy also responds to all your emails. It works by scheduling all your emails by the type and buffer. For the AI to work, you will need to update or change the status to either available or busy. Once a user does this, she will plan accordingly. Must Have

7. LIST OF AI TOOLS FOR JOB, PERSONAL, HEALTH, EDUCATION, ETC. IN DAY TO DAY LIFE

7.1 Work/Job AI Tools: There are AI tools that come in handy, especially when you are at work. They include:

- *Mosaic:* Comes in handy when you are writing curriculum vitae. It works by ensuring that you write the best resume.
- *Carly:* Looking for an AI that can help you manage your phone calls? Carly should do this for you quickly.
- *Lomi:* Helps you identify any sales leads that you may have missed.
- *ETCH:* This tool helps in managing all of your networks and puts them in one searchable database.
- *Woo:* Helps you make smart and better decisions that will come in handy for your career.
- *Newton:* Looking for your dream job? This tool will help you find your dream job.
- *Robby:* Always forgetting stuff? One of the best AI tools that work as a smart calendar.
- *Notion:* This tool helps with email organisation, overload, and communication.
- *Stella:* Not only does this tool help you with the scanning of jobs, but it also helps with the entire application process.

7.2 In-Home AI Tools

- *UnifyID:* This AI identifies your identity by the type, way you walk and sit.
- *Bridge kitchen:* This is the perfect kitchen assistant that helps you find your way around the kitchen.
- *Ems:* looking for a beautiful place to live? This AI tool will help you find a convenient and ideal place for you to live in.

7.3 Medical/Health AI Tools: There are AI tools that can come in handy, especially if you or your loved one falls sick. They include:

- *Amelie:* A useful chatbot that's all about mental health. If you are dealing with psychological issues, this can be an essential tool for you.
- *Abi:* An assistant that takes care of your health.
- *Kiwi:* An AI tool that helps you reduce your smoking and quit altogether. If you are struggling with smoking or quitting, try out this tool and see how useful it can turn out to be.
- *Bitesnap:* A food recognition AI tool that helps you count calories by only taking a photo
- *Joy:* Not only does it help you keep track of your

mental health, but it also comes in handy to improve your overall mental health.

- *Sleep.ai:* A medical AI tool that diagnoses tooth grinding and snoring.

7.4 Education AI Tools

- *Woogie:* A conversational AI tool that makes the discovery and learning for children an enjoyable experience.
- *Thirdleap:* An excellent tool for children that makes math easy

8. FUTURE OF AI TECHNOLOGIES:

Tegmark said during his Ted Talk, "our situation with technology is complicated, but the big picture is rather simple. Most AGI researchers expect AGI within decades, and if we just entered into this unprepared it will probably be the biggest mistake in human history. It could enable brutal global dictatorship with unprecedented inequality, surveillance, suffering and maybe even human extinction. But if we steer carefully, we could end up in a fantastic future where everybody is better off. Like, the poor are richer, and the rich are richer. Everybody is healthy and free to live out their dreams."

AI influences many real-world applications like facial recognition, language translators, and assistants like Siri, Alexa and Netflix. Not only AI is working for consumer applications but also offers significant benefits for businesses and economies by contributing to productivity growth and economies.

Across multiple industries, AI is exhibiting the extensiveness of technology applications. You will find its power in Robotics, healthcare, finance, travel and transportation, Google: smart apps, social media, e-commerce, and marketing.

In day-to-day services, AI plays an important role. We expect a lot more use of this technology in the future due to rapid growth in technology and development. The above mentioned free and open-source artificial intelligence software solutions are capable of performing frequent and computerized task reliably. To your existing products, the open-source tools for artificial intelligence will add quality from security intelligence to investment analysis. With the best open-source AI tool, you can get unbelievable accuracy through deep learning networks.

I hope this piece of writing has made you familiar with the key features of the free and open-source AI software. In case you have come across with any of the artificial intelligence software as mentioned above, then feel free to share your valuable views on the same.

If readers have any curiosity about anything or Any Question like "Is there any AI Tool by which I can do that or this?". They can send their queries to author on the email for any kind of research and training in various fields. "Be smart, Be Intelligent, Be informed"

IMPACT OF POLICY OF LIBERALIZATION ON THE GROWTH AND DEVELOPMENT OF HIGHER EDUCATION*

DR. MRIDULA SHARMA *

The paper highlights growth and development of higher education during pre and post independent India in particular changes of policy and practices during the economic liberalization and neoliberalism. This is a first part of an occasional research paper based on a major study on the above subject.

INTRODUCTION

Higher Education is a vital input in the development of quality human resources. People trained in higher education man the various professions and vocations. They are also engaged in the creation of knowledge through research and development. They help to solve the problems of society within a nation-state and globally. The knowledge generated and applied for the development of the country always spread throughout the world, if such discoveries are found to be helpful to mankind. India has a well-established system of higher education with more than 900 universities, 45 thousand colleges enrolling nearly 22 per cent of students in the eligible age group for higher education. It has a good stock of human capital and it hopes to add more with young age population profile of the country.

However, during the last more than a decade, several changes in approach, philosophy and support to higher education have taken place from the early period to British rule and in independent India. During independent period up to 8th Five year Plans the state consistently and regularly worked for the promotion of higher education among the people under liberal democratic framework and following the concept that expenditure on education is an investment to form human capital for the development of nation-state. Hence state and philanthropists provided the support for higher education of people by setting up universities and colleges, by giving grants in aid to institutions set up by philanthropists. It also created a constitutionally mandated system of coordination and maintenance of standards in higher education. It set up several apex institutions in different disciplines for coordination and development of higher education. A good deal of diversification took place through the initiative of the state-supported apex

organization. All this was under the liberal democratic framework of the welfare state.

Since 1990, there has been a change in approach, philosophy, policy and practices. Partially out of its own competitive demand on limited resources and partly under the neo-liberal framework that is promoted by world organization like IMF and World Bank. This led to several changes in philosophy, approach, policy and practices adopted by central and state governments in India. This

Since 1990, there has been a change in approach, philosophy, policy and practices. Partially out of its own competitive demand on limited resources and partly under the neo-liberal framework that is promoted by world organization like IMF and World Bank.

change also strengthened participation by philanthropists and educational entrepreneurs in higher education with the concept of recovery of the cost of education from the receiver of education. This was distinct from an earlier liberal framework where state and philanthropists largely met the cost of education of students. Not only this state and philanthropists provided scholarships to students for higher education.

This change, whereas provided opportunities to several students aspiring for professional education namely, engineering, medical, management and other disciplines, which they would have other the state and grant-in-aid supported institutions of higher education. It has also given rise to the concept of education loans to students at Prime Lending Rates. But it has also deprived those aspiring to get admission in these programmes, if they could not afford the cost of education or could not mobilize loan funds to meet the cost. This has given rise to several apprehensions with regard to unethical financial practices that led to commercialization of higher education. The latest document of National Education Policy has attempted to re-introduce the concept of state playing a major role in provision of higher education and philanthropists - genuine one are proposed to be encouraged. The concept of equity based funding of privatization of higher education has been put to rest in this policy document.

How these changes in policy and practices have impacted the growth and development of higher is the theme of this paper. The paper is part of the Occasional paper based on a detailed report of the above

* This is part of a study sponsored by NIEPA, "Impact of Policy of Liberalization on Growth and Development of Higher Education". (2018) - Author Late Dr. Mridula Sharma. This paper is a part of occasional paper on this subject submitted to NIEPA.

titled study. It has also added some aspects of NEP, 2020. Paper dealing with other aspects will be published in the next issue.

1. LIBERAL AND "SOCIAL GOOD" MODEL OF EDUCATION: ANCIENT INDIA

Education has always been under the liberal framework from the beginning of concept of education of students in groups. It is both in general, vocational and professional education in Gurukula, Craftsmanship and Viswavidyala in ancient Bharat. The community paid for the education of children and state/kings bestowed land and milch animals to those engaged in the education of students to meet Guru's family and students' expenses. Education was viewed as "social good." The growth of education and higher education was in response to the discovery of knowledge and the need of society. Bharat had a history of three Vishwavidyalaya and more than a dozen centres of higher learning.

2. LIBERAL AND MERIT GOOD MODEL OF EDUCATION: BRITISH RULED INDIA

During the British Rule, after the Minutes of Macaulay were discussed and approved in the British Parliament in 1835.(1) ruling government of that time attempted to replace the indigenous system of education by the formal system of schooling and higher education to suit the need of governance of India. It kept a liberal model of education wherein both state and people could engage in the education of children, but it encouraged and goaded institutions to follow the British institutional model of education. It shifted from "Social Good" model of education under a liberal framework to a "merit good" model of education. Wherein students were also required to pay nominal fees, but most of the expenses of education were met from society/ philanthropists or state or kings and Nawabs of respective territories.

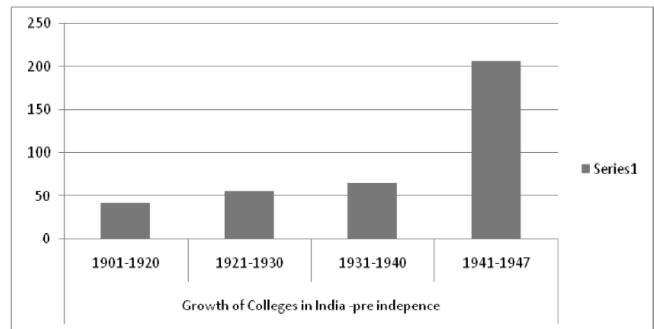
The growth of higher education in India during the pre-independence era was under the liberal framework, wherein both state and private people/philanthropists/ industries and social organizations- includig religious bodies, helped setting up of institutions of higher education. This is evident from the following Table No.1 and Figure No.1. However, growth in a number of colleges set up by Philanthropists/Society was higher than government colleges.

Table No.1: Growth of Colleges in India -pre-independence - 1900-1947

1901-1920	1921-1930	1931-1940	1941-1947
42	56	65	207

Source: UGC list of colleges since their establishment

Figure No.1: Growth of Colleges in India Pre-independence 1900-1947



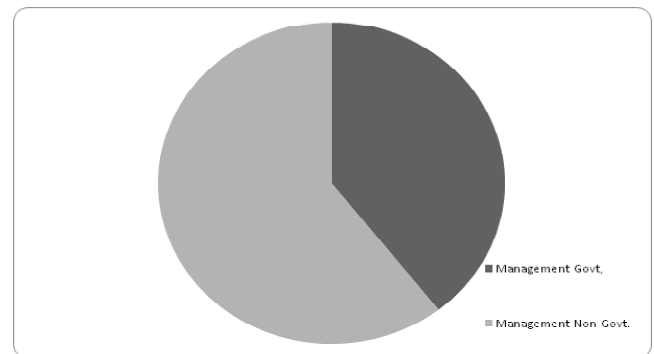
The composition of government and Privately managed colleges was as under:

Table No. 2: College by Type of Management

Govt.	Non-Govt.
149	229

Source: UGC list of colleges since their establishment

Figure No. 2 Colleges By Management - 1900-1947



3. LIBERAL AND MERIT - SOCIAL GOOD MODEL OF EDUCATION: INDEPENDENT INDIA

3.1 Role of the State

Though independent India opted for liberal and Merit Good Model of education, yet its approach was tended more towards "Social Good Model" as state positively intervened in the development of school and higher education through the planned process of development. Under this process, the State government and Central government prepared the plans for the development of education and higher education along with the development of other social and economic sectors. State allocated resources for the development and central government also provided funds to the state government for the development of education. Initially, education was in the state list of activities and central government by setting up University Grants Commission provided funds for development universities and colleges under plan

schemes. Subsequently, when Education was brought under concurrent list Central Government directly established schools and institutions of higher education and provided funds for their development. This approach enabled the government to positively intervene in the development of higher education under the concept of education as social and merit good. All the development and diversification one observes in higher education and as mentioned in the second were an outcome of this approach. The main approach was supporting the development of universities and colleges for improving quality of higher education through the various schemes and also ensuring the remuneration given to teachers is attractive enough to recruit and retain talented teachers in higher education. Schemes were also launched for quality improvement of teachers through research funding, faculty exchange programme, summer schools and academic staff development programme. It also positively intervened in carrying reforms under New Education policy, 1986 and 1992(2) for introducing the concept of autonomy to colleges and setting up the coordinating institutional set up in the form of State Council of Higher Education and provided initial funding for the same. Central government besides setting up of institutions of national importance like IITs, IIMs, Institute of Science, Central Universities. University Grants Commission also set up inter-university centres in new and emerging areas to support the development of higher education. State also set up institutions of importance in the field of Medicine, Agriculture and emerging technology of space, astronomy biotechnology and environment areas. State also provided scholarships for doctoral and post-doctoral research work. Beside this, it also provided funds for social sciences and science and technology research. Hence approach was that of the positive intervention of state through funding and creating institutions of higher education and promoting R&D through research scholarship, research project funding and setting up of institutions to carry out research.

3.2 Role of Private Trusts/Bodies

Along with this, the private sector under the liberal and not for profit framework with nominal cost to the receiver of education significantly contributed to the development of higher education until the seventh five-year plan. Development during the first three plans was relatively smooth until India faced problems of draught and two wars namely, Chinese-1962 war and Pakistan-1965 war. During 4th and subsequent plans, there was a fall in growth of government colleges. Still, this model of education was sustained until the seventh five-year plan. After the seventh plan, there was a major shift in "merit-social good" model of education. This is evident from the following tables.

Table No.3: Growth of Colleges during the first three five year plans

Plans	Govt	Non-Govt.
First Plan	91	145
Second Plan	204	306
Third Plan	263	654

Source: compiled from UGC list of colleges with year of establishment

Figure No. 3: Growth of Colleges during the first three plans

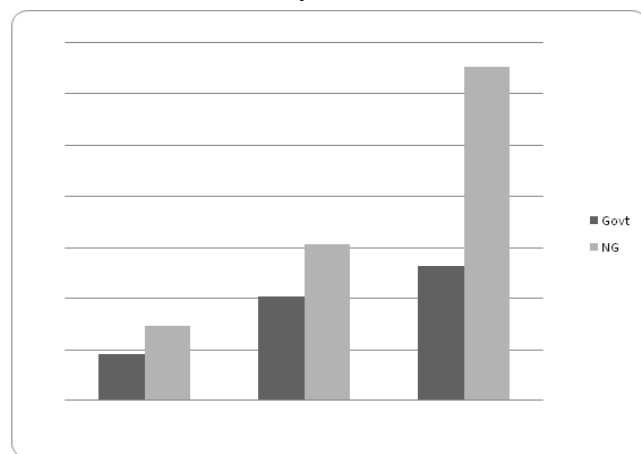
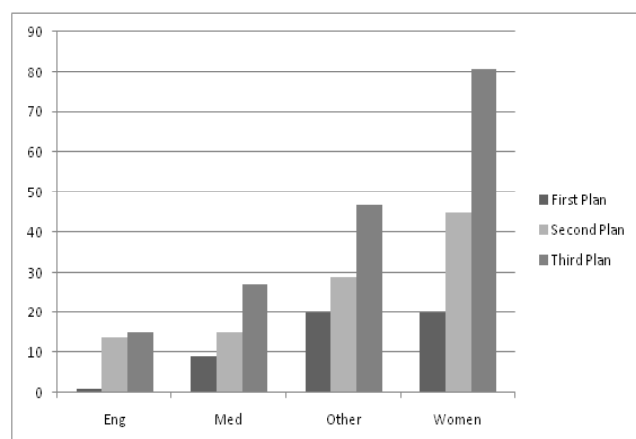


Table No. 4 Growth of Engineering, Medical, other professional colleges and women colleges

Plans	Eng	Med	Other	Women
First Plan	1	9	20	20
Second Plan	14	15	29	45
Third Plan	15	27	47	81

Source: Compiled from UGC List of Colleges with their year of establishment

Figure No.4: Growth of Engineering, Medical, other professional colleges and women colleges



The growth of professional education institutions was slow owing to reduced funding by state exchequer and inability of the private sector to set up such institutions due to relatively higher investment requirement. There was a pent-up demand for professional education colleges namely Engineering and Medical Education colleges.

3.3 The backdrop of Shift

The debate on who should pay for education has been going on for the last three decades or so.⁽³⁾ The practice of full cost recovery from students of higher education in some of the developed countries was well known to economists and policymakers. To begin with, many economists viewed that low fee charged from students also subsidised those who could afford it. One view was that let there be full cost charging institutions for those who can afford it and let the public sector cater to those who can not afford it. But such debate remained inconclusive as many of those who could afford it preferred public supported institutions as also public institutions had their name and fame as centres of quality higher education.

3.4 Pressure for Admission

When the population expanded, school education expanded, aspirants for higher education also expanded. Government both at centre and states level took the recourse to provide support for general education. Philanthropists also helped the expansion of colleges in general education namely, Arts, Science and Commerce and very few attempted to set up Engineering and Medical Colleges and other professional Colleges. This led to fierce competition for seats in the professional education colleges. Many aspirants for such education were either left out or those who could afford the cost of education went abroad for studies. But at the same time pressure for setting up engineering and medical colleges increased. Some of the Philanthropists and educational entrepreneurs saw it an opportunity to start professional colleges under the provision of full cost + recovery courses for those students who could not qualify for merit seats under-regulated fees. They were popularly known as capitation fee colleges.

3.5 Judicial Intervention

There was a court case for admission under such a system - The famous case of Mohini Jain vs government of Karnataka. Which led to clearly working out the procedure for admission and regulation of fees both under merit and paid seats. Hence partial neo-liberalism started in practice with the concept of merit and paid seats in professional colleges. Such colleges were mostly set up in the South part of India and Maharashtra. The likely impact of high fee-charging institutions was deliberated in one of the papers published in University News⁽⁴⁾.

3.6 The Neo-Liberalisation

The changes started taking place in practice about funding of education. Under the neo-liberal framework, the receiver of education is expected to pay for the cost of education. This encouraged philanthropists and educational entrepreneurs to set up professional Education colleges more particularly Engineering and Technology Colleges and Medical Colleges. Under the existing provision of admission, they could charge full cost from those who could not qualify for admission to limited seats available under the regulated fee structure.

4. THE IMPACT OF THE NEW WORLD ECONOMIC ORDER

With the world Leaders coming together on the issue of new economic order and trade liberalization led to the formation of the World Trade Organization and General Agreement on Trade in services. Liberalization was the main thrust of the new economic world order under the WTO. The World Bank and International Monetary Fund supported a study by George Psachropoulos⁽³⁾ on returns to investment in education. This study pointed out that social returns on school education was higher whereas, for higher education private returns was higher. That means the receiver of education had a higher returns than society. This, in a way, adversely affected the positive approach towards education financing adopted by many countries of the world including India after the publication of Investment in Human Capital, by T.W. Schultz in 1960⁽⁵⁾.

This gave legitimacy to WB and IMF approach to reducing subsidy on higher education and on many other social services. This also became one of the conditions of providing loans to countries and advised borrowing countries to follow this policy for better budget management. India, who received a loan from IMF agreed to reduce the funding on higher education. The equity and quality principles-education as merit and social good, which guided the development of higher education until the 8th five-year plans gave way to new approach that is partial neoliberalism which later on culminated to Neo-liberalism in higher education i.e., market orientation and a private good model of higher education.

5. THE SHIFT IN APPROACH BY PLANNING COMMISSION

During the 9th Five year Plan, a white paper on subsidies in the social sector was issued by the Planning Commission. It was authored by Shri Bimal Jalan.⁽⁶⁾ This, in fact, led to, in principle, accepting the policy of increasing the recovery from the receiver of education. It also gave rise to practice in publicly funded institutions to mobilize more funds through increasing fees from students. It reduced budgetary support to grant- in-aid institutions- which were basically run under Trusts and Societies Acts under the policy of nominal fee from the

receiver of education. This approach forced Trust and Society to run colleges to appoint ad-hoc teachers and launch self-financing courses. The government also encouraged universities and public sector colleges to start self-financing courses. Under the pressure from the government for mobilization of funds by aided and government colleges, many self-financing i.e. full cost recovery courses were introduced in these colleges. State-supported universities also started self-financing courses.

6. PARTIAL MARKET ORIENTATION - NEO-LIBERALISM - THE PRIVATE GOOD MODEL

Thus partial neo-liberalism practices started in higher education. Within the same institution, there are two sets of students studying self-financing courses and other under normal fee paid courses. As also some of the people who could afford (through family support or loan funding from Banks) higher fees could have access to professional education and those who could not have to compete for limited seats in public sector institutions or change their choices of courses of studies. With the passing of private University Acts by many states, neo-liberalism took its full form and a door for self-financing universities was opened.

6.1 State Private Universities Acts

Many states on their own framed Private Universities Acts to allow for setting up of full cost + recovery from students of their universities. This happened after the debacle of Chattisgarh Private Universities Act-which was struck down by supreme court owing to legal infirmities - and learning lesson from the failure in framing Private Universities Act many states became wise and framed their Private Universities Act which could stand the scrutiny of law. As of 2018, there are 24 states that have Private Universities Acts and there is a guiding Private University Act given by the University Grants Commission. The University Grants Commission also approved Deemed to be Universities charging full cost + recovery from students. Self Financing Deemed to be Univesity also grew under this framework.

6.2 The Deemed-to-be-Universities under Self-financing Model

With the practice of neo-liberalism within the central sector, the Deemed to be universities - with full cost recovery institutions under the provision of section 3 of University Grants Commission Act, 1956 were approved by the MHRD. This led to the very fast growth of the number of Deemed to be universities during 10th to 11th plans. The fast growth made many academics to question the quality of these institutions. Ministry of Human Resource Development, Government of India set up a committee to assess the quality of all the deemed to be universities in India. The Committee headed by Dr Tandon,

on the basis certain criteria of quality categorised all the deemed to be universities under three categories. Those which are good and can continue to work as deemed to be universities. The other those who needed to improve should be given a chance to improve and the third category of those institutions which need to be closed. The Deemed to be universities under these three categories was also made public. The findings of this committee were questioned by affected deemed to be universities in a court of law. The court also asked UGC to assess the quality of these institutions and let the court know about it. The contention of petitioners was that they have been approved by UGC and the UGC is appropriate authority to assess the institutions of higher education and the criteria adopted by the Tandon Committee suffers from several limitations. Hence the matter is required to be adjudged by the Supreme Cout of India. This case also affected the growth and development of self -financing deemed to be universities during 12th Plan.

7. GROWTH AND DEVELOPMENT UNDER NEO-LIBERAL FRAMEWORK

The growth of these institutions has surpassed the growth of public sector universities in just one and a half decade. This is evident from the following table No. 5 and figure No. 5.

Table No. 5: Growth of Private Universities

Year	No. of Universities
below 2005	14
2005- 2007	15
2007-2009	20
2009-2011	46
2011-2013	57
2013-2015	55
2015-2017	49
2017 above	0
Total	260

Source: Compiled from UGC list of Universities with a year of establishment

Figure No. 5: Growth of Private Universities from 2005 to 2017

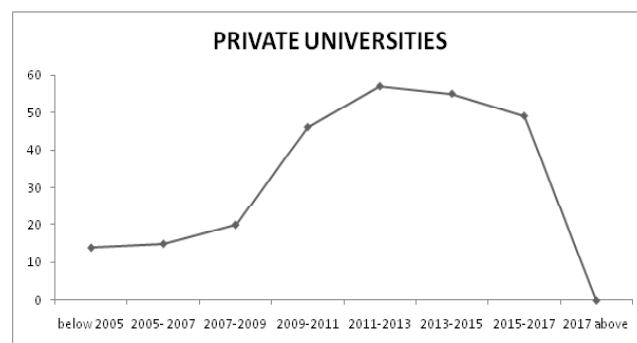


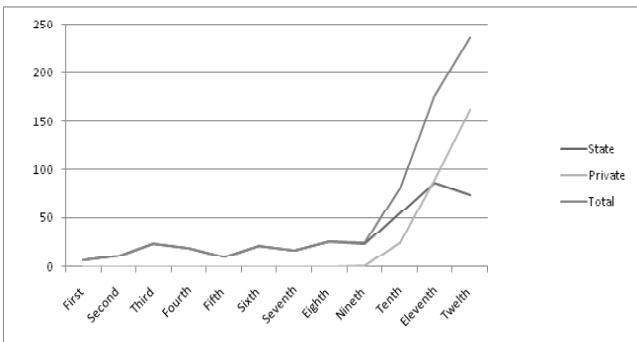
Table No 6 : Growth of State and Private Universities for over 5 years Plans - 1st to 12th Plans

Plan	First plan	Second plan	Third plan	Fourth plan	Fifth plan	Sixth plan	Seventh plan	Eighth plan	Ninth plan	Tenth plan	Eleventh plan	Twelfth plan	Total
State	6	11	23	18	9	21	16	25	23	55	86	74	367
Private	0	0	0	0	0	0	0	0	1	25	90	162	278
Total	6	11	23	18	9	21	16	25	24	80	176	236	645

Source: Compiled from UGC list of Universities with their year of establishment.

A comparative position of growth of Public and Private Universities is given below in Table No.6 and Figure No.6.

Figure No.6: Growth of State and Private Universities for over 5 years Plans -1st to 12th Plans



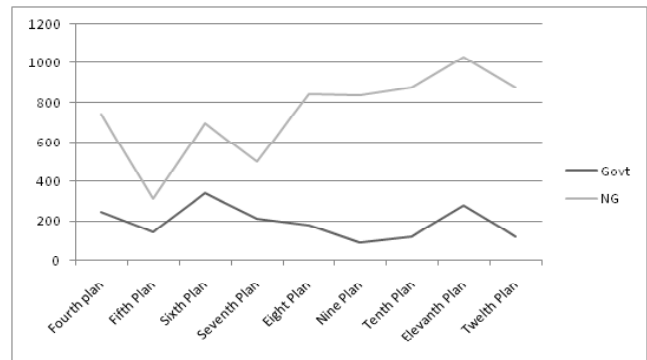
Private colleges also grew faster than government colleges during 4th 12 plan period see Table 7.

Table No.7: Growth of Government and Non-Government Colleges during 4th to 12th Plans

Five Year Plans	Govt.	Non Govt.
Fourth plan	247	743
Fifth Plan	143	315
Sixth Plan	342	694
Seventh Plan	213	505
Eight Plan	175	842
Nine Plan	92	837
Tenth Plan	123	878
Eleventh Plan	281	1031
Twelfth Plan	123	878

Source: Compiled from UGC list of Colleges with their year of establishment

Figure No.7: Growth of Government and Non-Government College during 4th to 12th Plans



7.1 Philip to the Concept of Autonomy to Colleges

Another feature one observe is that the concept of autonomy was seriously persued by the state since the announcement of New Education Policy in the year 1986. In spite of several attempts the progress on seeking and giving autonomy to colleges was slow. However, after growth of self- financing colleges, this concept seems to have gained strength. This is evident from the following figure.

Graph No.8: Growth of Autonomous Colleges over the period 1979-85 to 2012-2018

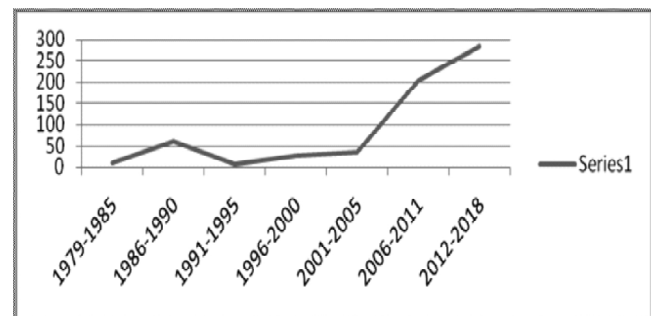


Table No.8: Growth of Autonomous Colleges over the period 1979-1985 to 2012-2018- All India

1979-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2011	2012-2018
8	61	6	25	34	204	283

Source: Compiled from UGC list of Autonomous Colleges with the year of grant of Autonomy.

TO SUM UP

- India, after independence, started with the concept of education as Merit and social good and supported higher education under the liberal democratic framework up to the 8th five-year plan.
- After the implementation of the New World Economic Order and push by the World Bank and IMF, it changed its course and attempted to reduce funding for higher education.
- The lack of growth of state-supported professional colleges and pressure of students for admission in these colleges gave rise to quasi neo-liberalism under which merit and paid seat concept came into practice.
- The neo-liberalism of full cost + recovery institutions started in the late nineties and early 2000s wherein many state government set up private self-financing universities and UGC and MHRD approved self-financing Deemed to be Universities under section 3 of UGC Act.

NOTES

- Minutes of T.B. Macaulay, 2nd February 1835. Presented to British Parliament.
- New Policy on Education, 1986 and revised in 1992, MHRD, GOI
- See the Working paper by Maureen Woodhall, World Bank, 2007 Funding Higher Education: Economic Thinking to debate policy development. Paper is reviewed in College Post-April-June, 2017.
- G.D.Sharma Higher Education: Resource or Policy Crunch, University News, 199 And Right to Education: Court Succeeded, Where Academia Failed, University News, 1992.
- GD Sharma - Court intervened where Academia Failed, University New. AIU.
- White paper on subsidies in social Sector, Bimaijalan, Planning Commission, GOI.

...contd. from page 1

every 50 college there is one autonomous college in the country. Hence the task of consolidation and grant of autonomy to colleges is very gigantic. A well designed mission, taking states and universities on board, can help achieving the target of grant of autonomy to colleges.

Enhancing the rate of participation of eligible age group population (18-23 years) to the level of 50 percent by the year 2035 from present level 27 in a period of 10 years is another challenge. Some of the states have already reached this level of participation where as a good number are lagging behind. Here also a strategy by taking socio-economic status of respective states needs to be developed.

Finances are key to implementation of the policy. The NEP 2020 envisaged that in next 10 years the allocation of funds to higher education would be doubled. However, ground realities are that allocation of funds to higher education during the present financial year has been reduced by six percent. Hence there is mismatch between policy and practice on ground. This mismatch also sends a message about the seriousness of the government to the implementation of policy. The real celebration of year of implementation would be when the government is able to demonstrate its seriousness by allocation of adequate funds to higher education and clearly share its plan of action for the next 5 years.

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THE NEP- 2020- KEY FEATURES, CHALLENGES AND OPPORTUNITIES- A NOTE

DR. G.D. SHARMA*

This brief note highlights Key Features, Challenges and Opportunities of the NEP-2020.

KEY FEATURES:

The Policy has laid down 22 principles of policy formulation and drawn a vision for the education of people in India, i.e. Bharat.

The 22 principles can be summarized in seven broad categories, namely,

1. Flexibility, Autonomy, Accountability, Multidisciplinary system
2. Contents and Processes- rooted in India and globally oriented,
3. Creativity and Critical Thinking and Outcome-based Evaluation,
4. Composite system of educational institutions in substantial size
5. Doing away with affiliation, fragmentation, and silos in education.
6. Light but tight governance -based on principles of integrity, transparency
7. Finally, the public education system strongly financially supported by the state and encouragement to genuine philanthropic private education providers

The education policy proposes to settle the issue of public vs. private institutions of higher education by clearly focusing on education as a "public good." and therefore, it is State's responsibility to provide funds and strengthen the public education system

THE VISION:

The policy vision is that "the education system rooted in Indian ethos, that contributes directly to transforming India, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, thereby making India a global knowledge superpower." The "Viswa Guru".

THE PROPOSAL:

- ¢ The education policy proposes to break the age-old colonial Affiliating College System, and recently emerged "stand-alone single subject educational institutions".
- ¢ It proposes to have composite educational institutions, as India had in the form of three universities namely, Nalanda, Taxshilla, and Vikramshila, imparting education in all the fields of

knowledge or the present-day Ivy League universities in the USA.

- ¢ It has proposed to convert all the colleges into autonomous degree-granting colleges by 2030.
- ¢ It proposes a three-tier system of higher education namely, Research Universities, Teaching and Research Universities, and Degree awarding autonomous colleges
 - ¢ It proposes to achieve GER (Enrollment of students - Gross Enrollment Ratio - Age group 18-23 population) 50% by the year 2035
 - ¢ The education policy proposes to settle the issue of public vs. private institutions of higher education by clearly focusing on education as a "public good." and therefore, it is state's responsibility to provide funds and strengthen the public education system.
 - ¢ The policy provides for a genuine private philanthropist to engage in the provision of education without a commercial motive.
- ¢ It has proposed increasing the public expenditure by 20% every year and reaching 6% of GDP in due course of time
- ¢ The regulation and promotion of higher education are proposed to be done by the Higher Education Commission of India (HECI) with its four major departments called verticals namely, Regulation, Funding, Accreditation, and Standard-setting, named as Higher Education Regulation Council, National Accreditation Council, Higher Education Funding Council, and General Education Council

THE FOCUS:

- " The policy focuses on scientific temper, constitutional values and recognizes existing Indian Knowledge systems, and suggests furtherance of this knowledge on scientific lines to address the problems development of India and the world.
- " The policy focus is on the virtual education program. The scheme to provide education both through face to face, digital mode, and blended way.

* Former Secretary, UGC, Director, CEC and Professor NIEPA

- " It focuses on creating knowledge, entrepreneurial abilities, and skill practices that will make India "Atma Nirbhar." This means generating a lot of content and skill practices that are locally and globally relevant

THE CHALLENGES OF IMPLEMENTATION:

- " There are about 45 thousand colleges in the country of this nearly 30 percent are single faculty colleges the question is: how this large number will get integrated with the new concept of multidisciplinary Institute of higher education?
- " There are also a large number of standalone PG Diploma offering institutions of Management most of them are student financed institutions- How are they going to be integrated with the university system?
- " The policy of multiple exit and entries with an accumulation of credit sounds good. So far single institute is considered it could work as the account of credit earned can be kept with the university. When it comes to the transfer of credit earned by the students to other universities or another program the matter would become complex? How this complexity is likely to be addressed? UGC has drafted Guidelines for Bank of Academic Credit. It attempts to answer some of the above questions.
- " Certification for various levels of attainment by the students says 1st year to 3rd-year degree and fourth year Hon. The degree is likely to be considered by employers in India?
- " Besides, two constitutional stakeholders namely Central and State Governments, during the last one and half decades, a third party, in the form of a substantial size of private education providers, has emerged. How this party is would be taken into account while finalizing the implementation strategy? This is particularly because the education policy has made serious observations on the commercialization aspects of education.
- " There is a huge challenge of allocation of funds to education. The promise of allocation of funds to the tune of 6 percent of GDP in the next 10 years and a 20 % increase every year has not been met during the budgetary allocation during 2021-22.

OPPORTUNITIES:

There is an opportunity to break silos in the system of higher education by orienting curricular and program of studies oriented towards the multidisciplinary school of studies or the departments. Jawaharlal Nehru University

has already implemented by constituting schools of studies in various multidisciplinary manners. Such orientation will also give research impetus as problems of society and life are multidisciplinary.

There is also an opportunity to break the old age colonial system of affiliated colleges by granting autonomy and degree-granting status to colleges and consolidation of colleges in a multidisciplinary manner. This is going to be the most difficult task. It would require structural changes and amendments of acts and statutes of the Universities.

There is an opportunity to involve private education providers in implementation policy, as their share in professional education and university education is substantial. Their participation in research activities may add to the development of research infrastructure and outcomes for the larger benefit of industry and society.

There is an opportunity to strengthen the system of external quality assurance through the development of well-defined protocols of quality assurance and accreditation. The present system of a single institution may be inadequate to handle the quality assessment and accreditation issue of the large Indian higher education system.

Their opportunity to link education to future needs of the society in the particular emerging fourth industrial revolution, AI, IoT, and Blockchain technology is going to transform the production of goods and services and may take over several of the cognitive-based white collars as well blue collar jobs.

There is a huge opportunity to transform higher education at the ground level to carry out research and teaching in the technology revolution in the field of renewable sources of energy, storage of energy, and impacting the fourth industrial revolution.

There are opportunities for universities and colleges to inculcate democratic values, scientific temper, and social cohesion in the campus leading to its spread in the larger society within and outside India.

Above all, there is a great opportunity for central government, state governments, industry, and philanthropists to participate in the development and transformation of higher education to effectively participate in emerging technology and quality of life particularly after a great gap of time in normal working and life of people due to Covid-19.

It is an opportunity to strengthen health sciences, natural and physical sciences, technology, and social sciences research to deal with ever-rising new challenges to humanity on this planet earth.

We are reproducing the write up on "Quantum Computing" from the book- AI 2041 - Reviewed in this issue, for the benefit of heads of institutions, teachers, students and readers of College Post. - Editor

QUANTUM COMPUTING

"A quantum computer (or "QC," which is also used to refer to quantum computing in general) is a new computer architecture that uses quantum mechanics to perform certain kinds of computation much more efficiently than a classical computer can. Classical computers are based on "bits." A bit is like a switch-it could be either zero (if off) or one (if on). Every app, website, or photograph is made up of millions of these bits. Using binary bits makes classical computers easier to build and control, but also limits their potential for taking on really hard computer science problems. Instead of bits, QCs use quantum bits, or qubits, which are typically subatomic particles such as electrons or photons. Qubits follow principles of quantum mechanics regarding how atomic and subatomic particles behave, which include unusual properties that give them super-processing capabilities. The first such property is superposition, or the capability for each qubit to be in multiple states at any given time. This allows multiple qubits in superposition to process a vast number of outcomes simultaneously. If you ask AI on a classical computer to figure out how to win in a game, it will try various moves and take them back in its "head" until it finds a winning path.

But an AI built on a QC will try all moves extremely efficiently, holding uncertainty in its head, resulting in an exponential reduction of complexity. The second property is entanglement, which means two qubits remain connected so that actions performed on one affect the other, even when separated by great distances. Thanks to entanglement, every qubit added to a quantum machine exponentially increases its computing power. To double a \$100 million classical supercomputer, you'd have to spend another \$100 million. To double your quantum computing, you just need to add one more qubit. These amazing properties come at a cost. QC is very sensitive to small disturbances in the computer and its surroundings. Even slight vibrations, electrical interferences, temperature changes, or magnetic waves can cause superposition to decay or even disappear. To make a workable and scalable QC, researchers have to invent new technologies and build unprecedented vacuum chambers, superconductors, and supercooling refrigerators to minimize these losses in quantum coherence, or "decoherences," caused by environment. Because of these challenges, it has taken a long time for scientists to increase the number of qubits in QC—from 2 in 1998 to 65 in 2020, which is still too few to do anything useful. However, even on a few dozen qubits, some computing tasks can be accomplished with QC over a million times faster than on classical computers.

Google demonstrated "quantum supremacy" for the first time in 2019, proving basically that a 54-qubit QC can solve a problem (in this case, one that happened to be useless) in minutes that would take classical computers years. When will we have enough qubits to tackle real problems rather than useless problems? IBM's road map shows the number of qubits more than doubling every year for the next three

years, with a 1,000-qubit processor due in 2023. Since 4,000 logical qubits should be large enough for some useful applications, including, for example, breaking Bitcoin encryption. Some optimists project that quantum computers will arrive in five to ten years. However, the optimists may have overlooked some challenges.

The IBM researchers acknowledge that control of errors caused by decoherence will get much worse the more qubits are added. To deal with this challenge, complex and fragile equipment must be built with new technologies and precision engineering. Also, decoherence errors will require each logical qubit to be represented by many physical qubits to provide stability, error correction, and fault tolerance. It is estimated that a QC will likely need a million or more physical qubits in order to deliver the performance of a 4,000 logical qubit QC. And even when a useful quantum computer is successfully demonstrated, mass production is another matter.

Finally, quantum computers are programmed completely differently from classical computers, so new algorithms will need to be invented, and new software tools will need to be built. Considering the issues in the previous paragraph, most experts believe it will take ten to thirty years to get a useful QC. Based on their expert opinion, I believe there is an 80-percent chance that by 2041 there will be a functional 4,000 logical qubit (and over a million physical qubits) quantum computer that can,.... ... at least as it relates to cracking the encryption used for today's bitcoins.

When such a multimillion-qubit QC really starts to work, one worldchanging application will be drug discovery. Today's supercomputers can analyze only the most basic molecules. But the total number of molecules that could make a drug is exponentially greater than all the atoms in the observable universe. Tackling a problem of this scale requires quantum computers, which will operate using the same quantum properties as the molecules they're trying to simulate. QC can simultaneously simulate new compounds as new drugs, and model complex chemical reactions to it, to determine their efficacy. As the famous physicist

Richard Feynman said in 1980, "If you want to make a simulation of nature, you'd better make it quantum mechanical." QC will be able to model many complex natural phenomena that classical computers cannot fathom, even beyond drug discovery: for example, figuring how to counteract climate change, predicting pandemic risks, inventing new materials, exploring space, modeling our brains, and understanding quantum physics.

Finally, quantum computers' impact on AI won't just be a matter of making deep learning faster. Programming a QC involves giving it all potential solutions represented with qubits, and then scoring each potential solution in parallel. Then, the QC will attempt to find the best answer in very little time. This could potentially revolutionize machine learning and solve problems that were viewed as impossible before." Source - AI 241- Ten Visions of our future, Pages 331-333 (see book review column for the review of this book).

This column brings out briefs of : Ph.D, M.Phil Researches in Education, Economics of Education, Social, Political, Psychology aspects of education conducted in University /College departments. It also brings out briefs on researches done by Research Institutions, Industry and NGOs. This column was introduced from April-June, 2016 issue of College Post. Method of reporting the researches completed and in progress was given in that issue. Interested researchers, professors and Heads of institute are requested to send their brief accordingly. Purpose of this column is to high light the researches in education conducted in university and college departments and in any other institution / industry and NGO for the benefit of policy makers, research scholars, thinkers. Readers are welcome to encourage relevant person and institute to send briefs on research done and being done in education.

This issue brings to you briefs on following researches in Education.

PH.D THESIS

TITLE OF THE THESIS: "PREPARING TEACHERS WITH GLOBAL PERSPECTIVE: A STUDY IN INDIAN CONTEXT? Researcher-Ramakant, Guide- Shukla Anil, Department- Department of Education, University - Lucknow University, Year of Completion-2018

Researcher has drawn the following research questions:
Research Questions:

1. What are the concepts worked as global dimensions in education system of today's globalized world?
2. What features are required to develop in people of 21st generation as to prepare them for global community?
3. What should be the ideal format of our teacher education program in global scenario (theoretical as well as practical aspects).

He set the following objective of his study:

Objectives:

1. To study the Opinion of Stakeholders regarding importance of Global Perspective among school teachers in India.
2. To explore the essential parameters of Global Education needed at school level.
3. To analyse the Indian Teacher Education Program (NCFTE-2010) in the light of those global attributes.
4. To suggest a Model Program for preparing Global Teachers in Indian scenario.

Sample and sample size:

Total 210 participants have taken part in this study. In which there were 50 secondary school teachers (in-service teachers), 50 Parents of secondary class students, 50 Teacher Educators, 50 trainee teachers (pursuing B.Ed.

course) and 10 students of class XIIth taken. Sample is used at two levels. In first level, there were total 200 participants (50 secondary teachers, 50 parents, 50 teacher educators and 50 trainee-teachers) had taken part. In second level, for carrying out the Focus Group Sessions, 44 participants (12 Trainee Teachers, 12 teacher educators, 10 parents and 10 secondary teachers) were selected from the base sample and 10 students were also added. In this way total 54 participated were selected through Purposive sampling method. Since it was not feasible to organize FGD sessions with participants from both the Universities at a time, so participants were taken from University of Lucknow and B.Ed. colleges affiliated to it only. In addition latest B.Ed. curriculum program i.e. National Curriculum Framework for Teacher Education (NCFTE-2010) is taken as valid document for finding the global traces in Teacher Education Program of India.

KEY FINDINGS:

1. Opinion of Teacher educators:

Results show that

1. More than 80% teacher educators agree that it is necessary to consider issues related to economy, politics, environment, technology, business, and education as global instead local since they affect lives of people across the world. They agree that environmental issues are interrelated and can be solved through global approach.
2. 78% teacher educators are agree that the curriculum of teacher education should be global so that teachers can handle issues at global level,
3. 82% teacher educators agree that teachers should have the required skills to investigate and research thoroughly on issues, analyze through different perspectives and give solution on global basis,
4. 78% teacher educators agree that one should have ability to suspend judgment if conflicts arise and give value to others information and understandings on that issue,
5. 86% teacher educators agree that teachers should have knowledge about the major geographical and cultural areas of the world and some of the issues that unite and divide them.
6. However only 66% teacher educators agree that teachers' education curriculum should have provision to study foreign language, other than English.
7. 78% teacher educators agree that teachers should be given opportunity to be a part of faculty exchange program with different countries and get to learn about different cultures.
8. 76% teacher educators are in support that cultures reflect their values and beliefs in different ways through art, literature, and music.
9. 80% teacher educators are in support that teachers should be able to identify and describe their

connections with world historically, politically, economically, technologically, socially, linguistically, and ecologically,

10. 84% teacher educators are in support that global education is very important in the 21st century school education,
11. 82% teacher educators are in support that understanding the social and political issues that shape our world is crucial for all educators.
12. 80% teacher educators agreed that including global issues in teacher education curricula, at all levels, will improve graduates' more chances for employment.

2. Opinion of Pre-Service Teachers:

Data shows that:

1. 74% trainee-teachers agree that teachers should be aware that environmental issues are interrelated and can be solved through global approach.
2. 64% trainee-teachers agree that teachers should aware that their information and knowledge on most issues can be expanded or could be sensed deeper to form a global issue.
3. 60% trainee-teachers agree that the curriculum of teacher education should be global so that teachers can handle issues at global level.
4. 58% trainee teachers agree that teachers should know how to get in depth knowledge about global issues.
5. 66% trainee-teachers agree that teachers should have the required skills to investigate and research thoroughly on issues, analyze through different perspectives and give solution on global basis.
6. 64% trainee-teachers are in support that teachers should understand that there are universal values connecting all cultures.
7. 70% trainee-teachers are in support that teachers should know how to state a concern, position, or value from another culture without distorting it, in a way that would satisfy a member of that culture.
8. 82% trainee-teachers are in support that teachers should take interest in reading newspaper, magazines, and books and watch television programs that relate to intercultural and international topics.
9. 78% trainee-teachers are in support that global education is very important in the 21st century school education.

3. Opinion of Secondary Teachers:

The data revealed that:

1. 80% teachers agree that economy, politics, environment, technology, business, and education related issues are global instead local and affect lives of people across the world. Teachers should be aware that environmental issues are interrelated and can be solved through global approach.

2. 82% teachers agree that teachers should have sense of efficacy and civic responsibility so that they can make some contribution to the resolution of a global culture issues.
3. 84% teachers agree that teachers should have knowledge about the major geographical and cultural areas of the world and some of the issues that unite and divide them.
4. 64% teachers agree that teachers should be given opportunity to be a part of faculty exchange program with different countries and get to learn about different cultures.
5. 84% teachers are in support that teachers should understand that universal values are connecting all cultures and cultures are affected by geography and history.
6. 88% teachers are in support that teachers should tolerate cultural diversity and appreciate the study of other culture.
7. 74% teachers are in support that teachers should be able to identify and describe their connections with world historically, politically, economically, technologically, socially, linguistically, and ecologically.
8. 74% teachers are in support that including global education in teacher education curricula, at all levels, will increase teachers' preparedness for 21st century.
9. 78% teachers agreed that including global issues in teacher education curricula, at all levels, will improve graduates' more chances for employment.

4. Opinion of parents:

Data shows that

1. 58% parents agree that the curriculum of teacher education should be global so that teachers can handle issues at global level.
2. 60% parents agree that teachers and students should have studied at least one other countrys' culture in depth,
3. 72% parents agree that they should have knowledge about the major geographical and cultural areas of the world and some of the issues that unite and divide them.
4. 72% parents agree that teachers and students should be given opportunity to be a part of faculty exchange program with different countries and get to learn about different cultures.
5. 64% parents are in support that teachers should understand that cultures are affected by geography and history.
6. 72% parents are in support that teachers and students should be able to identify and describe their connections with world historically, politically, economically, technologically, socially, linguistically, and ecologically.

7. 80% parents are in support that teachers and students should take interest in reading newspaper, magazines, and books and watch television programs that relate to intercultural and international topics.
8. 78% parents are in support that global education is very important in the 21st century school education.
9. 68% parents are in support that educational curricula must reflect our global world.

M.Phil. Thesis “EXPLORING THE CONTOURS OF ACADEMIC FREEDOM IN INDIAN UNIVERSITIES: A STUDY OF DOCTORAL RESEARCH IN THE DEPARTMENT OF SOCIAL SCIENCES”, Researcher- Shristi Bhatia, Guide- Neeru Snehi, University- National Institute of Educational Planning and Administration, New Delhi, Year of completion 2021

Objective of the Study:

The study examines the meaning and the perspective of academic freedom in the university space. The purpose of this study was to understand the perceptions of faculty and students on academic freedom in the research university. Further, this study investigated restrictions on academic freedom and the effect of academic freedom on the knowledge production/research that is taking place in the university.

Research Questions

1. What does academic freedom imply?
2. What is the impact of academic freedom on knowledge production/research in Indian University

Sources of Data and Methodology:

Multiple sources of data were used in order to understand the concept on academic freedom and the practices of academic exchange in the university spaces. An interview method with a semi structured questionnaire was opted for both faculty members and scholars/students. In addition to this, a brief online survey was done to gain a deeper insight to understand the practices of research in department of social sciences in the universities (Jawaharlal Nehru University and Delhi University).

Key Findings:

On the question of ‘what is academic freedom for you?’ the majority of faculty members said- “freedom to exchange of knowledge without any obstruction”. However, the meaning of academic freedom is perceived differently by the faculty and students. Most of the students answered that “academic freedom is an absolute right to thought and expression”. However, 7 out of 10 faculty members

stated that “academic freedom as a subset of freedom of expression and thought and they did not consider it to be an absolute right”.

The interviews and primary surveys of scholars reveal that

1. a significant number of scholars practise self-censorship in their daily academic exchange”.
2. the act of self-censorship is observed to be a subconscious practice that results out of the prevailing atmospheric fear that exists in universities.
3. that self-censorship is observed to be practised in classrooms while debating on critical issues such as gender or caste discriminations.
4. that self-censorship is often observed to be practised by individuals to avoid any backlash while providing a critical insight on popular ideologies in public forums.
5. on self-censorship. 52% scholars have shown that they practise self-censorship in their research, while publishing and also often in engaging in a dialogue or arguments in the university spaces.
6. Research areas or themes are often influenced by the supervisors they want to work under due to the public image in the field of their study. This view came up while interviewing a faculty from sociology department in JNU. That “scholars often choose themes based upon the faculty credentials and public appeal of the faculty members.”
7. on policy of academic freedom survey revealed that 43.9% says that no policy (document) exists on academic freedom in their institutions which are JNU and DU
8. 53.7% scholars have no actual idea about the policy.
9. On protection of academic freedom - 34.1% scholars on the scale of 6/8, believe that academic freedom is protected by within the academic departments and university they work.
10. On whether protection has diminished - 12 scholars stated that they don't know whether the protection of academic freedom has changed in institution.
11. Another, 12+9=41 scholars support that the protection of academic freedom have diminished in their institutions. This means that that around 50% of the total respondents feel that the protection of academic freedom have diminished in their institutions

To sum up: Findings from the interviews conducted also suggest that there has been practices of self-censorship, Research themes being influenced by market needs in the name of employment.

The SAR, V-Dem report also suggests a decline in the academic freedom index in India in recent years.

ABC AND MOBILITY OF STUDENTS

Academic Bank of Credit (ABC) flexible system of Entry and Exit regulations announced by UGC are under discussion. The work on ABC started in UGC even before the NEP-2020 was announced. After the announcement now regulations are put for implementation. Both the concepts are part of NEP-2020 and are very ideal. The challenges of implementation are quite high. In an article on ABC Professor Mantha and Dr. Ashok Thakur have listed the challenges of implementation of AB as a flexible system of Entry and Exit in higher education.

The challenges emerge from the present structure of undergraduate education which is mostly imparted in affiliating and partly in autonomous colleges. Autonomous colleges seem to be better places as they decide courses of study, a system of teaching and learning, and evaluation of students. Therefore, they can easily switch to the credit system. But individual colleges switching to credit systems may not take us too far unless credits awarded by different colleges are at par. This would require a system of standardization of credits being awarded by different colleges. Another corresponding requirement is a system of storage and retrieval of credits so awarded by the different colleges. It would require a system of storage and retrieval based on a distributed ledger that is on blockchain technology. Assuming UGC can build a portal with this software and make it available to colleges & universities. One is not aware of the stage of procurement and setting of such a system by the UGC. The system has to be automated to enable autonomous colleges, which are both in public and private sectors for their use. It is a huge task requiring investment and trained human resources. Acceptance of credit by another set of autonomous colleges and universities is yet another challenge.

The challenge of implementation is much more complex in affiliated colleges. Here, the scope of all the innovations like ABC and flexible Entry and Exit depends on the affiliating University. A large number of universities are having more than 100 colleges affiliated with them. A good number of students study in these colleges mostly Arts, Social Science, Humanities and Science courses. Most of them follow a standardized syllabus, standardized system of annual examination with a small portion of college-based assessment- called internal evaluation. It would require a change. To begin with, it will need a change of Acts and Ordinances of universities. After that, there would be a need for re-orientation of methods of curriculum framing with the flexibility to each affiliating college, method of teaching and learning, design of standardization of credits, and the system of evaluation. Another set of challenges are the flexibility of Choice Based Curriculum, availability of faculty, a newer system of teaching and learning, and outcome-based evaluation. All these are possible with the Internet of things, AI, and

BlockChain technology. But it requires a well-designed action plan, training of existing human resources, and acquiring trained human resources and technology, not only one time but continuously. All these are possible with a will to invest in higher education, rupees hundreds of millions, if not billions by the government.

Above all, a major challenge is restructuring the economy that can absorb graduates. The present structure of the Indian economy is very basic. Except IT and ITES sectors, its absorbing capacity of graduates is very low. A large number of graduates remain unemployed for a good number of years. The economy is sluggish and it has become more so over the past few years. Employment, except for delivery and transport services in urban centers in particular metros, has almost evaporated. The question would arise- exit for what? If a diploma or certificate holder does not get a job that will pay him suitably, he will not exit. It is possible that those who employ graduates may employ less qualified persons at a low-paid job and displace the graduates. In such an event quality of service become poor and graduate unemployment increases. The mobility of students through entry-exit is possible and desirable where the economy is suffering from a shortage of educated people and it hires people from other countries. Hence, flexible entry-exit has to wait for the economy to transform to reach near full employment level. Schemes of ABC and Flexible Entry-Exit are novel. Our implementation strategy has also to be novel. Keeping in view the ground realities -that is India a novel attempt of change is welcome.

NEET EXAMINATION

NEET examination is being questioned by many states. Recently Tamil Nadu Assembly has passed a resolution to withdraw from NEET. There are news that the examination is being manipulated by a few unscrupulous people. There is an analysis of impact of NEET on admission to Medical Colleges in Tamil Nadu. The data presented by the Committee headed by a retired Judge of High Court Justice AK Rajan, revealed that as compared to pre-NEET system of admission and post-NEET system of admission show that it favors English Medium students, CBSE students, and those who are able to attend high fee charging coaching institutions. On the basis of this kind of biases centrally monitored examination (NEET) was questioned.

Former Finance Minister Shri Chidambaram in Indian Express column even questioned that why should state spent on medical education out of , tax revenue from state when state board students do not get admission owing to this test. Besides, he said, English is not the medium of communication of people in rural areas and medical doctor has to serve in rural areas or interact with them in their language. He also referred to constitutional provision of state list and central list of responsibilities.

He also mentioned the amendment to these list was carried out during the emergency period. But that was mainly for the central government sponsored institutions. Therefore, people took these amendments in that light. But examination for all the institutions whether sponsored by state or central governments was not the intention of these amendments. This is an issue that needs serious deliberations and course correction.

There is yet another article published in Indian Express on October, 18, 2021 under the title "An Unfair Test" By Sunny Josh and Satyam Sunkari. Authors taking note of Justice Rajan Committee report raise a question - Is the National Eligibility-cum Entrance Test (NEET) flawed, acentric approach causes injustice and goes against the spirit of Constitution? This question authors have addressed on the basis of parity of participation and equality of opportunity and distributive justice. To Quote "How can NEET promote parity of participation when aspiring first generation students from marginalized and poor households participate from a highly unequal position in the first place?" Instead NEET promotes a kind of competitive equality which is socially insensitive; it disregards the fact that the terms and conditions of participation are highly unequal and biased. What is more it pays scant attention to how success in NEET is attained especially the regressive and exclusive process it sets in and how it intensifies the inequality of opportunity and parity of participation." Authors also refer to Coaching industry as reported by justice Rajan. On two counts, one that NEET has created "extractive industry of coaching, second that fees of coaching are beyond the reach of poor and marginalized. Impact of coaching effectively crush the poor and marginalized students' "capacity to aspire".

However, solutions attempted by the authors within the frame of NEET betrays the logic of seeking justice with an unjust framework. Answer to the problem has to be searched by replacing the centralized system by decentralized system of assessment and provision of more medical education facilities rather than reforms in NEET.

SEED Study on Coaching Institutions

SEED had carried out a study of coaching institutions for admission to medical and other professional courses as early as 1995. The study was sponsored by Department of Science and Technology, Government of India. Findings were that very bright students (above 90% marks in HSE) do studies on their own, but join coaching to see what type of questions are being asked. But it is those with relatively less marks in HSE join the coaching for preparation of examination. And this process starts even before they have completed their HSE. Coaching industry is a very big industry. It has grown over time. But its role in improving quality of students and making them meritorious is doubtful. Even the system of examination

to test the merit of the students on one common scale is very narrow to assess the merit.

College Post had published a note on ills of common admission test whether it is medical courses, engineering or management courses. Although it may be very facilitating to institutions and to those students who would like to move out of their state. On one side such tests give hopes and opportunity to students to become a medical doctor or an engineer or a management professional. But at the same time it disappoints the people so much that a few of them not able to make it become depressed and commit suicide. Whom to blame?

As far as engineering courses are concerned for the last several years supply has outpaced the demand, except for a few specialization. Many engineering institutions' have been closed owing to lack of demand. But in medical education shortage of colleges persist. Hence there is a rush. Similarly, many management institutions are seeking closures. But examination for admission in these courses on the pre-text of getting only meritorious students still continue. Hence coaching industry is flourishing.

The common admission test leading to common courses and preparation of students for common knowledge and training leads to preparation of prototype of human resources. Which is in a way very good factory model of higher education. Whether such model also exists in education system of developed part of world or not is a matter of study. In fact there is no common admission test in UK nor in USA and now Australia which enroll a large number of Indian Students in higher Education. Russia has also been enrolling students in medical education for some years. Now China is enrolling the students in medical education. I don't think there is any common admission test for admission to such courses. Students' aptitude and abilities are tested on the basis of language and mathematical abilities through certain entry test for higher education and individuals' expression of interest in studies. Every university has its own specialization and its own programmes of studies dealing with domain knowledge in their own way. Keeping this in view the thrust of institutions, students can make choice for institutions and the programmes. This may be possible as they may not have shortage of supply of such education institutions and programmes. If there is a shortage, they would admit as many students, they can do justice with the students and their studies.

We need to think about decentralized and more aptitude oriented system of assessment of students focusing on kind of specializations are on offer by the institutions. We need to create more and better medical and professional education with multidisciplinary orientation so as to provide equal opportunities to all the aspiring and deserving students.

THE 2021 NOBELS: LESSONS FOR HE, SCIENCE AND SOCIETY - A REPORT BY PHILIP G ALTBACH AND TESSA DELAQUIL*, 21 OCTOBER 2021

The Nobel Prizes in the sciences (physics, chemistry, physiology or medicine, and economics) were recently awarded for 2021 - and as usual they not only recognise top scientists and their discoveries, but they also have lessons for contemporary universities and science.

It is worth reflecting on some general trends in this year's Nobels. It is, of course, necessary to understand that Nobel awards, with few exceptions, recognise impressive scientific achievements of recent decades and "reward the discoveries that have conferred the greatest benefit to humankind" - but academe, perhaps especially at the top levels of research universities, changes slowly.

Who and where?

We can briefly summarise who received this year's prizes and where they are located. All of the 10 winners this year were male (in 2020, three out of 10 were women), as is, unfortunately, the norm for these awards - only 25 women have previously been awarded Nobel Prizes in the sciences.

This year's winners are currently affiliated with universities in only three countries - seven in the United States, two in Germany and one in Italy. Three are located at research institutes (two at Germany's Max Planck Institutes and one at the US Howard Hughes Medical Institute) and seven at universities. As is typical, the affiliated universities are top-ranked, highly-funded and well-recognised research universities, for instance, Stanford University and Princeton University.

The origin, education and careers of 2021 Nobelists

Interestingly, only two of this year's Nobel laureates were born in the United States (others were born in Japan, Germany, Italy, the UK, Lebanon, Canada and the Netherlands), although six out of 10 work in the US at present.

Six out of 10 earned their PhDs from US universities, with two from Germany and one each from Japan and Italy. Their undergraduate origins, on the other hand, reflect the diversity of the laureates' countries of birth - only two out of 10 earned their bachelors degrees from US institutions. The others studied in Canada, the Netherlands, Germany, Scotland, Japan, Italy and Lebanon - all at top universities and colleges.

The career patterns of Nobel laureates are also significant. For the 2021 cohort, only four have remained within a single country (the United States), sometimes with several career moves between top universities, while the other six have worked in different countries - ranging from visiting professorships to full-time positions.

These experiences often include the laureates' own countries of birth, but also other national contexts that

boast top institutions, such as Germany and the UK.

Science is international, but limited and stratified

The education and careers of this year's Nobel laureates show that top scientists are indeed internationally mobile. Some have held appointments in several countries - all at top institutions - and they tend to gravitate to the countries with the most advanced scientific institutions, especially the United States.

The careers of this year's Nobelists are international, but within an elite circle, indicating the extent of global science and the importance of cross-fertilisation of ideas. The educational and career journeys of this year's Nobel laureates (as may also be seen in other recent cohorts), especially in terms of graduate student mobility, scholar exchange and some instances of joint international collaborative work, may signal a shift in the make-up of the elite scholars of the academic world to include more characteristics of research internationalisation.

The 2021 Nobel laureates, in keeping with previous years, are largely confined in terms of their currently affiliated universities to a few countries, with no representation this year from anywhere except Europe and the United States.

It is worth noting that, in some cases, the research which led to the Nobel prize took place at an institution or country separate from the laureates' current affiliation or location.

There is little sign yet of the 'rise of Asia', despite the massive research investments made especially by China and the existence of highly-ranked universities in Japan, South Korea, Hong Kong and Singapore.

It is the case that the Nobels are a somewhat 'lagging indicator' of scientific achievement, but one might expect that the near monopoly of North America and Western Europe might have been somewhat weakened by now.

What do the 2021 Nobels teach us about universities and science?

It is clear that the United States dominates the Nobel prizes in the sciences. In 2021, scientists working in US universities shared seven out of 10 prizes. Of course, not all of the winners were born or educated at the undergraduate level in the US. For this year, only two were US-born and undergraduate-educated - although six received their doctorates from American universities. This is not unusual and shows the attraction of American research universities.

The Nobels show that basic science is both concentrated and stratified. For the past two decades, 103 out of a total of 230 Nobels in the four scientific fields were won by scientists born in the United States. An additional 38 were born in other English-speaking countries.

This was not always the case. Prior to World War II,

German-speaking countries ranked high - but the Nazi regime destroyed German scientific domination. Indeed, until 1948, Germany often led in terms of the number of prizes by citizenship, at which point the UK led for a number of years until the US overtook the count in 1960, due in part to the immigration of Jewish and other scientists fleeing Nazi oppression.

Might the US and other Anglophone countries lose their dominant positions in the coming years? Despite the much heralded 'rise of China' and some evidence of the geographic spread of basic research, it is unlikely that the balance will alter fundamentally in the foreseeable future.

The ecosystem of the top American universities is stable - good infrastructure, a culture of research excellence, high (by global academic standards) salaries, competitively available research funding, academic freedom and reasonable autonomy and, of great importance, the ability and willingness to attract and retain top global talent.

Some change is possible, perhaps likely, and highly desirable. Expanding path-breaking basic research globally would diversify themes and people. And the wave of academic excellence initiatives that are taking place in 15 countries, including China, Russia, Germany, France, and others may, in the medium-term, strengthen the best research universities.

The use of English as the global scientific language levels the playing field a bit by giving the global scientific community a common language, while at the same time

undeniably giving an advantage to those countries using English as their native medium.

The importance of fundamental research

Nobel Prize-level research clearly operates in a rarified stratosphere of global science. And in today's 'results-oriented' academic atmosphere, the kind of long-term thinking and orientation toward basic research is considered to be an unaffordable luxury by most governments and universities.

Yet, as the Nobel Prize committees recognise each year, it is precisely such fundamental research that yields the most brilliant practical results in the long run - such as the work by David Julius and Ardem Patapoutian on the discovery of receptors for temperature and touch, which Francis Collins, director of the US National Institutes of Health, suggests may support the development of pain treatment.

It is worth considering then whether, in our efforts to support research internationalisation through funding, mobility and collaboration schemes, we should also re-evaluate our approach to supporting basic research at a global scale.

*Philip G Altbach is research professor and distinguished fellow and Tessa DeLaquil is PhD student and a research assistant at the Center for International Higher Education, Boston College, United States.

Source: *World University News*

College post is reproducing wealth Tax figures from [Global Millionaires and Billionaires, 2021](#) from Report by Thomas Piketty, Emmanuel Saez and Gabriel Zucman. Source and Courtesy: [Indian Express](#), 10th Dec, 21

GLOBAL MILLIONAIRES AND BILLIONAIRES, 2021

Wealth group (\$)	Number of adults	Total wealth (\$ bn)	Average wealth (\$ m)	GLOBAL WEALTH TAX	
				Effective wealth tax rate (%)	Total revenues (% global income)
All above 1m	62,165,160	174,200	2.8	1.0 %	1.6
1m - 10m	60,319,510	111,100	1.8	0.6 %	0.6
10m - 100m	1,769,200	33,600	19	1.3 %	0.4
100m - 1b	73,710	16,500	220	1.5 %	0.2
1b - 10b	2,582	7,580	2,940	2.3 %	0.2
10b - 100b	159	4,170	26,210	2.8 %	0.1
Over 100b	9	1,320	146,780	3.2 %	0.04

Source: *World Inequality Report 2022*

I have been attached to the academic field for the last 50 years and there is no looking back since 1972. I did a master's in three subjects, namely, English, Political Science, and Sociology. I got a gold medal in Sociology from the University. I joined as Principal SD College, Dinanagar in 1984 Dinanagar was a very poor, border & backward area. Students came from down-trodden families. It was a challenge to work for the development of the college. As a person, I am always prepared to face such challenges. I do so with devotion, dedication, hard work, and faith in the Almighty. This approach helped me to tackle the difficult situation. I was able to develop the college slowly but steadily. I worked in this college for 35 years.

The college had only 300 Students when I joined. The enrollment increased to 3000 students in 2016. It was a single-faculty college. I introduced other subjects and made it multi-Faculty College with introduction of Arts, Science and Commerce subjects. College, in due course, also introduced PG courses. The faculty members of the college also increased from 5 to 92 over this period.

The College was operating from a residential building of 4 rooms only. I mobilized resources to develop the college campus. A five-acre plot was added to the college and it was made a very lush green campus. The College shifted into a huge Complex of 150 rooms and 10 halls with a covered area of 2 Lacs sq ft. It now has 45 Classrooms, 30 labs, 3 UG and PG libraries, Indoor Stadium, AC auditorium, NRSC, Gymnasium, Multi-Media Hall, Conference and Seminar Hall, Triple Storey Hostel and a fleet of buses.

I got the college accredited by the NAAC twice. In the second cycle of assessment and accreditation, the college got an A grade. College being in border and rural areas was an achievement for faculty members and students. The college was rated high by RUSA and it got the award of the potential of excellence The UGC gave MRP in English, Punjabi, Home-Science, Chemistry, Sanskrit, and Bio-Technology to the College.

Learning and participating in the conference was my passion. I attended several ICF conferences and IT Workshops organized by SEED-ICF. I have attended several seminars, workshops supported by UGC and organized by colleges and universities. I had an opportunity to have international exposure during a European visit to 11 countries in 2007. I visited South East Asian countries. Eg: Singapore, Thailand, Malaysia, Hong Kong, and Macau, 2008. My visit to Nepal and Mauritius in the year 2011-12... I also had the opportunity to visit Switzerland, 2012, 2018, Australia and New Zealand, 2014, Indonesia in 2018. UAE (Sharjah & Dubai) 2019

Recognizing my contribution to academic administration I was given several awards. These include the Rashtriya Gaurav Award; Mother Teresa Award; Bharat Excellence Award; Shiksha Rattan Award; and Eminent Citizen of India Award.

I had an opportunity to deliver talks on Radio and Doordarshan programs. Some of these include Vakhra Chehra- Leading Women; Khirki- Rural Education; Gallan te Geet - Women Empowerment; Gallan te Geet- Female Feticide; Gallan te Geet; Time Management in Exams. How to co-ordinate family and professional life (All India Radio) Talk on Doordarshan on the topic "Quality in Higher

Education" on 15th October 2014. 7 Self-composed English Poems recited at All India Radio Jalandhar 2015. I have been a Member of the Expert Panel at Doordarshan 2017. "SAPNO KI UDAN" Doordarshan, Jalandhar 20

In 2016 I joined GNDU College, Pathankot where students' enrolment was more than 1800. In just two years I got affiliated with UGC under 2F & 12B Act. College was declared "Model College" by RUSA and many more achievements in Academic, sports, and Coordinator activities.

At present, I am leading BNDU College Kishankot and GNDU College Verka (Additional Charge). Both are constituent colleges of Guru Nanak Dev University. I am sure Almighty will bless me with more and more challenges in my life.

Let me share with you that as an administrator my outlook has been: free, fair, and transparent in my dealings and devoid of prejudices and bias of any kind. My decision-making is based on consultation and careful perception.

Our system, to some extent, expects us to be a disciplinarian with a penchant for hard work and loyalty to the institution. I firmly believe that I need not necessarily be a great administrator, a scholar, and a teacher. My role is more of benevolence and stimulation. I am always a coordinator and a regulator rather than a controller. I always share all the credit while fully owning the discredit, if any. I have an affirmative, progressive and supportive frame of mind and I always try to create an ambiance of liberty and free expression. I believe that I am a good negotiator and a clever bargainer when matters related to the welfare of my college, colleagues, and students come up for discussion. A good Principal creates, by the time his tenure ends, a few 'better' Principals. This is like an ordinary conscientious teacher producing a few outstanding students who outshine their 'guru'.



Nirmal Pandhi

Former Principal, SD College, Dinanagar
Former OSD, Baba Namdev University College, Kishankot (Gurdaspur) Punjab
Present - Director, SBHS Girls College, Nikke Ghuman Gurdaspur, Punjab

College Post invites Heads of Colleges, VCs of Universities and Directors of higher education to send their report not exceeding 1000 words about best practices and innovations in the area of academic, governance, contribution to society and achievements in sports and culture. Selected reports will be published under the proposed CP column on innovations and best practices in higher education.

ART AND SCIENCE OF VISUALIZING THE FUTURE IMPACT OF AI, AI- 2041- Ten visions of our future, Authors Kai-fu-Lee and Chen Qui Fan, Currency, New York - a division of Penguin Random House. Copyright 2021 Kai-fu-Lee and Chen Qui Fan

For the last two decades, software developments slowly and subtly replaced a good deal of work, which were possible only by human engagement, by machines through machine learning, deep machine learning, big data analysis, and so on.

Author Kai-fu-Lee and Chen Qui Fans- are visualizing the progress of AI in the next 20 years. Authors have adopted a unique style of communication of complex issues through storytelling - that is to say, visualizing the possible situation in story form and then analyzing it in narrative form.

The ten chapters of the book deal with ten possible impacts of AI on human life - i.e., the way we work way we live, way we have social communication and interaction. The ten chapters visualize ten aspects of AI development.

In The Golden Elephant (Lord Ganesha) - the introductory chapter located in India - Mumbai drives a point on how AI is likely to influence the behavior of people through virtual reality in the field of finance and insurance.

Gods behind the Masks- deals with Generative Adversarial Networks, Deep Fakes, and uses of computer vision, Convolutional Neural Network, biometric data, and the issue of AI security. The authors highlight possible misuse of these developments for manipulating the people to a particular end and controlling people through data by the authority having control of the data. The visualization done by authors vividly shows how these developments can be misused. Therefore, there is a need for building AI Security.

Twin Sparrows depicts the visualization of the use of AI in the education of young children keeping in view the individual students' traits of learning and personal makeup. The story has been built around two orphan children living in a child care house. AI is answering their queries, giving company and helping them to develop until they are adopted by real families. Where they grow both in AI and the human environment.

In Contact Less Love authors shares development in AI about VR, AR, MR, and XR along with kind of development in medical sciences as also gamification. The story has been woven around a young lady in virtual reality loving a young man, but not able to take a step out of the house as all needs are met by VR, AR, MR, and XR. Authors demonstrate how by 2041 VR, AR, MR, and XR are going to be pervading society.

My Hunting Idol is a story of a mix of vision and computer leading to the holographic presence of living or

dead. This is going to be a major revolution in AI. AI would be able to delve through the past and predict the future based on a brain-computers interface- called a BCI.

Holy Driver is a very interesting story of automation. The automatic cars. Authors drive the very interesting point that automatic cars may not need real drivers. The story is woven around a person who is a good gamer of automation cars. He is known as Ghost Driver as he does not find his match in the game. But his skill of game to drive an automatic car sitting in one country to another country through computers saves the life of several persons in the story. Hence he is termed as Holy Driver.

Quantum Genocide is a story of a breakthrough in quantum computing- Q bit. This breakthrough will revolutionize computing. Data that cannot be analyzed on the computer over the years will be analyzed in a very short time. 1 Qbit helped by millions supporting Qbit would do the job The story is woven around a frustrated scientist and a hacker who would like to break blockchain cryptocurrency account to transfer the unclaimed funds. Scientists want to take revenge for the loss of his love. With quantum computing, he attempts to hack several thousand well-secured servers and disrupt the whole world. This is termed quantum genocide.

Job Savior and Isle of Happiness are stories of the impact of AI on the working and living of people at large. Companies saving jobs and retraining the people for the job will have an endless task as one after another job will be lost to AI in the process. Governments have to resort to providing Basic Living income to all. But it also has its ill effects.

Those who have enough, have to resort to AI for happiness. Development of AI for happiness is shown in the Isle of Happiness.

The last chapter Dreaming Plenitude is a very important one. The story is vowed around a young person given Basic Life Card and looking more Moola through social service. It is a very emotionally drawn story of stolen children in Australia. There are two aspects of abundance caused by AI technology and new sources of energy. These will be available at almost zero cost. But there is another side. That is greed which may not allow such a dream to realize. Authors have made a very interesting statement that-"We must find an economic model that is subordinate to human needs and not human greed." This sounds close to what Mahatma Gandhi said, nature has given enough to meet human needs, but not human greed.

The book is a very exploratory visualization of what is likely to happen in the fields of: AI, Quantum Computing, and breakthrough in new sources of energy. The visual + Analytical journey of AI-2041 is worth taking by the young and olds equally.

Dr. G.D. Sharma

SEED PUBLICATIONS

The list of Publications and Research Studies is given below:

- **Issues in Development of Colleges - Governance and Other Aspects -**
Collection of papers presented in Annual Conference of ICF.
- **Issues in Development of Colleges - Quality and Resources Aspects -**
Collection of papers presented in Annual Conference of ICF.
- **Classroom Processes in Primary Schools of EFA Districts, Saharanpur (U.P.) -**
Research Study sponsored by SIEMAT, Allahabad, UP
- **Classroom Processes in Primary Schools of EFA Districts, Sitapur (U.P.) -**
Research Study sponsored by SIEMAT, Allahabad, UP
- **Classroom Processes in Primary Schools of Non-EFA Districts, Bahraich (U.P.) -**
Research Study sponsored by SIEMAT, Allahabad, UP
- **Coaching Institutions for Admission to IIT, Engineering and Medical Courses -**
Research Study sponsored by Department of Science and Technology, Government of India, New Delhi.
- **Decent Jobs-India Study**, sponsored by Global Policy Network, Washington, USA.

Research Reports

- **Quality Assurance in Management and Engineering Institutions in India.** A Report of Seminar held IIC, New Delhi, Funded by GJVJ Raju Foundation, AP
- **Trade In Education Services under WTO: GATS Regime**, Report of 4 seminars sponsored by All India Council of Technical Education, GOI, New Delhi.
- Micro Finance to women members of SHGs for income generation for livelihood funded by Dewan Foundation through **DEEPALAYA in Delhi and Haryana.**
- Micro Finance to women members of SHGs for income generation for livelihood funded by Dewan Foundation through **SRIJAN in Rajasthan and Madhya Pradesh.**
- Micro Finance to HIV affected women Members of SHGS for income generation for livelihood funded by Dewan Foundation through **St. Paul Trust, Samalkot, Andhra Pradesh.**
- Micro Finance to women members of SHGs for income generation for livelihood funded by Dewan Foundation through **IBTDA, Alwar, Rajasthan.**
- Micro Finance to HIV and Leprosy affected women members of SHGs for income generation for livelihood by Dewan Foundation through **FUTURE BRIGHT TRUST, Vjaynagaram, Andhra Pradesh.** Micro Finance to members of self help groups in Jharkhand for income generation for Livelihood by Dewan Foundation through **Pradan**, New Delhi and Jharkhand.
- **Handbook of Quality Assurance in Higher Education -** sponsored by Ed.Cil., GOI, Noida under its CSR activities.
- **Study of Education of Challenged Children in Schools-** sponsored by Ed.Cil, GOI, Noida under its CSR activities.
- **Copyright in Education -** study sponsored by Ed.Cil., GOI, Noida, under its CSR activities.
- **College Post -** the Higher Education Journal - a quarterly publication.

Research Studies Completed/Research Papers

SEED carried/carrying out the following studies:

- (1) Micro Finance for Income Generation for Livelihood: A comparative Study of Non-Profit making NGOs, SBLP and for Profit MFIs - (ICSSR, GoI, Sponsored project).
Study entitled Micro Finance for Income Generation for Livelihood: A comparative Study of Non-Profit making NGOs, SBLP and for Profit MFIs sponsored by Indian Council of Social Science Research was completed during this year. Review by expert of ICSSR was very encouraging. To quote:
"The study makes an important point that poverty is a complex phenomenon and all poor household cannot be treated as homogeneous group. Micro-finance can be successful in cases where households have some assets and marketing skills. The support s the revolving fund support model of MFIs." ----- The analysis has been carried out in a systematic manner and presented in a clear style"
- (2) Monograph on Foreign Direct Investment - Creative or Disruptive External Economic Intervention - © SEED authored by Dr. G. D. Sharma.
A report of FDI entitled FDI- An External Economic Intervention was completed this year and presentation of the same was made to students and teachers of Management in G.D. Goenka University. The report was also sent to relevant experts for their use.
- (3) Diversification of Higher Education paper has been prepared by the President, SEED and has also been submitted to Higher Education Policy and Research Centre of NUEPA. The paper is being published as chapter in the Book being brought out by NUEPA.

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