



Rs. 30.00
ISSN-0566-2257

UNIVERSITY NEWS

A Weekly Journal of Higher Education

Association of Indian Universities

Vol. 60 • No. 37 • September 12-18, 2022

Haribhau R Bhapkar

Indian Academics and Implementation of National Education Policy–2020: Challenges and Solutions

Chetna Boriwal and Sudhir Kumar

Significance of Literature Review in Research

Raghavendra Bommannavar

Life Skill Education: Significance for the Young Minds

Alokita Vishal and Pathloth Omkar

Tracing the Inclusion of Women with Disabilities in India

Raghunath Anant Mashelkar

Integration, Innovation and Inclusion: Pathways to Progress
– Convocation Address

#Let'sBeatCoronaTogether

UNIVERSITIES HANDBOOK – 34th EDITION (2018)

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

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

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

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

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

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

- A. **CASH DEPOSIT**: The required amount could be remitted directly to our Saving Account in any branches of Canara Bank from places other than Delhi & NCR Area.
- B. **DEMAND DRAFT ONLY** : Such instrument is required to be prepared be in the name of “ASSOCIATION OF INDIAN UNIVERSITIES” (payable at New Delhi), preferably from the Nationalised Banks ONLY.
- C. **CHEQUES OF ANY KIND ARE NOT ACCEPTABLE.**
- D. The requisite amount could also be transferred for its direct remittance to our Saving Account via **NEFT/RTGS** using the following details :

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

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

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

Please send Pre-paid Order to :

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

ITEMS	In This Issue	PAGE
Articles		
Indian Academics and Implementation of National Education Policy–2020: Challenges and Solutions		3
Significance of Literature Review in Research		11
Life Skill Education: Significance for the Young Minds		18
Tracing the Inclusion of Women with Disabilities in India		22
Convocation Address		
C.V. Raman Global University, Bhubaneswar		26
Campus News		
Theses of the Month (Science & Technology)		
Advertisement		37

**New Subscription Tariff
 (Effective April 01, 2020)**

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

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

Opinions expressed in the articles are those of the contributors and do not necessarily reflect the views and policies of the Association.

Patron:

Prof. Suranjan Das

Editorial Committee Chairperson:

Dr (Ms) Pankaj Mittal

Editorial Committee:

Dr Baljit Singh Sekhon

Dr Amarendra Pani

Dr Youd Vir Singh

Editor:

Dr Sistla Rama Devi Pani

#Let'sBeatCoronaTogether

Indian Academics and Implementation of National Education Policy–2020: Challenges and Solutions

Haribhau R Bhapkar*

In the present era, the great legacy of ancient and perpetual Indian knowledge and thought guides every development and reform of educational policies across the globe. Enormous problems like the present pandemic fuel the importance of collaborative research that is based on the great foundation of multidisciplinary education. From this point of view, the Indian government has brought a new National Educational Policy—2020 (NEP—2020) that deals with the holistic and multidisciplinary progress of the students. But for the better implementation of the NEP-2020, there is a need to understand the existing Choice Based Credit System (CBCS) as NEP—2020 is a very advanced version of CBCS. Many disparities in the CBCS must be tackled before the implementation of NEP—2020. The meanings of grade points differ as per the rules and perceptions of the universities. Moreover, the equivalent percentages of CGPA are varied in the universities. That is as per the rules of academia, 9 CGPA is converted to an equivalent percentage from 76.8% to 95%, which is an injustice to all stakeholders. The present article is based on a study that attempts to define a new advanced academic credit system that is mathematically and pragmatically more precise when compared with the existing literature. By considering the all desired aspects, the paper defines the universal formula for the conversion of CGPA into an equivalent percentage. This work would give equal justice in NEP—2020 to all students and other stakeholders. This would be very helpful to industries, government agencies or offices, recruiters, and other related sectors to assess students on the same platform and give more justice to their talent.

The world is experiencing fast variations in the sphere of knowledge scenery. Due to the recent pandemic, the importance of collaborative research is observed to resolve social problems. So, there is a basic need for an individual to understand the multidisciplinary learning approach and methods. A researcher having profound knowledge of two emerging fields can perform better for the welfare of mankind or solve more difficult issues through an interdisciplinary approach. For example, if a researcher has the best knowledge of mathematics learned in health education, then he/she can apply it to design mathematical models, formulae, and prediction algorithms for the health or medical sciences (NEP, 2020).

The previous education policies had focused on the right to education, free and compulsory education, and many more. The National Education Policy–2020 (NEP–2020) envisions education

* Professor in Mathematics, MITADT University's MIT School of Engineering, Loni Kalbhor, Pune - 412201 (Maharashtra). E-mail: drhrbhapkar@gmail.com

systems that invoke a sense of deep-rooted pride in being Indian, in thought, spirit, intellect, and deeds. That is, it aims to produce not only good graduates but ethical and social human beings also. The NEP-2020 is the advanced version of the choice-based credit system (CBCS) having multidisciplinary ingredients. For the better implementation of the NEP-2020, we must understand and resolve the drawbacks of the current CBCS as we strongly agree that preventions are always better than cures. In this policy, student mobility is one of the prime aspects which compel us to think about the assessment of students on a more equal platform. It should be reflected at least on their grade cards (NEP, 2020).

Presently, most institutions or academia in India are using the choice-based credit system with different ingredients for the welfare of students (Varghese, 2011, Mallick & Paroi, 2019 and Gordon & Fay, 2010). Previously, all institutes/universities were using an absolute marks system. Most government offices and industries need marks to know the merit of the student. However, the formulae for conversion of CGPA to an equivalent percentage in almost all universities are different. This disparity needs to be removed for better implementation of NEP-2020, particularly for students' mobility and in deciding the student's merit.

All academia in India has been using different grade points and equivalent mark intervals as per

their philosophy and perceptions. Therefore, even though Cumulative Grade Point Averages (CGPA) is the same, equivalent percentages of the CGPA are different according to the rules and regulations of the universities (UGC Guidelines, 2015 and Varghese, 2011). Thus, this work is focused on the challenges after the implementation of NEP-2020 across Indian academia concerning the assessment of students on the same platform and giving more justice to all stakeholders. The main objective is to define the universal formula for converting CGPA to an equivalent percentage (%) across all universities in India and define a new optimum Academic Credit System by the pragmatic approach.

Rationale

The current study found that there are at least nine different formulae to convert CGPA to percentage in Indian Universities. The same CGPA is converted to different percentages as per the formulae used by the university. For example, the 9.0 CGPA of a student is converted to percentages from 76.25 % to 95 % as per the rules framed by the universities. This leads to confusion and misinterpretation among all stakeholders about the CGPA and its equivalent percentage in credit systems.

This provides us with the rationale to introduce a new credit system that will accelerate students' mobility across all institutions within and across

Table 1: Variation in the Conversion of CGPA to Percentage.

A	B	C	D	E	F	G	H	I	J	K
Sr. No.	Formulae: % Marks =	% of CGPA = 10	% of CGPA = 9.5	% of CGPA = 9	% of CGPA = 8.5	% of CGPA = 8	% of CGPA = 7	% of CGPA = 6	% of CGPA = 5	% of CGPA = 4
1	CGPA*10	100	95	90	85	80	70	60	50	40
2	(CGPA-0.5)*10	95	90	85	80	75	65	55	45	35
3	$5 \leq \text{CGPA} \leq 9$, % = 10* CGPA +5 CGPA > 9, % = 95	95	95	95	90	85	75	65	55	45
4	CGPA* 9.5	95	90.25	85.5	80.75	76	66.5	57	47.5	38
5	(CGPA-0.75)*10	92.5	87.5	82.5	77.5	72.5	62.5	52.5	42.5	32.5
6	(CGPD/6.5)*60	92.31	87.69	83.08	78.46	73.85	64.62	55.38	46.15	36.92
7	CGPA * 9	90	85.5	81	76.5	72	63	54	45	36
8	CGPA*8.8	88	83.6	79.2	74.8	70.4	61.6	52.8	44	35.2
9	CGPA*7.25 +11	83.5	79.88	76.25	72.63	69	61.75	54.5	47.25	40

countries and also enable potential employers to assess the performance of students by using the same scales. Moreover, it would remove the injustice being done to the students.

This work studied the conversion formulae of CGPA to the percentage of more than 100 universities/institutes/colleges and observed that ‘Nine different formulae’ are used by these universities/institutes/colleges. Table-1 For example, a CGPA of 9.0 (Column E with bold font) Shows the Variation, Not Even a Single Value Matches that of the Other. depicts the disparity in the conversion of CGPA to percentages.

If a student secures more than 95 marks in all subjects, his CGPA will be 10 and the percentage must be more than 95. So how can the universities give him 83.5% or 88 %? As the universities/institutes/colleges are using a different formula for converting CGPA to percentage, there is a disparity in percentage. In fact, for the same CGPA, there has to be the same ‘Percentage’ across the country. Graph-1 depicts the conversion of 9 CGPA into equivalent percentages as per the rules of various academia.

Why are there different formulae for the conversion of CGPA to an equivalent percentage?

Every academia has the freedom to decide the grade points and corresponding intervals as per the UGC guidelines. The following are the main points

due to which there are enormous disparities while converting CGPA to equivalent percentages.

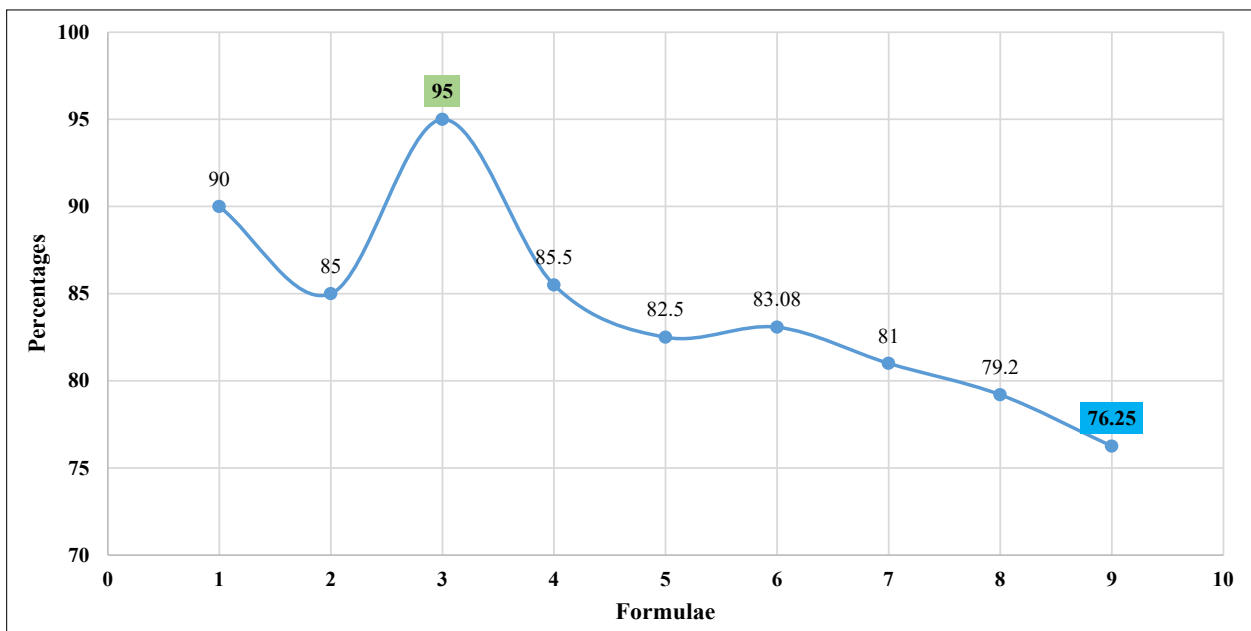
- There are different mark intervals for the same grade points.
For grade point 10 mark intervals are 75 – 100, 80 – 100, 85 – 100, 90 – 100, 91 – 100.
- Marks data of past students are used to define conversion formulae for new students.
- There are sample case formulae, and not a Generic Formula.

Disparity in Academic Credit Systems

The following are some disparities in ACS of academia in India:

- Some universities have different grade points and mark intervals for Theory, Practical, UG, PG, and backlog examinations.
- Wide Variation in Equivalent Percentage of CGPA across Indian Universities.
- The same CGPA is converted to different percentages as per the formulae used by the university. Moreover, in the same university, program-wise percentages are different.
- Mark intervals of grade points are different. Moreover, the range of mark intervals is also different.

Figure 1: Equivalent Percentages of CGPA 9



- Letter grades of mark intervals are different.
- CGPA range for the award of Class is different.

Resolution of Discrepancy in ACS

How to Resolve this Issue?

There are the following a few points through which, the above disparity can be removed.

- There should be a Unique Credit System across academia in India. Moreover, the Ingredients of ACS must be the same.
- We need to define a new credit system that minimizes the drawbacks of all existing ACS.
- Do not use the performance of past students to decide the performance of the present students. The conversion formula must be universal, and not a sample case formula.
- Innocents should not be punished. That is, the formula should not decrease the actual performance of students.

Basic Rules of Data Analysis

There are two important rules for the analysis of the data.

- The Interval width of each interval must be the same.
- There should be an optimum number of intervals.

According to the statistical theory, there should be 7 to 25 intervals for the data analysis depending upon the total frequency of the data. A great statistician named Sturge defined the formula to determine an optimum number of intervals or classes (K) for frequency distribution with total frequency N as follows.

$$K = 1 + 3.322 \log N$$

The number of intervals and total frequency are given below according to the above formula.

Table 2: Total Frequency and Optimum Number of Intervals

Sr. No.	Total Frequency (N) (Total Number of Students)	Number of Intervals (K)
1	10	4.32 ≈ 4
2	1,000	10.97 ≈ 11
3	5,000	13.29 ≈ 13
4	10,000	14.29 ≈ 14

Advanced Academic Credit System

The following things should be taken care of while analyzing the results of students.

- Data set : 0 to 100
- Not interested in marks < 40 (Minimum passing is 40 Marks)
- Data under consideration: 40 to 100
- Interval Width : 61
- Divide 61 into an optimum number of intervals
- By pragmatic approach, divide the range into 12 intervals.
- The width of 11 intervals is 5 and 1 interval is 6
- Assign grade points by a pragmatic approach.

If the passing marks are different, make desired changes in the ACS with the same philosophy.

By considering all the above points, the Advanced Academic Credit System (AACS) is formed. The AACS has minimum errors when compared with all existing academic credit systems in academia. In the AACS, marks range, grade points, and the corresponding letter grades are linked by the pragmatic approach. The credit system is mathematically more correct and precise when compared with the existing literature. The AACS is depicted in the following table.

Resolution of CGPA to Percentage Conversion Formula

In Indian academia, numerous different formulae are used to convert CGPA into equivalent percentages as per the rules and perceptions of the Universities/Institutes/colleges.

Generic Conversion Formula

By considering the number of intervals, the complete range of passing marks, maximum and minimum marks width of grade points intervals, grade points and upper limits of marks intervals, the highest conversion factor (H) of converting CGPA to an equivalent percentage for 0 – 10 point scale system is defined as follows.

$$H = 10 - \left(\frac{1}{25}\right) \left[\frac{M_1 - M_2 + 1}{n} \right] - \left[\frac{D_1 - D_2}{M_1 - M_2 + 1} \right] - \left(\frac{1}{M_1 - M_2 + 1} \right) \sum_{i=1}^n [(G_i * 10) - U_i] + E_H \quad \dots (1)$$

Where M_1 = Maximum marks in the academic credit system (ACS) of the university.

M_2 = Minimum passing marks in the academic credit system (ACS) of the university.

n = Number of mark intervals in ACS.

D_1 = Maximum width of marks interval in ACS.

D_2 = Minimum width of marks interval in ACS.

G_i = Grade points of i^{th} interval in ACS.

U_i = Upper marks limit of i^{th} interval in ACS.

E_H = Error in H. $0 \leq |E_H| \leq 0.2$

Alternately, if $R = M_1 - M_2 + 1$ and $D = D_1 - D_2$ then,

$$H = 10 - \left(\frac{1}{25}\right)\left[\frac{R}{n}\right] - \left[\frac{D}{R}\right] - \left(\frac{1}{R}\right) \sum_{i=1}^n [(G_i * 10) - U_i] + E_H$$

Table 3: Advanced Academic Credit System

Marks Range	Grade Points (HCGPA)	Letter Grades
Less than 40	0	F
40 - 44	4.5	E -
45 - 49	5	E
50 - 54	5.5	D-
55 - 59	6	D
60 - 65	6.5	C -
66 - 70	7	C
71 - 75	7.5	B-
76 - 80	8	B
81 - 85	8.5	A-
86 - 90	9	A
91 - 95	9.5	O-
96 - 100	10	O

According to the ACS of the University, H is the highest conversion factor to convert CGPA to an equivalent percentage. This formula applies to any ACS of academia. Therefore,

For AACS, $H = 9.77$ (In formula error is $E_H = 0.04$)

Percentage = Max {CGPA*9.77, Minimum Passing Marks in ACS}

The 'Formula 1' is easy from a calculation point of view, and there won't be any difficulty in implementing it at the practical level. Hence, this will remove the 'disparity' in determining 'CGPA' equivalence to 'Percentage'.

This conversion factor helps to secure the class obtained by the students in any examination. Moreover, the students having pass class or second class, or first class by actual marks remain in the same class by applying the highest conversion factor.

Validation of H

To validate the formula, 7558 data sets of six subjects are considered with credits 4, 4, 4, 5, 2, 1. Cumulative grade point average (CGPA) is obtained by using the formula of the weighted percentage. In a credit system, instead of a simple percentage, the weighted percentage is more precise and mathematically correct. Therefore, the predicted percentages that are obtained by the CGPA and the

Figure 2: Comparison of Weighted and Predicted Percentages

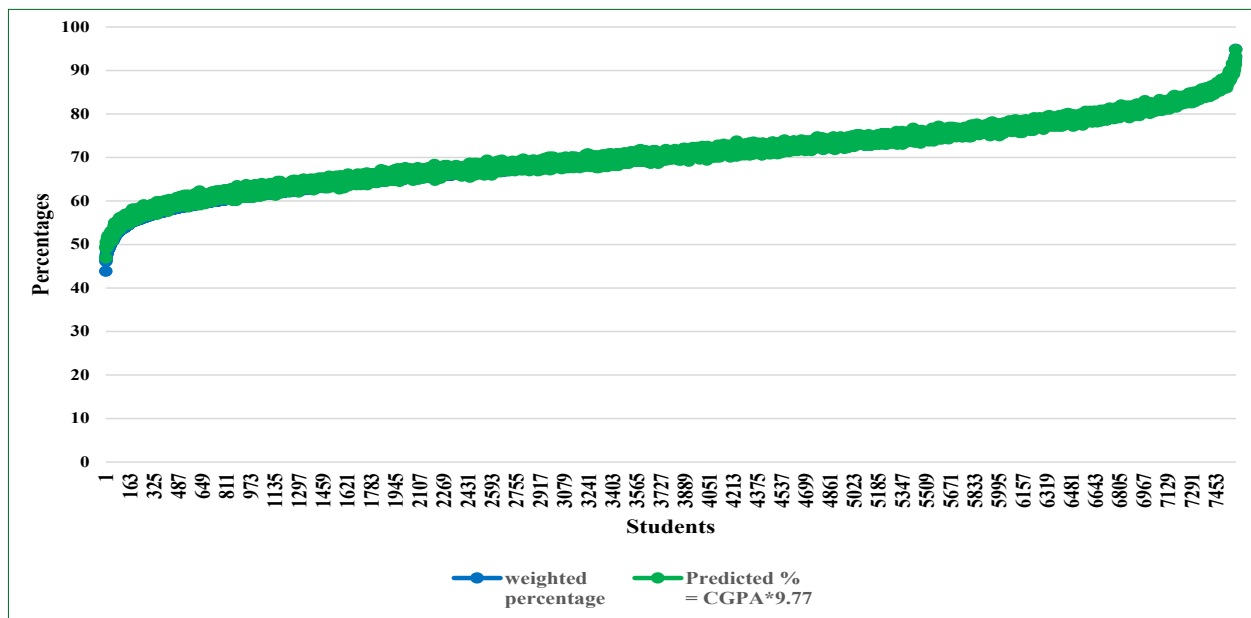
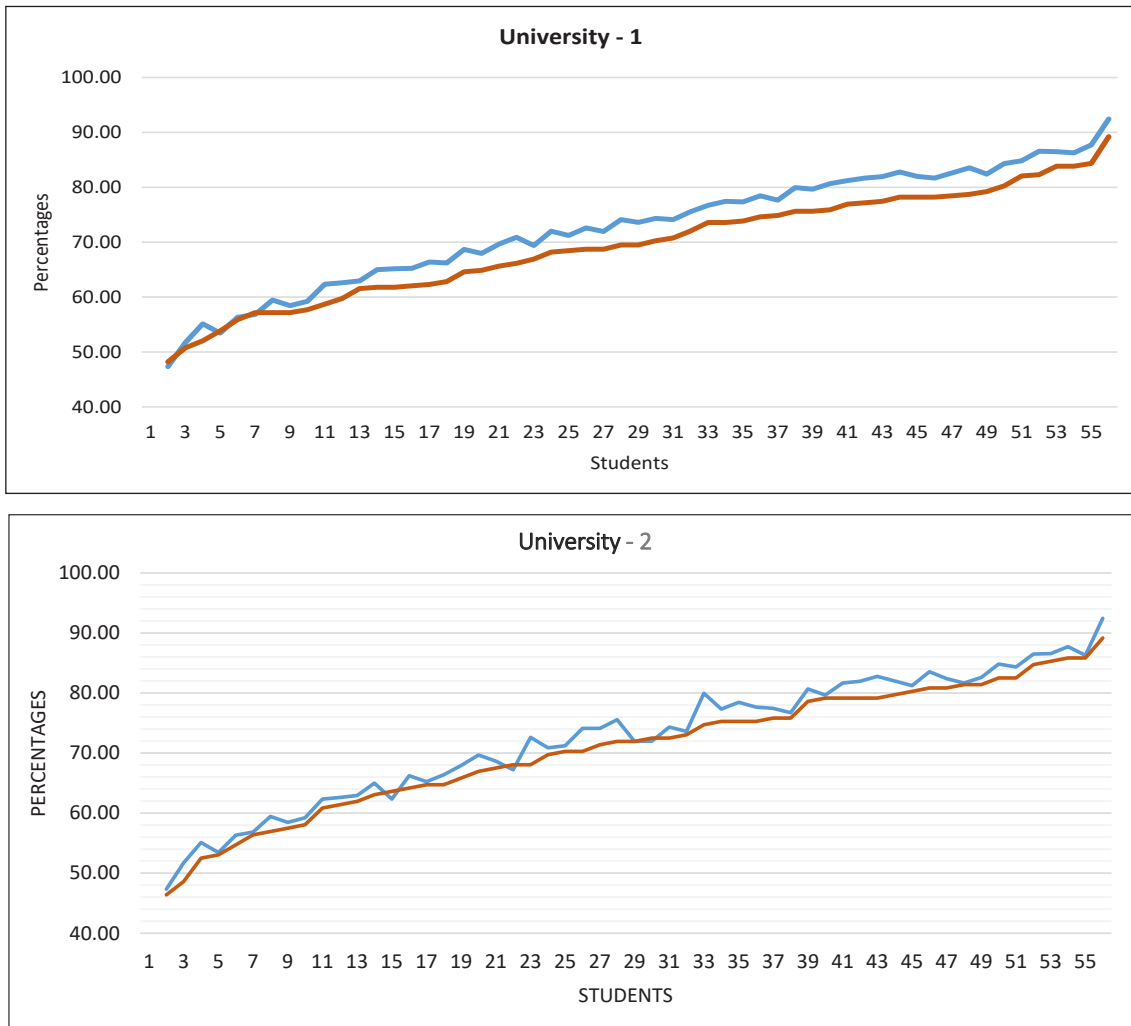


Table 4: Descriptive Statistics of Sample

Variable	Number of students	Mean	Median	Standard Deviation	Standard Error Mean	Maximum	Minimum	Q1	Q3
Weighted Percentage	7585	70.018	69.850	7.703	0.088	43.850	94.850	64.750	75.3
Predicted Percentage	7585	70.707	70.588	7.328	0.084	46.896	94.796	65.703	75.718

Figure 3: Comparison of Weighted and Predicted Percentages of Actual Data

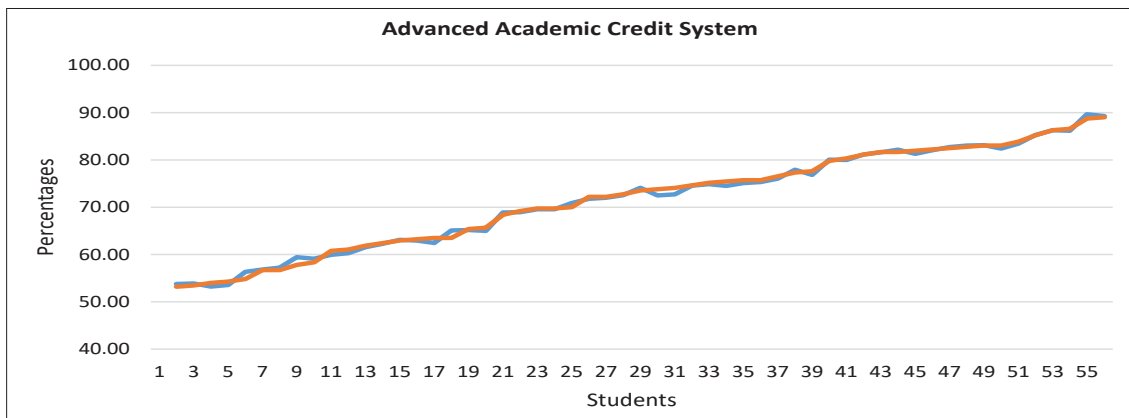
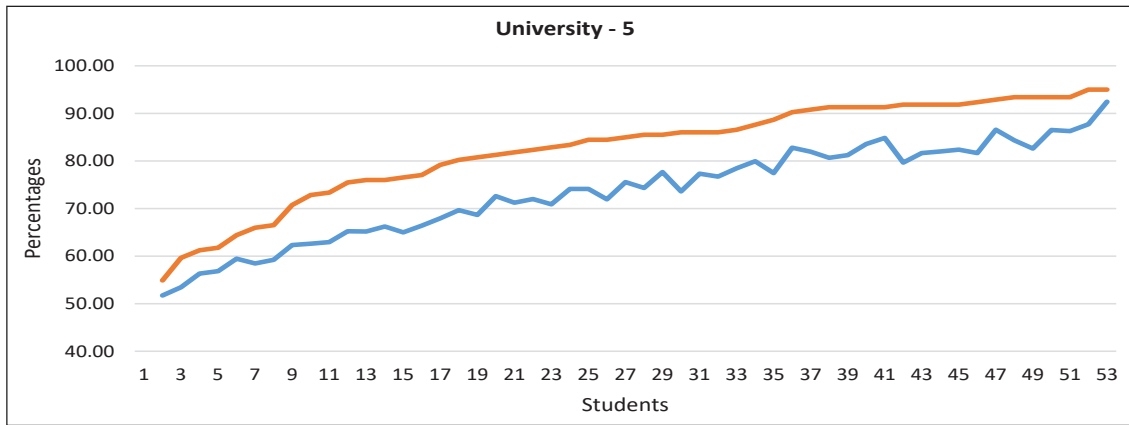
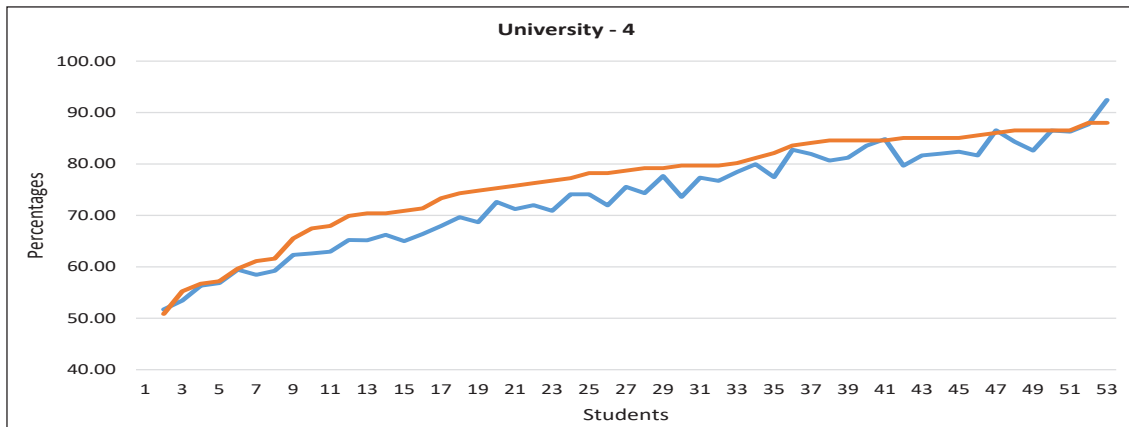
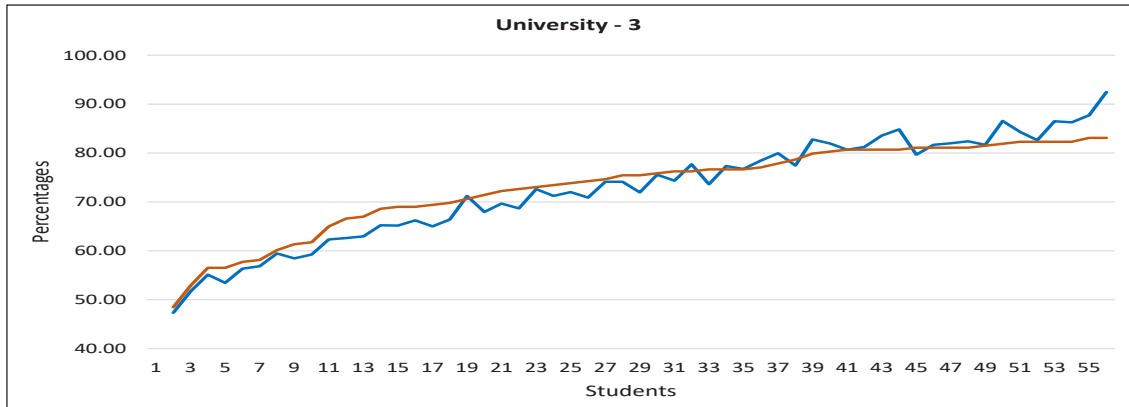


highest multiplying factor must be coherent with the weighted percentages. The graph of the weighted and predicted percentages of the data is given below.

From figure 2, it is observed that the graph of actual weighted and predicted percentages are

identical. The correlation coefficient of these series is 0.996 and the coefficient of determination is 0.9929.

The descriptive statistics of the weighted percentages and the predicted percentages of the above data are depicted in table 4.



The paired T-Test is applied to the series of weighted percentages and predicted percentages. The P-value is 0.00. That means both the series are the same.

Let us consider an actual sample of 55 students' results. The weighted percentages and CGPA/SGPA of each student are calculated according to the rules of the sample of five universities and the advanced academic credit system. The following graphs depict the comparison of the weighted percentage and the predicted percentages of particular universities. The blue curve and red color curves respectively represent the weighted percentages and predicted percentages as per the rules of universities.

From this figure 3, it is strongly observed that there is at most a 12.5% difference between the weighted and predicted percentages of the first five universities and a very negligible difference in the advanced academic credit system. Hence, the advanced academic credit system gives more correct predicted percentages when compared with the existing academic credit systems. Moreover, in AACSB all stakeholders of the academia will get more justice. Every Indian academia must follow a pragmatic philosophy "One CGPA: One Percentage" and proactively participate in the better implementation of the NEP-2020.

Conclusion

By considering all aspects of data analysis, it has been strongly recommended that each university/institute/college in India, must use the same formula for conversion of CGPA into an equivalent percentage. Moreover, every academic should follow the Advanced Academic Credit System, which will help to remove the disparity of academic credit systems and assess students on

an equal platform. The results are verified on the synthetic as well as actual sample data. The natural philosophy "One CGPA: One Percentage" needs to be applied in academics and thus minimize the futuristic disparities in the implementation of NEP-2020. This will give equal justice to all stakeholders and greatly help for better implementation of the National education policy 2020 across Indian academia.

References

1. National Education Policy- 2020, https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf, 2020
2. UGC Guidelines (2015). Minimum Course Curriculum for Choice Based Credit System, https://ugc.ac.in/pdfnews/8023719_Guidelines-for-CBCS.pdf.
3. Varghese, N (2011). Globalization and Cross-border Education: Challenges for the Development of Higher Education in Commonwealth Countries, UNESCO International Institute for Educational Planning, Paris, viewed 21 Aug 2022, <<http://unesdoc.unesco.org/images/0019/001915/191584e.pdf>>.
4. Mallick, Ahammod and Paroi, Sumit (2019). *Education India Journal: A Quarterly Refereed Journal of Dialogues on Education*, ISSN 2278-2435, Vol. 8, Issue-4, November.
5. Gordon, M., E., and Fay, C., H. (2010). The Effects of Grading and Teaching Practices on Students' Perceptions of Grading Fairness. *College Teaching*, 58(3), 93-98. <https://eric.ed.gov/?id=EJ887007>
6. Kelkar, A., S and Ravishankar, L. (2014). Choice Based Credit System: boon or bane. *Current Science*, p.g- 1229-1230.

□

Significance of Literature Review in Research

Chetna Boriwal* and Sudhir Kumar**

In the process of building knowledge, the literature search is a fundamental requirement. It gives an overview of the current contents in which research is situated by referring to contemporary debates, issues and questions in the field. It is part of any research process. It involves the systematic identification, location, and analysis of documents containing information related to a research problem. These documents can include articles, abstracts, reviews, monographs, dissertations, research reports, electronic media, etc. It also provides supporting evidence for a practical problem or issue that the research is addressing, thereby underlining its significance and providing a historical background for the research. It describes related research in the field and shows how this work extends or challenges or addresses a gap in the works in the field.

The literature review also provides the rationale for the research hypothesis and indications of what to be done which can help in justification of significance of the study. It discovers research strategies and specific data collection approaches that have or have not been productive in investigations of similar topics. It avoids other researchers' mistakes and makes a profit from their experiences. It may suggest approaches and procedures which previously were not considered. The literature review includes a discussion of relevant theories and concepts which underpin research. It also introduces relevant terminology and provides definitions to clarify how terms are being used in the context of the research to be done.

The major purpose of reviewing the literature is to determine what has already been done which not only prevents unintentionally duplicating another person's research but also gives the understanding and insight of the topic within a logical frame. When writing research significance, one has to be confident that the research is contributing to the existing knowledge without replica. One can be confident that it is contributing to the existing understanding of the field.

* Librarian, Govt. Home Science College, Narmadapuram-461001 (Madhya Pradesh). E-mail: chetu.boriwal@gmail.com

** Former Professor and currently Dean, Faculty of IT, Vikram University, Ujjain-456010 (Madhya Pradesh)

It has two practical aims:

- To identify published information into the same, similar, or related areas of interest; and
- To sharpen the focus of the research topic.

Do's & Don'ts of Literature Review

The basic Do's and Don'ts of literature review in research are presented here.

Do's

1. It should include research papers very close to the research topic (Umbral);
2. As far as possible start each sentence from the works like explain/discuss/find analyse, etc.;
3. Always use only one tense 'present 'or 'past' in all reviews and in all sentences of a review;
4. The reviews should be more fact-finding type;
5. Be precise to include more research papers;
6. A review in 5-6 lines is enough unless demand for more;
7. Include articles from the latest year of the research;
8. Include at least 50-60 reviews in a thesis
9. Use names of the authors as per bibliographic standards (MLA, APA, etc.)
10. Include more papers published in print journals with high impact factors.
11. Explore these sections of the library/libraries to find selected contemporary works on the shelves to include them in the literature review;
12. Search on Shodh Ganga for more results. Thesis in other universities may be taken for review;
13. Consult some specialized libraries in the nearby area to be more comprehensive;
14. Read select published papers very carefully;
15. Download paper on your computer and if necessary, take out prints.
16. Note important points from each review such as -
 - a. New hypothesis

- b. New methods
- c. New experiments
- d. New suggestions
- e. Pitfalls of that work to be removed in research work, etc.

It should also include:

- a. Material used
- b. Method used
- c. Experiments done
- d. Result obtained
- e. Geographical area covered, and
- g. Limitations

Don'ts

1. It should be a limited topic very closely related to the research in question (umbral topics). But it may include a review of articles on nearly related topics to some extent (penumbral).
2. It should not include any article unrelated to the research topic (alien topics)
3. It should not copy author abstracts since they may be biased in coverage. It will also avoid plagiarism
4. It should not repeat words already existing in the title unless required.
5. Do not review much older papers unless research work demand so
6. Do not give details of references. Providing the names of the authors in the literature review may be sufficient since their details in reference are available in part of the thesis.
7. Do not use arbitrary capitalization. Use capital words as per grammar in the text as well as in the title.
8. Do not solely depend on internet search as it may not include many papers or may prove a large number of articles.
9. Don't be hasty in reviewing papers instead read the full article carefully.
10. Review the paper when you understand the topic well.

Thus, literature review is not a formality but the backbone of research. It aims to find out what has been included and what has been excluded in that

work. It serves as a guideline for new work. In the beginning literature review may be a time-consuming and boring part of research but at a later stage, it will prove to be the most fruitful part. Do not finish this chapter as obligatory or formally.

Dr. S.R. Rangannathan, Father of Library & Information Science has given Canons of Abstracting, a corollary word for literature review. Some important points of these canons useful for the literature review are:

1. Don't use full sentences but use telegraphic language.
2. Do not use words ascertainable from headings/titles.
3. Provide primary advances in knowledge and most factual data, new techniques and instruments used.
4. As far as possible minimize time lag.
5. Make use of the abstract given by the author (which is called a synopsis)

Ranganathan's canons should always be kept in mind by the researcher. Only the latest material available on the related subject should be included in the literature review.

Here we can also remember the Ranganathan APUPA pattern where A stands for Alien P for Penumbral (somewhat related) & U for Umbral (very much related to the research topic). Articles with the umbral region should only be reviewed unless a few from the penumbral region are necessary. Articles not related to the topic should not be included in the literature review which can be seen often in many research reports they are only included in the report for the increased number. Such articles do not contribute anything to the body of the research report.

In this section four papers published in journals & three PhD thesis in LIS in some Indian universities closely related to research work on INDEST have been reviewed.

Review Samples

Suman and Sharma(2016), conduct a survey on the utilization of the INDEST consortium by research scholars and M. Tech students of IIT, Roorkee. Findings indicate that majority (61%) of respondents are aware of it. About 81% of research scholars and 1% PG students were aware of training

programmes, 81% of research scholars and 53% of PG students used it for research purposes. 42% of respondents were partially satisfied with it, 70% of research scholars and 53% of PG students felt that it expedited the research process, 70% respondents felt that INDEST is easy to use.

Choudhury(2015), conducts a survey on the utilization of INDEST and other e-resources by students and teachers of four government and 2 private engineering institutions in Assam. Findings revealed that maximum students and teachers don't know much about INDEST but 45% of users used e-resources many times a week. 37% of teachers used them in updating knowledge while more than 35% used them for project work. 55.3% of teachers used them with their own efforts. 43% of students sought guidance from their teachers. Users faced problems to find relevant information.²

Kumar Parveen (2012), conducted a feedback survey on awareness of INDEST Consortium at Panjab University and finds that majority of the users are aware of it and university library is the main source to know about it. He found that the users were aware of important databases and e-resources. The author also found that 76.66% of users use the university library to access e-journals, and 54.44% of users access e-journals 3-4 times in a week. 20% of users were not satisfied with the existing internet facilities in the university, and 13.33% of users were not comfortable with reading on computer screens. Regarding the problems faced by users in accessing the IAC e-journal, 30% of users demand more access terminals, 26.66% of users find a lack of internet bandwidth. About 22.22% find insufficient time to use IAC³.

Nisha, Naushad and Ara(2008), explain INDEST-AICTE and UGC-Infonet Consortium and examines the use of databases at University of Delhi and IIT (Delhi). Results indicated problems like slow downloading, lack of maintenance, training, infrastructure and language, etc. The study suggests staff orientation, periodical evaluation, organization of workshops and more subscription to e-journals, etc⁴.

Ph.D. Thesis

Gupta (2016), in his Ph.D. Study conducted survey on the impact of INDEST in 8 AICTE supported and 9 self-supported engineering institutions of

M.P.&U.P. Collected 17 questionnaires from librarians and 293 from faculty members and analyzed state and national level usage of their e-resources (ASCE, ASME & IEL Online). The findings reveal that out of 17 librarians, 15 (88%) were aware of INDEST, 13 (76%) participated in training programmes 15 (88%) requires print journals in addition to e-journals and 53% of librarians adopt strategies to popularize e-resources. Out of 293 faculty members, 178 (61%) were aware of INDEST, 184 (63%) feel training/orientation programmes, and 62% prefer IEL online as compared to ASCE & ASME. 141 (48%) respondents feel lack of accessibility is a major problem because of limited terminals. Concluded that availability of electronic resources under INDEST has a positive impact on research in terms of a number of publications. Suggested to create awareness about INDEST, conduct training programmes/workshops and increase internet bandwidth, etc⁵.

Harish (2016), in his Ph.D. thesis examined the utilization of INDEST e-resources by the faculty members of 7 top IIT Kharagpur, Bombay, Madaras, Kanpur, Delhi, Guwahati and Roorkee. Finds that out of 411 respondents, all (100%) respondents are aware and use INDEST, 248 (60%) respondents get awareness from professional staff, 293 (71%) respondents access from the department, 144 (35%) respondents spent 4 hours in a week. He found that important journals are not available in consortia.

Singh (2016), in his thesis at Guru Nanak Dev University, conducted a survey on the role of INDEST in 32 engineering institutions in Punjab and Chandigarh. He collected 1357 questionnaires from B. Tech, M. Tech. research scholars and faculty members and found that most 1192 (88%) of the respondents don't know about INDEST. 878 (65%) of the respondents require training for maximum use of e-resources. Accessing is the most common problem faced by respondents 459 (34%). IEEE is the favourite e-resource (52%) followed by Science Direct (40%). The study suggested user orientation programs at the central level, create awareness for open access journals, start e SDI service and develop different models of e-resources for U.G., P.G. & research scholars, etc⁷.

Comparative Chart of Reviewed Works

In this section findings of 7 studies reviewed have been compared with the results of my research for Ph. D. in LIS, Vikram University, Ujjain. The summaries of these are given in table-1.

Table-1: Comparative Chart of Reviewed Works

N		Present research	Suman & Sharma R1(2016)	Choudhary R2(2015)	Kumar R3(2012)	Nisha & others R4(2008)	Gupta R5(2016)	Harish R6(2016)	Singh R7(2016)
1	Type of institutions	Six engineering Colleges	IIT, Roorkee,	Six engineering Colleges	Punjab University	IIT& Delhi University	8 AICTE & 9 self supported Institutions	7 IIT _s	32 institutions
2	Area	M.P	Utrakhand	Aasam	Punjab	Delhi	M.P.& U.P.	India	Punjab
3	Total respondent	360	270	185	90	90	293	411	1357
4	Users type	PG, RS & faculty	B. Tech., M. Tech & RS	U.G. & faculty	Students & faculty	Uses	Faculty	Faculty	B.Tech, M. Tech., RS & faculty
5	Awareness	48%(44%PG & 52%RSF)	61%(97% M.Tech & 96%RS)	45% (10%U.G. & 35%faculty)	87%	84%	61%	100%	Only 12% Faculty
6	Sources of awareness	(27% & 23%) faculty & friends	53%PG & 60%RS (Staff & friends),61%PG& 81%RS (training)	NA	68%& 21% (University library& faculty)	44% Colleagues	NA	60% library staff	NA
7	Frequency (2-3 times in a week)	31%(34%PG & 26%RSF)	35% (74% M.Tech & 31%RS)	45%	54%	NA	22%	35%	NA
8(a)	Purpose (Research)	71%(71%PG & 70%RSF)	(53%PG & 88% RS)	36%UG& 9% faculty	(70%)	NA	59%	Research	(37%)
8(b)	Purpose (update)	25% (24%PG & 23%RSF)	41% PG & 17% RS	27%UG & 37%faculty	17%	NA	2%	NA	NA
9(a)	First information to access	NA	NA	43UG%&14% faculty (teacher/senior)	NA	NA	NA	NA	NA
9(b)	First information to access	35% Friends 27% faculty/senior person	NA	19% Students & 55%teacher (Individual efforts)	NA	NA	NA	NA	NA
9©	First information to access	NA	NA	43%Students & 14%teacher (faculty/senior person)	NA	NA	NA	NA	NA
10(a)	Place (University library)	77%PG & 77%RS	NA	NA	77%	NA	31% department	71% Department	NA
10(b)	Place (Computer centre)		31%		13%		29%		
11(a)	Search technique (Field)	38% (40%PG & 35%RSF)	52%M.Tech & 40% RS	NA	NA	NA	NA	NA	NA
11(b)	Search technique (Simple search)	58% (61%PG & 55%RSF)	NA	NA	NA	NA	NA	NA	NA
11©	Search technique (Truncation)	NA	42%M.Tech & 54% RS	NA	NA	NA	NA	NA	NA

(table contd. on next page)

(table contd. from previous page)

N		Present research	Suman & Sharma R1(2016)	Choudhary R2 (2015)	Kumar R3 (2012)	Nisha & others R4 (2008)	Gupta R5 (2016)	Harish R6 (2016)	Singh R7 (2016)
12(a)	Problems	27%(28%PG&27%RSF) (Lack of knowledge to use)	52%M.Tech & 100% RS(Lack of knowledge to use)	30% (Difficulties in finding relevant information)	27% Bandwidth & 30% limited terminals	33% slow downloading	NA	Difficulty in reading full text	Slow Access speed
12(b)	Problems	Insufficient time & training	14%M.Tech & 56% RS% (Difficulties in finding relevant information)	NA	22% (lack of time)	44% (lack of infrastructure)	48% Limited access terminals	NA	Difficulties in finding relevant information) 16%
13(a)	Satisfaction level (Satisfied)	NA	38%M.Tech & 23% RS	45%	80%	NA	44%	NA	NA
13(b)	Satisfaction level (Partially satisfied)	NA	60%M.Tech & 77% RS	24%	NA	NA	NA	NA	NA
14(a)	Influence (Expedited the research process)	32% (32%PG & 30%RSF)	(53%M.Tech & 70% RS)	NA	NA	NA	NA	NA	NA
14(b)	Influence (Improve professional competence)	32%(29%PG&35% RSF)	(12%M.Tech & 6% RS)	NA	NA	NA	NA	NA	24%
15	Advantages	45%(40%G&51%RSF) Easy to use	75%M.Tech & 70% RS (Easy to use)	NA	NA	93% useful	NA	Full text retrieval	NA
16	Preference of e-resources	NA	NA	NA	NA	NA	62% IEL online	NA	NA
17	Feel the need of INDEST	77%	NA	NA	NA	87%	NA	NA	NA
18	Need more e-journals	77%	NA	NA	NA	87%	92%	NA	NA
s19	Need of orientation/ training programs	86%	NA	NA	NA	71% to know INDEST	63%	22%	NA

Discussion of Research

Those studies have surveyed U.G, P.G. students, research scholars and faculty members in various institutes like IIT's and engineering colleges in Delhi, Uttrakhand, Assam & Punjab, etc. The above studies are comparable with the present research. The respondents are almost from similar *strata* in all earlier studies. Many parameters are available in these studies but not all. These have been included in this study. Not all but a few parameters especially on INDEST have been included for corroboration with earlier studies.

Awareness of Consortium E-resources

The results on awareness of e-resources available in consortium (INDEST now e-Shodh Sindhu) Consortium varies too much IITs have almost 100% awareness among faculty members, research scholars & P.G. students (Harish, Suman & Sharma). It can also be observed that the faculty of engineering colleges in most of the states have less awareness (12% by Singh, 45% by Choudhary). The present study shows that 48% awareness which has matched the results of Choudhary (45%) and is very near to Gupta (61%). The awareness of e-resources

available in the consortium (INDEST now e-Shodh Sindhu) should be increased by promoting orientation /training programs & publicity.

Sources of Awareness of Consortium E-Resources

This section studied sources of awareness of e-resources available in the consortium (INDEST now e-Shodh Sindhu). For most users, the library is the best source of awareness (Suman & Sharma, Kumar and Harish). But a study by Nisha & others finds colleagues as a better source of awareness. In my study library is the least sources (14%) as compared to friends & faculty (27%). *Inference:* The library should take measures to promote e-resources available in the consortium.

Frequency of Use of Consortium E-resources

Frequencies of use of e-resources available in consortium (INDEST now e-Shodh Sindhu) have been reported by Suman & Sharma and Harish & found that 35% respondents use INDEST 2-3 times in a week. But percentage is high in Kumar's & Choudhry's reports. Present study has matched very near to studies of Suman & Sharma and Harish. *Inference:* The frequency of use of e-resources available in consortium has to be increased through joint efforts of faculty and library.

Purpose of Use of Consortium E-resources

Research/project is the prime purpose of the use of IAC in the above studies. Its percentages varies Suman & Sharma 88 %, Kumar 70%, Gupta 59%. Contrary Choudhry reported 36% for its use. The result of the present study is very near to the study of Suman & Sharma and Kumar. *Inference:* Use of e-resources available in the consortium for various purposes should be increased.

Place of Access of Consortium E-resources

The e-resources available in the consortium are mostly used in the central library (Kumar 77%). The study also shows a similar result. *Inference:* Use of e-resources available in the consortium at homes and hostels should be increased.

Preference to Utilize Consortium E-resources

Nisha and others have reported that 77% of users use full-text articles. Results are also similar to this study. *Inference:* Full-text use of articles in consortium e-resources is high & should be increased to achieve 100%.

Problems in Accessing Consortium of E-resources

Various studies reveal different problems faced by users. Finding relevant information is most common (Suman & Sharma 56%, Choudhury 30%). Besides lack of infrastructure (Choudhury 26% & Nisha and others 44%), and limited access terminals (Kumar 30%, % Gupta 48%). The present result is almost very similar to these studies. *Inference:* Problems of search, bandwidth, speed & terminals should be solved.

Influence of Consortium E-resources

For most PG & research scholars consortium expedited research process (70% & 53%). Present result shows an even less percentage (33%) for it. *Inference:* Use of consortia for expediting research should be increased.

Advantages of Consortium E-resources

It is easy to use as revealed in the study of Suman & Sharma (70% & 53%). The present study also finds this result though with less percentage. *Inference:* Satisfaction level with e-resources available in the consortium should be increased by providing more services.

Need for More E-journals

In the present study, 77% of respondents required more e-journals in consortia. It is almost similar to the reports of Nisha and others (87%) & Gupta (92%). *Inference:* New journals may be added to consortia but carefully after proper evaluation of the use of existing sources.

Feel The Need for User Orientation/Training Programs for Using Consortium E-Resources

In the present study, 86% of respondents need orientation/training programs for using e-resources of consortium. This percentage is less in the studies of Nisha and others (71%), Gupta (63%) and Harish (22%). *Inference:* Orientation/training programs should be conducted regularly & frequently.

Conclusion

The literature review is a very important part of any thesis. It is the plinth of a building but is often taken very casually. A good comprehensive literature review strengthens the building to be erected in the form of research on a topic. It is often experienced that it is taken very casually. It has been also noted

that unrelated topics are included in this part of the work. Also, it has been experienced that this chapter is closed as soon as the literature review is over. The findings of those works are not taken into consideration at the time of conclusion. This is an important aspect of research which is often missing. The research scholars and research supervisors in all subjects may consider the suggestions made in this paper to improve research quality and avoid duplication. A comparative study with earlier research in the conclusion part, at least, can be obligatory if not mandatory.

References

1. Suman and Sharma, S. (2016). Use of INDEST-AICTE Consortium in the Mahatma Gandhi Central Library of Indian Institute of Technology, Roorkee. *International Journal of Library Information Network and Knowledge*, 1(1), 1-22. Retrieved from <http://ssarsc.org/volumes/IJLINK-V111-feb-4.pdf>
2. Choudhury, U. (2015). Use of INDEST and other e-resources by engineering students and teachers of Assam. 10th CALIBER. 316-324. Retrieved from <http://ir.inflibnet.ac.in/bitstream/1944/1871/1/32.pdf>
3. Kumar, P. (2012). Use of INDEST-AICTE Consortium by the users of Panjab University, Chandigarh, India. *International Journal of Digital Library Services*, 2(4), 17-23. Retrieved from http://www.ijodls.in/uploads/3/6/0/3/3603729/vol-2_issue-4_17-23.pdf
4. Nisha, F., P. M., Naushad Ali and Ara, T. (2008). Use of INDST Consortium and UGC-Infonet e-journal Consortia, A Comparative Analysis. 6thCALIBER (India), Ahmadabad. 708-717. Retrieved from <http://ir.inflibnet.ac.in/bitstream/handle/1944/1311/76.pdf?sequence=1>
5. Gupta (2016). Role and impact of INDEST-AICTE Consortium in Libraries of Engineering Colleges of Madhya Pradesh and Uttar Pradesh a Study. (Ph.D. Thesis). Jiwaji University, Gwalior, 1-204.
6. Harish, H.T. (2016). Use of INDEST-e-resources by the Faculty of Indian Institute of Technology: An Analytical Study.(Ph.D. Thesis).University of Mysore, Mysore, 1-333.
7. Singh, N. (2016). Role of INDEST Consortium in Supporting Engineering Education and Research. (Ph.D. Thesis). Guru Nanak Dev University, Punjab, 1-306.



HANDBOOK ON ENGINEERING EDUCATION (2016)

The 12th Edition of “**Handbook on Engineering Education**” is primarily meant for students seeking admission to Engineering/Technology/Architecture programmes at the undergraduate and postgraduate levels. It contains State-wise information on 1050 colleges/institutes/ university departments in the country. The information of Institutions in the Handbook includes: Year of establishment of Institute/ Department/ name of its Principal/ Director; probable date of Notification/last date of application; Number of seats available in each Engineering/ Technology branch; seats for NRIs/Foreign students; Eligibility; Application procedure; State-wise Common Entrance Test Rules for B.E/B.Tech/B.Arch courses; Fees; Hostel facilities, etc. Also given is ‘Faculty strength’, commencement of Academic Session, and System of Examination. Brief details of Post-graduate courses are also included.

PP : 574+xlvi

Paper Back

(Rs. 600/- + Postage Rs. 50/- each)

Send Pre-paid Order to :

**Publication & Sales Division
Association of Indian Universities**

16, Comrade Indrajit Gupta Marg
New Delhi – 110 002

EPABX : 011-23230059 Extn. 208/213, Fax : 011-23232131

E-mail : publicationsales@aiu.ac.in, Website : <http://www.aiu.ac.in>

Life Skill Education: Significance for the Young Minds

Raghavendra Bommanavar*

Human beings are complex organisms made up of a variety of abilities, attitudes, and behaviours. People are continually interacting with each other, their inner selves, and the environment as a whole. Children must therefore develop the abilities, attitudes and behaviour necessary for successfully managing themselves and their surroundings as they mature into adolescence and adulthood. Although through traditional education efforts are made to develop these abilities, attitudes and behaviour, the tendency of traditional teaching to emphasise knowledge at the expense of other facets of our personalities in the hope that greater knowledge will inevitably result in improvements in attitudes and actions is not serving the purpose as desired.

At the same time, it was commonly believed that the family and community would continue to pass on life lessons and attitudes. These conventional approaches are also not sufficient to make young people more skilful. In addition, for a variety of causes, young people now face more difficulties. Everyone requires life skills if they want to live a fulfilling life. As young people in this age group appear to be the most susceptible to behaviour-related health issues, they are applicable to children and adolescents of all ages. Therefore, rather than serving as an intervention just for individuals who are already at risk, life skills are required for the development of good health and well-being. Life skills are acquired as a result of constructive processing of information, impressions, interactions, and experiences, both personal and social, which are a part of one's everyday life and job, as well as the quick changes that take place during one's life, (Ouane, 2002). Thus, it is clear that focusing on theoretical knowledge, at the expense of other facets of the human personality, is not an effective method to prepare young people for the complexities of our current world.

The purpose of this paper is to comprehend the value of teaching life skills to young people. Its goal is to identify the life skills that our students most essentially require, and fulfil the gaps left by our educational system in inculcating them. It was also

* Assistant Professor, R.V. Teachers College (IASE), Jayanagara II Block, Bengaluru-560011. E-mail: raghu9561@gmail.com

tried to understand the difficulties that students face in their academic careers and the approaches that can be taken to address such issues. The analysis is based on the information and materials gathered from papers written by numerous authors and collected from different sources.

What are Life Skills?

Life skills are described by the World Health Organization as “the capacities for adaptive and good behaviour that enable individuals to manage successfully with the demands and challenges of everyday life. Life skills, according to UNICEF, are “an approach to behaviour change or behaviour development that addresses a balance of three components: knowledge, attitude, and skills.” The UNICEF definition is supported by research that indicates changes in risk behaviour are unlikely to occur without attention to knowledge, attitude, and skill-based competency.

Understanding one's strengths and flaws require having high levels of self-awareness, self-esteem, and self-confidence. As a result, the person is able to see potential possibilities and make preparations for potential hazards. This fosters the growth of social awareness of one's societal and familial problems. Therefore, it is possible to identify problems that arise in both the family and society. With life skills, one is able to consider options, balance benefits and drawbacks, and reach thoughtful conclusions while resolving each problem or issue as it comes. It also requires the capacity to forge fruitful connections with other people.

Core Life Skill Strategies and Techniques

The 10 basic Life Skills are listed by international organisations like UNICEF, UNESCO, and WHO as:

1. Self-awareness-building skills
2. Critical thinking
3. Creative thinking
4. Decision making
5. Problem Solving
6. Effective communication skills
7. Interpersonal relationship
8. Empathy

9. Coping with stress
10. Coping with emotions

What Makes Up the Basic Life Skills?

Life skills are made up of three elements according to the World Health Organization (WHO):

Critical thinking skills/Decision-making skills include the ability to gather information and solve problems. The person must also be adept at assessing the long-term effects of their current activities and others' actions. They must be able to identify potential answers and evaluate how their own values and the values of the people around them affect those solutions.

Interpersonal/Communication Skills include verbal as well as non-verbal communication, active listening, and the ability to express feelings and give feedback. Assertiveness abilities and negotiation/refusal skills, which have a direct impact on one's capacity to manage conflict, are also included in this category. A crucial interpersonal skill is an empathy, which is the capacity to pay attention to and comprehend the needs of others. Respecting individuals around us is a part of cooperating and working as a team. The adolescent's ability to fit in with society depends on the development of this skill set. As a result of these abilities, social norms are accepted, laying the groundwork for adult social behaviour.

Coping and self-management skills refer to skills to surge the internal locus of control so that the individual trusts that they can make a transformation in the world and affect change. The broader area of self-management skills also includes self-esteem, self-awareness, self-evaluation abilities, and goal-setting skills. An individual must learn to deal with anger, sadness, and anxiety as well as learn how to cope with loss or trauma. Time management, stress management, and relaxation strategies are essential.

Teenage Years

Adolescence is frequently characterised as a time of turbulence and stress, yet if given the right support and space through handholding and informed contact, teenagers can significantly contribute to society. Teenagers are the nation's most productive force because they have boundless energy, vigour, and optimism. They also have a tremendous need to experiment and make the world a better place. Early adolescence is described by the

WHO as a period of development between the ages of 10 and 14 that is also distinguished by unique characteristics. This includes the need to experiment, reach sexual maturity, develop an adult identity, and move from socioeconomic dependency to relative independence, among another rapid physical, psychological, cognitive, and behavioural changes and developments.

Adolescents must seamlessly move from infancy to maturity because they are a dynamic productive force. However, it is a reality that most adolescents lack the required supervision and incentive to use their potential in a productive manner, which leads to their involvement in counterproductive activities. These high-risk behaviours have a significant negative impact on society, necessitating the creation of quick, efficient programmes that will help early adolescents. In this regard, life skills education is essential in raising people's consciousness and offering them advice and direction. It gives individuals the capacity to make better decisions, cultivate their mental well-being, and deal with the facts of life. Adolescents would benefit from life skills education if it helped them to understand their rights, resolve conflicts, develop their sense of self-worth and confidence, and learn how to assume responsibility for their actions in relationships and the wider world.

Rubrics for Using Life Skills

According to UNICEF, the following requirements must be met for a life skills-based education to be successful:

- It should focus on behaviour modification more than just information and attitude shifts.
- In general, traditional "information-based" strategies fall short of producing desired changes in attitudes and behaviours. For instance, practising safe behaviour will not always follow a lecture on the topic. As a result, the lecture should be supported with activities and scenarios that allow the audience to practise safe behaviour and see its results. According to the adult learning hypothesis, people learn best when they can connect new information to previous knowledge and experience.
- It will function best when enhanced or strengthened. When a message is delivered just once, the brain retains only 10% of it the next day, but when it is delivered six times a day, the brain

retains 90% of it. Thus, it is necessary to reiterate, sum up, reinforce, and review.

- It will function best when paired with media, community development, access to suitable health care, and policy development.

Imparting 'Life Skills Education' in Classroom

Imparting Life Skills Education in the classroom has been researched meticulously. In light of the foregoing literature analysis, it is now established that it provides benefits when included in curricula Yadav P, Iqbal N (2009). Existing research suggests implementing life skills as a training programme, an intervention strategy, and a model that supports teenagers' healthy development. Thus, the importance of life skills education, and in the section that follows, researchers try to show how it can be implemented in classroom settings using straightforward activities. The following are many exercises that can be used to improve students' life skills:

Classroom Discussion

An exercise that gives pupils the chance to learn about and experience using one another to solve difficulties enables students to develop a personal connection to the subject and a deeper comprehension of it. These build listening, assertiveness, and empathy abilities.

Brainstorming

It enables kids to spontaneously and swiftly come up with ideas. Encourages creative problem-solving and the application of creativity among kids. Good discussion opener because the students can come up with ideas on their own. It is crucial to weigh the benefits and drawbacks of each proposal or to order ideas in accordance with predetermined standards.

Role Plays

It's a good way to practice skills, imagine how to manage a hypothetical issue in real life, develop empathy for others and their perspectives, and get more awareness of one's own emotions. This game is also enjoyable and encourages participation from the entire class.

Groups

When there is a time crunch, groups are advantageous since they increase student contribution. Enables for student interactions and helps them get to

know one another better, which helps with teamwork and team development.

Educational Games and Simulations

As players work hard to support their arguments or earn points, it encourages enjoyable, active learning and lively discussion. They demand the application of information, attitudes, and skills in combination and give students the chance to practise their assumptions and talents in a relatively secure setting.

Discussion and Conclusion

In today's world, life skill education must be implemented in a relevant and effective manner. Teaching kids life skills can be beneficial because it focuses on their needs and gives them the practical, cognitive, emotional, social, and self-management skills they need to make improvements in their lives. Yadav P. and Iqbal N. (2009) found that giving pupils life skills instruction and a nurturing environment helped adolescents improve their attitudes, beliefs, and behaviours.

Life skills education has been shown to be an effective technique in primary prevention education, according to Errecart et al. (1991) and Caplan et al. (1992), since it is more interactive, uses a problem-solving approach, and is activity based. As a result, learning and enjoyment are involved for both teacher and student.

As has been amply demonstrated in the studies mentioned, life skills education has generally been found to be an effective psychosocial intervention strategy for promoting positive social, mental, and emotional health in adolescents. It plays a significant role in all aspects, including strengthening coping mechanisms, developing self-confidence and emotional intelligence, as well as enhancing critical thinking, problem-solving, and decision-making skills. Thus, it is significant and crucial that life skills instruction be incorporated into the core curriculum of schools and delivered on a daily basis by a life skills trainer, teacher, or counsellor in order to improve student's mental health, give them better-adapted skills to deal with the challenges of changing life circumstances, and enable them to become fully functional members of their host society in particular and the global community in general

Although a lot of progress has been made in the past ten years, including in this study, to reflect life

skills education as an effective form of education that does improve social, emotional, and cognitive skills, and aids 21st-century youth in achieving their goals by enhancing their capacities to meet the needs and demands of the modern society and be successful in life, more empirical research from future researchers, academics, and practitioners is still required.

References

1. Aparna and Raakhee (2011). Life Skill Education for Adolescents: Its Relevance and Importance, *GESJ: Education Science and Psychology*, No.2 (19) ISSN 1512-1801 3.
2. Asher, S. R. and Williams, G. A. (1987). Helping Children Without Friends in Home and School, in Webster-Stratton, (1999), How to Promote Children's Social and Emotional Competence, SAGE Publications Ltd., London.
3. Assertiveness and Communication Skills, Available at: www.citd.co.uk/courses/course_details. Accessed: February 28th, 2010.
4. Beyer, B. K. (1995). Critical Thinking, Bloomington, IN: Philadelta Kappa Educational Foundation.
5. Prakash, Bhagban (2003). Adolescence and Life Skills, Tata McGraw-Hill Publishing Company Limited, 7 West Patel Nagar, (New Delhi).pp 47-54.
6. Clarke, D., Bundy, D., Lee, S., Maier, C., Mckee, N., Becker, A., Paris, F. (n.d.). Skills for Health Skills-based Health Education Including Life Skills: An Important Component of a Child-Friendly/Health Promoting School Contributors. Retrieved from http://www.who.int/school_youth_health/media/en/sch_skills4health_03.pdf
7. Sinkar, Gayatri (2013). An Integrated Approach to Assess the Need to Introduce Life Skill Training to Adolescents, Shri Jagdish Prasad Jhabarmal Tibrewala University, Rajasthan – 333001. Pp 140-149.
8. Moushumi S., Salma, A. and Smriti, O. (2012). Promoting Positive Wellbeing in Early Adolescence: Implementing Life Skills. Souvenir from 4th International Conference on Life Skills Education- Optimizing Positive Strengths through Life Skills, 122-132.
9. Namita, S. Sahare (2013). Implementation and Impact of Life Skill Development Programme among Adolescents. *Special Issue-ACOE* 09 & 10 February. www.srjis.com
10. Nidirangu, A. N., Ngare, G. W. and Wango, G. (2013). Gender Factors in Implementation of Life Skills Education in Secondary Schools in Nairobi, Kenya. *International Journal of Education and Research*, 1 (5), 1-18pp. Retrieved from <http://www.ijern.com/images/May-2013/38.pdf>
11. Puspakumara, J. (2011). Effectiveness of Life-skills Training Programme in Preventing Common Issues among Adolescents: A Community Based Quasi Experimental Study (ALST). Presentation, Department of Psychiatry Faculty of Medicine and Allied Sciences Rajarata University of Sri Lanka.
12. Roodbari, Z., Sahdipoor, E., and Ghale, S. (2013). The Study of the Effect of Life Skill Training on Social Development, Emotional and Social Compatibility among First- Grade Female High School in Neka City. *Indian Journal of Fundamental and Applied Life Sciences*, Vol. 3(3), 382-390. Retrieved from <http://www.cibtech.org/jls.htm>
13. Smith, E., Swisher, J., Hopkins, A., and Elek, E. (2006). Results of a 3-Year Study of Two Methods of Delivery of Life Skills Training. *Health Education and Behavior*, 33(3), 325-339. <http://dx.doi.org/10.1177/1090198105285020>.
14. Vashishtha, K. C. and Bhardwaj, S. (2006). An Empirical Exploration of Life Skills Relevant to Science and Technology. *Indian Education Review* 42(2) 26-50.
15. Yadav, P. and Iqbal, N. (2009). Impact of Life Skill Training on Self-esteem, Adjustment and Empathy among Adolescents. *Journal of the Indian Academy of Applied Psychology*, (35) Special Issue, 61-70. Retrieved from <http://medind.nic.in/jak/t09/s1/jakt09s1p61.pdf> □

Tracing the Inclusion of Women with Disabilities in India

Alokita Vishal* and Pathloth Omkar**

“Being disabled should not mean being disqualified from having access to every aspect of life”.

-Emma Thompson

The population of women with disabilities is of considerable percentage in India and they are suffering from various disadvantages. They face triple discrimination due to their status as women; persons with disabilities; and poverty; as majority of them are below the poverty line. Due to poverty, they get restricted in accessing many opportunities. The educational engagement of disabled women at different levels from pre-primary to university education was never explored systematically. NEP-2020 also talks about children with special needs; gender sensitization issues, democratic participation, equalization of opportunities, classroom engagement and disparities. However, in the present scenario, the government is doing a lot in the form of awareness, but in practice, only verbal assurances are more and the system is skewed when it comes to education of women with disabilities. Male treat women as subordinates in our society and do not provide them democratic environment. The government requires a comprehensive plan to transform the status of women and women with disabilities. Gaining education and proving their identity is not easy for women with disabilities but if support system is in place, it is not difficult. In this context, this paper accounts for systematic experiences of women with disabilities and deals with the engagement of women with disabilities in education.

Status of Women with Disability

Disability is a result of a variety of causes. In some it is by birth, many a time it is accidental and, in some conditions, due to the mistake of doctors. However, as per data, females with disability are less in comparison to males with disability. Despite that, government programmes and policies are not getting enough attention from parents to ensure the full and

* *Research Scholar, Department of Educational Studies, School of Education, Mahatma Gandhi Central University, Bankat, Motihari, East Champaran, Bihar-845 401. Email id: alokita2010@gmail.com*

** *Assistant Professor, Department of Educational Studies, School of Education, Mahatma Gandhi Central University, Bankat Motihari, East Champaran, Bihar-845401. Email id: pathlothomkar@mgcub.ac.in*

effective participation of females with disability and in providing equal opportunity for girls/ women with disability. 21 types of disabilities are categorised by the Rights of Person with Disability Act- 2016. But due to lack of facilities, many types of disabled students are not accessing education in mainstream educational institutions so they get dependent on others which makes them feel burdened but they have no other option for the upliftment of their life condition.

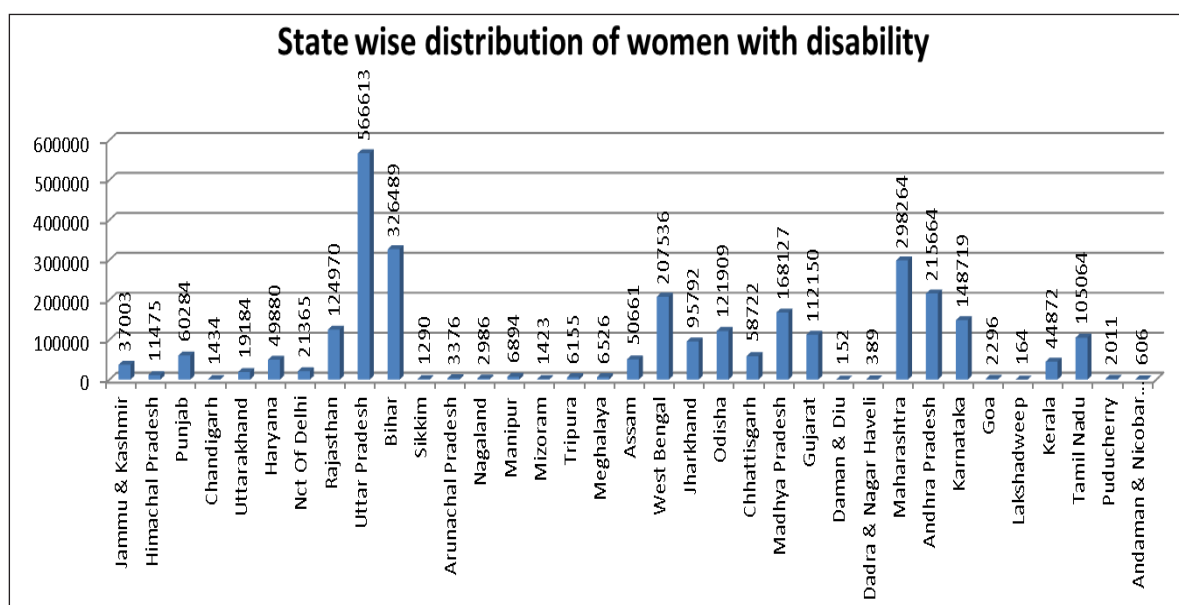
It is evident from the Graph-1, that in India, there is a large distribution of women with disabilities in states of Uttar Pradesh, Bihar, etc. Uttar Pradesh has the largest population of women with disabilities, area of Bihar is small but large number of women with disabilities are residing there. According to the census 2011, in India 2.68 crores are disabled. Approximately 50 per cent of disabled persons belongs to one of the five states, which are Uttar Pradesh, Maharashtra, Bihar, Andhra Pradesh and West Bengal. In view of the above, a Study was conducted to assess the educational and employment status of females with disabilities in India and to explore the issues and concerns of women with disabilities

Secondary sources of the data were used in the present paper such as censuses of India, journals, theses, narratives, statistical supplements and government report to know the status of education and employment of women with disabilities in India.

Education of Women with Disability

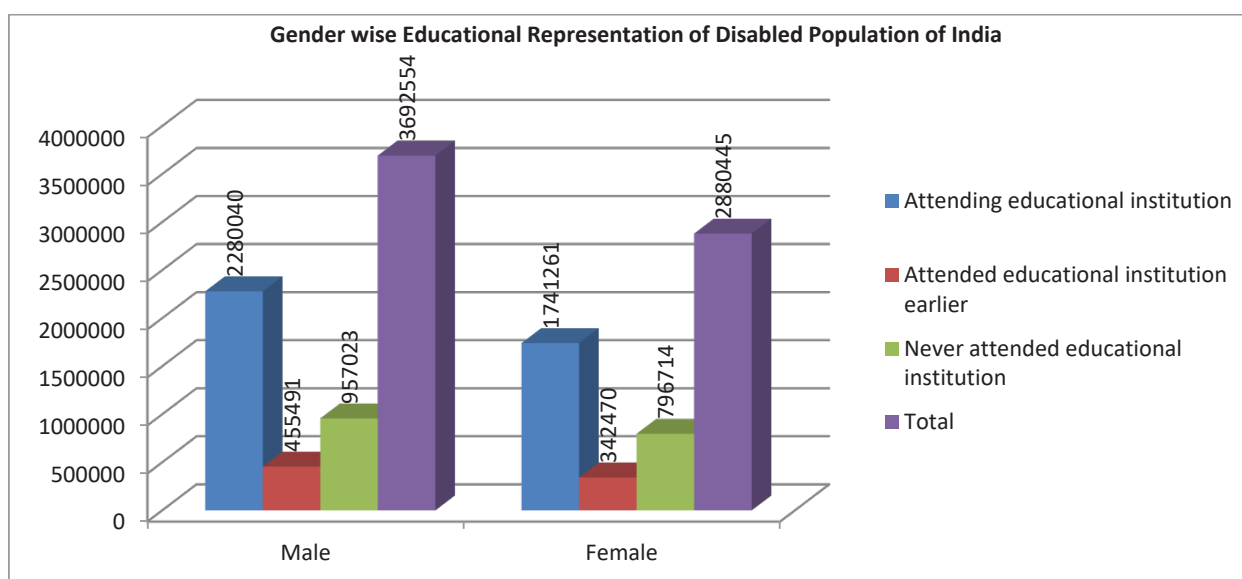
Under Integrated Education for Disabled Children (IEDC) Scheme, the 15-18 years age group of children with disability have the provision to get free and compulsory education but unfortunately in present society women with disability are not fully accessing these. Many social, economic, physical and attitudinal barriers are restricting them from achieving their educational rights. Even after the implementation of many plans, policies and acts, the educational status of women with disability are not satisfactory. Due to the safety issues, parents don't allow their female disabled to go alone to educational institutions and transportation services for them are more costly for middle-class parents so the dependency on parents gets increased.

Graph-1 State-wise Distribution of Women with Disability in India



(Source: Census2011)

Graph-2 Gender-wise Educational Representation of Disabled Population in India



(Source: Census 2011)

It is evident from Graph-2, that the total number of males with disabilities is much in comparison to women with disabilities but from earlier times to now women are facing segregation and discrimination in educational institutions. When a female is suffering from any types of disability, then her suffering gets double as a woman and as a disabled person, and many times due to lack of inaccessible infrastructure facilities

like improper school toilets, classrooms, stairs and transport facilities families are not sending their female disability to the educational institution. Sometimes a student with a disability does not feel comfortable studying with normal students and many times general educational institutions are not well equipped to impart education to students with disability according to their needs, therefore, they deny enrolling these students.

Barriers to Education of Women with Disabilities

Infrastructural Barriers

The lack of accessible infrastructure in institutions and work creates a barrier to the smooth functioning of women with a disability and many parents deny sending their children to these places. During the COVID-19 pandemic, many offices provided their employees to work from home facilities this type of opportunity reduces bodily impairment which is a hurdle in getting a job. If government promotes it, then they get more independent and self-reliant.

Attitudinal Barrier

Many times, parents, society, institutions and workplaces people show a negative attitude toward accepting women with disability, these stereotypical behaviours negatively affect their careers and restrict the mobility of an individual who is disabled. People's thinking based on rigid gender roles confines females with disability in house and do not allow to get education or job.

Financial Barriers

Due to lack of financial support women with disabilities are not getting sufficient assistive and electronic devices which minimise their impairment and facilitate their education.

Women with Disability in the World of Employment

Women in general face discrimination in employment. In our film industry, actresses get less salary in comparison to actors, and labour class also face the same situation when a female works as a labourer she gets fewer wages in comparison to male labourer. Women with disability also face the same issue, when disabled women do find jobs, they receive considerably lower wages. Some of the studies show in the industrialized country a disabled woman working full-time earns only 56 per cent of the salary of a full-time employed disabled man. In fact, women with disability get fewer wages in comparison to male disabled or non-disabled women. Many companies, hotels, and many more places are not accepting women with disabilities as an employee in their institutions or in the organisation, they indirectly refuse to appoint them due to their physical presence. The attitude of normal people is the biggest challenge in front of them to create their space in society and survive their

life smoothly among us. Development of appropriate skills and training increase the employability of people with disability in public and private sectors in this regard Vocational Rehabilitation and Training Centres are engaged in developing skills in them. Due to the slow pace of growth of the organised sector, self-employment is a way to empower and strengthen the life of women with disabilities.

Brain Drain and Identity Crisis

Every individual has unique potential and capacities which we have to respect but, in our country, we are not fully utilising their potentialities. The government has made so many provisions to provide those equal opportunities like a normal person but many times private job markets are denying accepting them as an employee in their company. National Educational Policy 2020 also focuses on their education but most of the time, private educational institutions are rejecting them to teach normal students. Due to this rejection of our society and system brain drain happens.

Narratives of Women with Disabilities

Atreja, S. (2020), sharing her personal experiences said that our society's attitude and behaviours toward disabled people many times hurts them. Here the rights of the dignity of the person with a disability are not shown in a normal person's behaviour. After attending the reading meeting on critical disability studies, she gets a better understanding that the power of academia is much helpful in activism (Atreja, 2020).

Manasi Joshi won the trophy in the women's singles SL3 Category. Manasi's first tournament after getting a sports prosthesis is Thailand Para-Badminton International and at the Asian Para Games 2018. She was required to possess her leg amputated after a motorbike accident and delayed medical attention. She says that things have 'changed tons because of the performances by our tribe at the very best level'. Manasi's determination and strife are inspirational; every individual has the power to overcome the obstacles that come our way (Hoque, 2018).

Narrative of Sivani Gupta when she met with two massive accidents came on wheelchair and received a national award from Dr. APJ Abdul Kalam. Sivani Gupta is 22 years old young independent girl from Delhi. One day she met with a massive accident and her spinal cord got seriously injured. But she

again prepared herself to fight with this society and get self-dependent, resumes her job but corporates were not open to employing those people who are disabled. She met with another massive accident and after facing unseen or clueless troubles of life, she moved on to the UK, continued her study and she is working on the ideas of accessible infrastructure. Her initiatives got accolades and got associated with the office of the High Commissioner in Human Rights in Geneva. Dr. APJ Abdul Kalam conferred a National award to Sivani Gupta for her work. These narratives reveal:

- The unseen pain of women with disability life.
- Our society's mentality and sympathetic view of People with Disabilities.
- The reality of implementation of government plans or provisions.
- Denying of corporate sector or private sector for the acceptance to consider them as an employer.
- After not getting respectful life in our country brain drain happened.

These narratives are only a few examples of women with disabilities but it is the inspiration for many of us. Education and training provide an opportunity for women with disabilities to meet and achieve their goals in complex situations of life if we provide them space and welcome them. Education helps in enriching the skills and provides job, and job reduces the dependency of a disabled person. Acceptances reduce inequalities. Special provisions have been made in the following schemes/programmes for women with disabilities:

- National Overseas Scholarship for Students with Disabilities: In this scholarship, six out of twenty scholarships are reserved for women candidates.
- Pre-Matric Scholarship and Post-matric Scholarship for Students with Disabilities: Under this 50% of the scholarships are reserved for girls.
- Scholarship Scheme from Trust Fund: 30% scholarships are reserved for females students with disabilities.
- Under Integrated Education for Disabled Children (IEDC) Scheme, 15- 18 years age group children with disability have provision to get free and compulsory education.
- Article 21A is also guaranteeing education as a fundamental right.

Conclusion

India is the second largest populated country and there is a need for proper utilization of human resources which also contributes to our economic growth. The total number of female disabilities is lower than male disabilities in both employment and education; females have lower participation than males. In general female representation is also lower with respect to males, and the government is continuously trying to increase their participation in this regard so many plans and policies get implemented. But due to social, cultural and economic barriers female participation in education and employment get affected. The governments are also initiating some programmes and strategies to provide education, and employment and increase the acceptance of women with disabilities in their family but only government initiatives are not enough in providing dignified life and acceptance, it is important for everyone to accept them in family, society, workplace and in an educational institution.

References

1. Atreja, S. (2020). Introduction. In Bhattacharya. T. & Ghai. A. "(Eds.), *Indian Journal of Critical Disability Studies*. Delhi, India, 1(1), 12-21. Retrieved from <https://jcdsi.org/index.php/injcds/article/view/45>
2. Dwan, R. (2016). Inequities in Education of Women with Disabilities in India. *Research Gate*, 1-5. Retrieved from https://www.researchgate.net/publication/309349484_
3. Hoque, N., (2018). *10 Women with Disabilities Whose Achievements in 2018 We should be Celebrating*. Feminism in India. Retrieved from <https://feminisminindia.com/2018/12/27/women-disability-achievements-2018/>
4. Ministry of Home Affairs (2019). *Office of the Registrar General & Census Commissioner, Government of India*. Retrieved from https://censusindia.gov.in/2011census/population_enumeration.html
5. Rousso, H. (2003). Education for All: A Gender and Disability Perspective.
6. Sarma, J., (2016). *Narratives of Women with Disabilities: Unravelling the Intersections*. Café Dissensus. Retrieved from <https://cafedissensus.com/2016/08/14/narratives-of-women-with-disabilities-unraveling-the-intersections/>
7. Shah, Binjal (2015). Two accidents, a wheelchair and a National award from APJ Abdul Kalam: Shivani Gupta's heroic tale 5th Oct 2015. Retrieved from https://yourstory.com/2015/10/shivani-gupta?utm_pageloadtype=scroll



Integration, Innovation and Inclusion: Pathways to Progress

Raghunath Anant Mashelkar (Padma Vibhushan, Padma Bhushan, and Padma Shri) Fellow of Royal Society (FRS) delivered the Convocation Address at the 2nd Convocation Ceremony of C.V. Raman Global University, Bhubaneswar on March 05, 2022. He said, “The beginning of your own life is not in your hands, but where you end up is. So remember, your aspirations are your possibilities, therefore, always keep your aspirations high. You can’t predict your future at the beginning of your journey.”
Excerpts

I am privileged to be the Chief Guest for the second convocation of C. V. Raman Global University, an important milestone in the history of this young and aspirational university. I am immensely grateful to this university for awarding me an Honorary Doctorate. This happens to be my 45th Honorary Doctorate, but the first one from this great state of Odisha. I accept this honour humbly. As a proud alumnus of our university, yes, I am using the word “our” purposely, I assure you that I will do my best to help it scale greater heights and enhance its honour and prestige. I want to congratulate the graduands present here today for achieving a great milestone in your life. This is a special day in your life. I also want to congratulate your parents and teachers for giving you the best gift that they could have ever given you in life—education.

Universities can’t build the future of the youth, but they sure can build the youth of the future. You are fortunate that our university has equipped you with new-age skills and tools to create your future.

I am impressed by the remarkably rapid progress made by the university. Within a short period of time, it has become India’s leading skills university; it’s fantastic global medals can certainly make any university envious. Its unique pedagogy links knowledge and skills seamlessly and facilitates joyful, hands-on learning experiences. After all, students must “enjoy” what they “do” and “do” what they “enjoy”. I am confident that our university will emerge as the world’s preeminent skills university.

Three Pathways to Progress

There are just three pathways that can transform a university from good one to a great one. They are integration, innovation, and inclusion. Let me explain each of them.

Integration

Integration is multidimensional. It is integration in the journey of learning, doing, and delivering, it is integration across disciplines, it is integration across borders leading to globalization.

First, the challenge of integration from learning to delivering. In world-class universities, education, research, innovation, and entrepreneurship are often integrated seamlessly. Education disseminates known knowledge. Research creates new knowledge. Innovation converts knowledge into agents of social good. However, to ensure that innovation and novel ideas create real-world impacts in our society, we need entrepreneurship. Our university is doing a remarkable job executing this integration, especially with the most important partner—industry. The advanced skills centres established with the help of industry partnerships are truly unique.

The second is integration across disciplines. Breakthroughs in research take place at the intersections of disciplines. Advances are generally the sum total of numerous creative ideas and interdisciplinary endeavors. Indeed, moving from ideas to impact is not a unidimensional process. It is similar to the intermeshed gears in a clock. The challenge before us is to enable this intermeshing. Therefore, what we require are not just chemical, mechanical, or computer engineers, but “solution engineers” and problem solvers, who are experts in integrating disciplines.

The third is the integration within and across national boundaries. Our university must be sensitive to the needs and the aspirations of the people and the society of Odisha, for which I have seen a great deal of laudable evidence. The word “global” university means we must espouse a global outlook, and integrate diverse thoughts and cultures with an open mind and further the philosophy of “Vasudhaiva Kutumbakam”.

I understand that our university has attracted 223 students from 25 countries even during the challenging COVID-19 pandemic. In addition to exchange of knowledge and culture, there is a huge opportunity to build a brand in skill in India and across the globe. Besides this achievement in education, we must also foster productive global partnerships in research and innovation.

Looking to the future, the very character of internationalization will not only evolve but also spread

rapidly due to the phenomenal advances in Information & Communication Technology. Digitization, virtualization, mobilization, and personalization are the four new megatrends. All these will lead to game-changing collaborative, self-organizing, self-correcting, asynchronous, dynamic, and open systems that are borderless.

Innovation

Innovation is the successful implementation of a new idea in the market, industry, or society. It is the journey of creativity from minds to markets and from ideas to impact.

I am passionate about innovation. I remember receiving the JRD Corporate Leadership Award on 21st February 1999 from the then Hon'ble Vice President of India. I tried to set an agenda for the Indian innovation movement. I ended by expressing a hope.

“Finally, 1999 will be the year when we will launch a powerful national innovation movement to propel us into the next millennium. It is only through the process of innovation that knowledge can be converted into wealth for our society. Through this movement, every citizen, every constituent of India must become an innovator. The „I“ in India, should not stand for imitation and inhibition, it must stand for innovation. The I in IIT must stand for innovation. The I in industry, the I in CSIR must stand for innovation. The I in every Indian must stand for innovation. It is only this innovative India that will signal to the rest of the world that we are not a hesitant nation, unsure of our place in the new global order, but a confident one, that is raring to go and be a leader in the comity of nations”.

I am happy to see a number of initiatives that have been spearheaded by our university. In terms of scientific research, I understand that 468 publications have been published and 45 patents have been filed. Now, the emphasis should be on raising the bar, aiming for breakthroughs in research, having a say not just in India but across the world. It is paramount to convert invention into innovation. To that end, I am particularly happy about the creation of incubation centres and the emergence of tech-driven start-ups that will promote entrepreneurship and raise the next generation of entrepreneurs at our university.

India has transitioned from a 'starting-up' nation to the fastest growing 'start-up' nation. It is shattering records by producing a unicorn almost every week. Unicorns are companies that are valued at more than one billion dollars.

My analysis suggests that almost 50% of the unicorn start-ups were born in elite institutions such

as the IITs and IIMs, and the rest hail from tier 2 or tier 3 cities. This signifies the real democratization of innovation. I hope that we will see a unicorn emerging from our university sooner or later.

Finally, innovation must be embraced as a way of life at our university. Hon'ble President Obama said that education and innovation are the currencies of the 21st century. I say that education in innovation and innovation in education are the currencies. This university must build on both. The classrooms must be reinvented to keep pace with changing times. It is the innovative combination of digital and physical learning that will nurture future winners.

Inclusion

India needs growth, but more importantly, it needs inclusive growth. No Indian should be left behind. This means education for all, and research and innovation that create products and services which are affordable and accessible to all.

Our university exemplifies the concept of inclusive education. I was very impressed with the Safal program that is based on the strong beliefs that skills can change life and that educating girls educates an entire nation.

This unique Safal program facilitates the education of orphan and destitute girls across the state. The girls benefit from different levels of education and learn new skills. The university bears the cost of their education. To my mind, this is inclusion in education at its best.

In the same way, research and innovation at our university must be inclusive. Let me explain by giving an example of such inclusive innovation: My mother Anjani Mashelkar brought me up against the odds that a poor, widowed, and uneducated woman faces. She asked me to never forget our humble beginnings and use science to help the poor. I created the Anjani Mashelkar Inclusive Innovation Award in her name after her passing. The award recognises and celebrates game-changing inclusive innovations that are affordable, tech-driven, scalable, and sustainable. The award honours those who create not just the best practice but also the next practice. Here are some examples of inclusive innovation; five of the thirteen awardees in the last 11 years:

- iBreast is a high-quality and simple breast cancer screening that avoids painful mammography and is available for every woman at an affordable cost of \$1 per scan.
- Sanket is a pocket-size, high-tech ECG machine that provides accurate reports immediately at the cost of ₹5 per test.

- Save Mom is an IoT-based maternal healthcare solution that remotely monitors pregnancies of poor rural women at the cost of ₹1 per day.
- Oral Scan is an innovative optical device that detects oral cancer rapidly and accurately at ₹250, as against a biopsy that typically costs ₹2500.
- Dozee is an IoT-based remote monitoring system with 98.4% medical accuracy; it converts any bed into an ICU bed in just 10 minutes at 10% of the cost of a full-fledged ICU system.

As I always like to say, science must solve, technology must transform, and innovation must impact. These five brilliant examples of inclusive innovations are transformative and affordable solutions that can save millions of lives.

Building Engineers for Our Future

In order to be a leading university that raises world-class engineers, we must strengthen the minds as well as the mind-sets of our engineering graduates so that they can help build a better future.

Much has been written about the mind of an engineer. For an engineer, two things are important. The first deals with learning habits of mind. These include curiosity, open-mindedness, resourcefulness, ability to reflect, resilience, ethical approach, and cooperation and collaboration.

Then there are engineering habits of mind. These include visualizing, analyzing, improving, adapting, systems thinking, problem finding, and finally creative problem-solving. Our university must empower our students to develop the learning habits of mind as well as the engineering habits of mind.

An eminent education expert said that two-thirds of today's senior school students will end up in jobs that do not exist today. In that case, how do we impart future-ready skills to our students and prepare them for the digital age? While the nature and type of jobs will keep evolving, there are certain skills that are essential regardless of changing times. What are they?

It is generally agreed that the top 10 skills include complex problem solving, critical thinking, creativity, people management, collaboration, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility. We test students by examining their domain knowledge, be it mechanical, electrical, or metallurgical engineering. We have to devise new tools of evaluation that assess students based on these top 10 skills.

Let us remind ourselves that the word 'engineer' comes from the French word 'ingenieur', that literally

means 'an ingenious one'. To my mind, our ingenuity guides us to explore new tools of knowledge from adjacent disciplines and is key to our success. Finally, I would like to quote the inspiring inscription on the Lamme Medal of The Institute of Electrical and Electronics Engineers, USA: "The engineer views hopefully the hitherto unattainable". I firmly believe that it is in this new interconnected world where the engineers from our university will not only 'view' the unattainable but also 'attain' the unattainable.

Five Mashelkar Mantras

The beginning of your own life is not in your hands, but where you end up is. So remember, your aspirations are your possibilities, therefore, always keep your aspirations high. You can't predict your future at the beginning of your journey.

While studying Newton's laws of motion in school, I did not realize that I would sign in the same book as Newton did and be ceremoniously inducted as a Fellow of the Royal Society in London.

Second, there is no substitute for hard work or success. Unlike instant coffee, success is a continuous pursuit. I have worked 24x7, week after week, month after month, year after year, and will do so till I take my last breath. The golden rule is the following: work hard in silence; let your success make all the noise.

Third, purpose, perseverance, and passion matter. It is always too early to quit and never too late to start. Quitters are never winners and winners are never quitters. Interpret FAILURE as your first attempt in learning. Your best guru is your last mistake as long as you learn from it.

Fourth, strive to be a part of a solution, and not of a problem. If you can't find the way, create your own ways. You will knock on many doors; don't get frustrated if they don't open. Create your own doors.

Fifth, human endurance, human achievement, and human imagination are all boundless. The only real limits are the self-imposed ones.

Be 'limitless' in terms of your imagination. So every day when you wake up, no matter how old you are, say to yourself that my best is yet to come and today may be that day.

What it all boils down to

My young friends, my best wishes and choicest blessings will always be with you as you ascend this limitless ladder of excellence and bring glory not only to yourself, to your family, but also to our beloved university, state, and motherland. □

CAMPUS NEWS

National Seminar on Innovative Librarianship

A two-day National Seminar on 'Innovative Librarianship: A Foresight on *Aatmanirbhar Bharat*' was organized by the Central Library, Central University of Tamil Nadu (CUTN), Thiruvavur, Tamil Nadu, recently. The event was sponsored by the Indian Council of Social Science Research (ICSSR), New Delhi.

Dr. R Parameswaran, Librarian, Central Library welcomed the participants and briefed the development of library activities and its various services. Also, he stated the recent developments and best practices offered in the Central Library by using various technological innovations. The Convenor, Dr. S Dhanavandan, Deputy Librarian, Central Library provided an overview of the two days schedule. He emphasized the role of libraries in providing various innovative services and opportunities.

The seminar was presided over by Prof. M Krishnan, Vice Chancellor and he delivered the Presidential Address. He highlighted the significance of academic libraries and their contribution to the advancement of higher education. Further, he stated the importance of education, and it should reach the end of the stakeholders, especially the rural people. The Chief Guest, Prof. J P Singh Joorel, Director, INFLIBNET pointed out, "One nation one Subscription" in his inaugural address and also, encouraged the library science people and their good initiatives regarding the *Aatmanirbhar Baharath*.

During the Inaugural Function, Vice Chancellor, Prof. M Krishnan and Director, INFLIBNET, Prof. J P Singh Joorel released the conference books namely 'Librarianship: Accelerating Open Access', 'Innovative Librarianship: Impetus to Digital Convergence' and 'Digital Librarianship and Social Media'.

Also, Prof. M Krishnan released the book titled 'Library Analytics: Reshaping the Future' which was authored by Dr. S Dhanavandan, Deputy Librarian, CUTN, Dr. S Gopalakrishnan, Former Assistant Librarian, Anna University, and Dr. M Tamizhchelvan (late), The Gandhigram Rural Institute, Dindigul. The book emphasises the various recent trends and

techniques of library analytics and definitely it will help the new budding as well as researchers in library and information science.

Prof. Sulochana Shekhar, Registrar (I/c) and Prof. S Nagarajan, Controller of Examinations (I/c), Central University of Tamil Nadu offered the felicitations and appreciated the initiatives the Central Library took for organizing such kind of programme for the benefit of library professionals, research scholars and participants from the national level in the library domain and also congratulate and wished all the participants in the inaugural function. Prof. S Nagarajan, in his felicitations, remarked on the new concepts and various metrics which were discussed in the book titled 'Library Analytics'.

The Guest of Honour, Prof. Pravakar Rath, Senior Professor, DLIS, Mizoram University, Aizawl delivered the recent technological applications and their impacts on researchers. Prof. S Srinivasa Ragavan, Professor and Head, DLIS, Controller of Examinations Bharathidasan University, Trichy delivered the keynote address. He insisted on the various twenty technological applications in the library sources and services. Ms. Esakkiammal, Information Scientist, Central Library proposed the vote of thanks to all dignitaries and participants.

Dr. S Dhanavandan, Organising Secretary introduced the resource person for the first technical session. Dr. Akhandanand Shukla, Head, Department of Library and Information Science served as the Conference Director. The session was chaired by Dr. P Padma, Assistant Professor, Madurai Kamaraj University, Madurai and Dr. G Amutha, Librarian, Virudhunagar Hindu Nadars' Senthikumara Nadar College, Virudhunagar. Ms. Kaliammal, Former, Librarian, Bharathidasan University, Trichy served as the rapporteur. In the session, a total of fourteen papers were listed and ten papers were presented. Prof. S Srinivasa Ragavan delivered the invited talk on '20 Innovative Technologies that Determines the Future Libraries of *Aatmanirbar Bharat*'.

The next session was chaired by Dr. K Praveena, Associate Professor, DLIS, Annamalai University, and Dr. Taddi Murali, Assistant Professor, DLIS, CUTN. Mr. S Raja, Assistant Librarian, Alagappa University,

Karaikudi served as the rapporteur. About seventeen papers were listed and only thirteen papers were presented during the session. Prof. Pravakar Rath, Senior Professor, DLIS, Mizoram University, Aizawl delivered the invited talk on 'Transformation of Indian Libraries in Creating New Avenues for Library and Information Professionals in 21st Century'.

The next session was chaired by Dr. R Jeyshankar, Associate Professor, DLIS, Pondicherry University and Dr. T Raja, Librarian, St. Xavier College of Education, Palayamkottai served as a rapporteur. Out of nineteen papers only seven papers were presented. Dr. R Sevukan, Professor, DLIS, Pondicherry University delivered the invited talk on 'Twitter as Information Monitoring Tool during Crisis'.

Organising Secretary, Dr. S Dhanavandan, Deputy Librarian, Central Library delivered the welcome address for the session which was chaired by Dr. J Varadharajalu, Librarian (I/c) Vellore Institute of Technology (VIT), Vellore and Dr. Dhanyasree V K, Assistant Professor, DLIS, CUTN. Dr. K Murugan, Teaching Fellow, VOC College, Anna University, Thothukudi Campus served as the rapporteur. Out of twenty papers, only six papers were presented. Dr. K Elavazhagan, Librarian and Chief Knowledge Officer, IITM Trichy delivered the invited talk on 'Innovative Technologies in Library and Information Science in India'.

The next session was chaired by Dr. Anila Sulochana, Assistant Professor, DLIS, CUTN and Dr. J Arumugam, Librarian, PSG Institute of Technology, Coimbatore. Dr. R Gomathi, Assistant Professor, DLIS, Periyar University, Salem served as the rapporteur. About twenty-three papers were listed and presented eleven papers. Dr. S Gopalakrishnan, Former Assistant Librarian, Anna University, Chennai delivered the invited talk on 'Self Reliant Learning'.

The next session was chaired by Dr. K G Sudhier, Assistant Professor, DLIS, Central University of Tamil Nadu. Mr. Ashkar, Junior Superintendent (Library), IITDM Kurnool was the rapporteur. About sixteen papers were listed and only eleven papers were presented. Prof. V Chandrakumar, Professor and Head, DLIS, University of Madras, Chennai delivered the invited talk on 'From Innovation to Transformation: Need to Redefine the Philosophy of Librarianship'.

The panel discussion was on the topic 'The Future of Libraries' which was moderated by Prof. S Ravi,

Professor, DLIS, CUTN. Further, Prof. P Ravichandran, Professor, DLIS, Annamalai University, Chidambaram, Dr. J Arumugam, Librarian, PSG Institute of Technology, Coimbatore, Dr. R Balasubramani, Associate Professor, DLIS, Bharathidasan University, Trichy and Dr. Senthilkumaran P, Deputy Librarian, Central University of Kerala, Kasargod served as subject expert in the panel discussion and many healthy issues were discussed.

During Valedictory Function, Dr. M E Kalyani, Assistant Librarian, Central Library, CUTN delivered the welcome address. Dr. Akhandanand Shukla, Head, DLIS, CUTN presented the conference report. The Presidential Address was delivered by Prof. G Ravindran, Dean, School of Communication, CUTN. Dr. K Elavazhagan, Librarian and Chief Knowledge Officer, IIM Trichy delivered the valedictory address and also, he highlighted the benefits of the offline conferences in the library and information science domain.

The vote of thanks proposed by Dr. S Dhanavandan, Deputy Librarian and Convener of NSIL 2022, Central Library. He recorded his sincere thanks to Vice Chancellor Prof. Dr. M Krishnan and Prof. Sulochana Shekhar, Registrar (I/c), for their support and cooperation in organizing this programme. And also thanked all the resource persons, chairperson, and delegates. About 150 participants participated. And also, thanked the Deans, Heads, Teaching and Non-teaching Staff, Administrative Staff, and Research Scholars and Students.

International Conference on Contemporary Multidisciplinary Issues

A two-day International Conference on 'Contemporary Multidisciplinary Issues in Applied Science, Humanities, Agriculture, Animal Health and Production' is being organised by the Rajiv Gandhi South Campus, Banaras Hindu University, Barkachha, Mirzapur Uttar Pradesh on November 14-15, 2022. The academicians, scientists, researchers, small entrepreneurs, and students of undergraduate and postgraduate may participate in the event to discuss critical issues and concerns about advanced and innovative technologies in Applied Science, Humanities, Agriculture, Animal Health, and Production.

While a global pandemic has been a looming risk for decades, COVID-19 has come as a shock to society, health systems, economies, and governments

worldwide. In the midst of extraordinary challenges and uncertainty, and countless personal tragedies, scientists and researchers are under pressure to make decisions on managing the immediate impact of the pandemic and its consequences, decisions that will shape the state of the world for years to come. What might be the silver linings in the crisis and how might researchers use this moment to build a more prosperous, equitable, and sustainable world? To offer new perspectives on the post-pandemic future, in support of efforts to proactively and collectively shape the future in the field of Applied Science, Humanities, Agriculture, Animal Health, and Production. The Themes of the event are:

Applied Science

Biotechnology, Microbiology, Industrial Drug Designing Formulation, Vaccine Technology, Biomedical Engineering, Bioinformatics, New Drug Delivery, Natural Products, and Ayurveda, Metabolic Disorders, Scope and Challenges in Pharmaceutical Industry, Artificial Intelligence, Machine Learning, ICTs, Artificial Intelligence, Computer Architecture, Embedded Systems and Games, Computer Graphics and Virtual Reality, Computer Modelling, Cloud Computing, Computer Security and Information Assurance, Data Structure, Data Communications, Network, Security Forensic, Data Compression and Encryption, Database System, Data Mining, Ecosystem Functioning, Environmental Management, Impact on Biodiversity, Wetlands, Waste Management Environmental Health and Hygiene Issue, Socio-economic Condition, Climate Change, Environmental Sustainability, Environmental Toxicity, Remote Sensing and Other Environmental Issues.

Humanities

Management and Commerce, Tourism and Hospitality, Travel Trade, Hospitality Management, ICT and Tourism, Tourism Sustainability, Quality Management, Rural Development, Entrepreneurship and Start-up Management, Impact Assessment, Challenges in B2B and B2C, Economic Reforms and Sustainable Development, Green Marketing, Retail Marketing, Virtual Marketing, Office Management, Office Automation Techniques, Retail Logistic Management, Social Science, Mass Communication, Social Media Management Marketing Management, Operational Management, Human Resource Management, Financial Control, Marketing Management and Digitization Banking and Insurance, Modern Banking Practices, Contemporary Trade Practices.

Agriculture

Agroforestry, Soil Science, Soil Management, Plant Nutrition, Fertilization, Agronomy, Water: Management of Irrigation Strategies, Water Recycling: Benefits and Risks, Smart Farming: Environmentally Management of Crop Production, Food Security and Safety/ Challenges and Opportunities, Horticultural Practices and Urban Agriculture for Sustainable Food Security, Post-harvest Technologies for Reducing Food Losses, Sustainable Cities, Climate Change and Human Health, Dairy Technology Dairy Science, Agricultural Processing Technology, Crop Processing, Organic Agriculture, Agro Biotechnology. Livestock and Fisheries, Opportunities in Farm and Rural Entrepreneurship, Secondary Agricultural Processing Sector, Processing and Value Addition in Agri-Food Industry, Agri Infrastructure Processing and Marketing, Plant Protection.

Animal Health and Production

Veterinary Science, Nutraceuticals and Functional Foods Food Biotechnology, Veterinary Science and Animal Husbandry: Veterinary Physiology, Veterinary Biochemistry, Anatomy, Pharmacology, Pathology, Parasitology, Microbiology, Public Health, Surgery and Radiology, Obstetrics and Gynaecology, Medicine, Livestock Production Management, Livestock Products Technology, Animal Nutrition, Animal Genetics, and Breeding.

For further details, contact Organising Secretary, Rajiv Gandhi South Campus, Banaras Hindu University, Barkachha, Mirzapur-231001 (Uttar Pradesh), Mobile No: 09839576067 / 09567435800/ 09815070337/09935851495/ 09792586522/ 08188944324, E-mail: ashaa.rgsc@gmail.com. For updates, log on to: <https://bhu.ac.in/barkachha/index.html/Event>.

International Conference on Advance in Materials and Manufacturing Technology

A five-day International Conference on 'Advance in Materials and Manufacturing Technology' is being organised by the Materials and Metallurgical Engineering (MME) in association with the Department of Mechanical Engineering and Computer Science and Engineering Maulana Azad National Institute of Technology, Bhopal, Madhya Pradesh during November 22-26, 2022 in hybrid mode. The aim of the event is to provide a platform for researchers, engineers, academicians, and industry

professionals to present and discuss the role of metallurgy and materials technology for a sustainable future with recent advances, trends, and development which is taking place all across the globe.

Technology influences human existence by bringing new risks as well as improvements to our lives. The threat of technological advancement is increasing with time as society is looking to create and develop easier ways to live and lengthen their lives. The growth in technology has been exceptionally fast in the 20th and 21st centuries. On one side the positive aspects of these new advancements are unparalleled but their detrimental effect on the climate has become a global concern. The Tracks of the Conference are:

- Automotive, Aerospace, and Space Materials.
- Non-materials.
- Surface Engineering.
- Composites.
- Biomaterials.
- Corrosion Engineering.
- Machining.
- Energy Harvesting Materials.
- Sustainable Manufacturing.
- Artificial Intelligence and Deep Learning in Materials and Manufacturing Technology.

For further details, contact Organising Secretary, Materials and Metallurgical Engineering, Maulana Azad National Institute of Technology, Bhopal-462003 (Madhya Pradesh), Mobile: +918763724080/+91-8889152316/ +91-7541805885, E-mail: mmt2022manit@gmail.com. For updates, log on to: www.mnit.ac.in.

National Seminar on Future of Teaching and Learning

The one-day National Seminar on 'Future of Teaching and Learning in School Education' is being organized by the Matrushi S S Govinda and Shrimati RKD Khanushiya College of Education (M.Ed.), Palanpur, Gujarat on October 16, 2022. The Research Scholars may participate in the seminar and can

present their papers based on their Ph.D., M.Phil. and M.Ed. dissertations.

The Government of India has ventured to bring out a National Education Policy of 2020 to meet the changing dynamics of the population's requirement with regard to quality education, innovation, and research, aiming to make India a knowledge superpower by equipping its students with the necessary skills and knowledge and to eliminate the shortage of manpower in science, technology, academics, and industry. The Subthemes of the event are:

- Technology Integration.
- E-learning Initiatives Post COVID-19.
- Creative Teaching Methods.
- Alternative Ways of Teaching and Learning.
- Teacher Education.
- Open and Distance Education.
- Evaluating and Assessment.
- Enhancing Quality Education.
- Ensuring ICT-based Learning.
- Participatory Role of Parents in Education.
- Problems and Prospects of School Education in Concurrent India.
- Training the Trainers for New Trends in Education.
- Value Addition in Teaching by Integrating Skill Development Along with Learning to Live Together.
- Pace Setting Roles of Schools.
- Bridging Gender and Social Gaps.
- Language across School Curriculum.

For further details, contact Convener, Mr. Chetankumar Raval, Assistant Professor, Matrushi S S Govinda and Shrimati RKD Khanushiya College of Education (M.Ed.), Palanpur-385001 (Gujarat), Mobile No: +91 9687402383, E-mail: nationalseminar2022@gmail.com. For updates, log on to: www.bkkpsm.org/events. □

THESES OF THE MONTH

SCIENCE & TECHNOLOGY

A List of doctoral theses accepted by Indian Universities (Notifications received in AIU during the month of July-August, 2022)

AGRICULTURAL & VETERINARY SCIENCES

Agricultural Economics

1. Bhagtani, Bharat Jethanand. **Entrepreneurial effectiveness and attitude of agripreneurs in Saurashtra Region.** (Dr. C D Lakhlani), Department of Agricultural Economic, Junagadh Agricultural University, Junagadh.

2. Birari, Udaykumar Devjibhai. **Growth and performance analysis of agricultural cooperative societies in South Gujarat.** (Dr. K A Khunt), Department of Agricultural Economic, Junagadh Agricultural University, Junagadh.

Genetics & Plant Breeding

1. Patel, Nikitabehen Shaileshbhai. **Variability and stability analysis in relation to heat tolerance in bread wheat (*Triticum aestivum* L).** (Dr. J B Patel), Department of Genetics and Plant Breeding, Junagadh Agricultural University, Junagadh.

BIOLOGICAL SCIENCES

Biochemistry

1. Krupa, S. **Studies on hydrolytic enzymes, antioxidants, antinutritional factors and phenolics from the seeds of *Artocarpus* species.** (Dr. K R Siddalinga Murthy), Department of Biochemistry, Bangalore University, Bangalore.

2. Manushree, V. **Bioevaluation of cocculus hirsutus trypsin inhibitor gene against helicoverpa armigera and bacterial pathogens of tomato.** (Dr. V R Devaraj and Dr. D Theertha Prasad), Department of Biochemistry, Bangalore University, Bangalore.

3. Rastogi, Jyoti. **Studies on agrobacterium mediated genetic transformation in sugarcane.** (Prof. Parvesh Bubber and Dr. Ram Kushal Singh), Department of Biochemistry, Indira Gandhi National Open University, New Delhi.

Biotechnology

1. Mahesh, Shashank. **Studies on population genetics of *Boswellia serrata* Roxb species and its conservation.** (Dr. Deepak Mishra), Department of Biotechnology, AKS University, Satna.

2. Sunil, K R. **Bioethanol production from aquatic plant using *Saccharomyces cerevisiae*.** (Dr. S T Girisha), Department of Biotechnology, Bangalore University, Bangalore.

3. Vijayalakshmi, T N. **Efficacy of Molecular markers for genetic analysis and characterization of geraniol producing gene in wild collections of *Cymbopogon martini* (Roxb.) Wats from Karnataka.** (Dr. Thara Saraswathi K J), Department of Biotechnology, Bangalore University, Bangalore.

Botany

1. Ambujakshi, N P. **Micropropagation and optimization of elicitors to enhance the secondary metabolites in *Chonemorpha fragrans* An important medicinal plant.** (Dr. H R Raveesha), Department of Botany, Bangalore University, Bangalore.

2. Hema, N. **Screening characterization and utilization of microbes for the bioconversion of organic wastes into succinic acid.** (Dr. K P Sreenath), Department of Botany, Bangalore University, Bangalore.

3. Khylllep, Alarisa. **Characterization of rhizospheric and endophytic bacteria in selected crops of *Jhum* fields of Mokokchung District of Nagaland.** (Prof. M S Dkhar and Dr. D Thakuria), Department of Botany, North Eastern Hill University, Shillong.

4. Vasudha, D R. **Micropropagation and green synthesis of nanoparticles from *Nothapodytes nimmoniana* Graham.** (Dr. H R Raveesha), Department of Botany, Bangalore University, Bangalore.

Microbiology

1. Patel, Jigna Hamirbhai. **Biotechnological and bioinformatics on salt stress adaptive genes from microbial isolated of little Rann of Kutch.** (Dr. Vrinda S Thaker), Department of Microbiology, Saurashtra University, Rajkot.

Zoology

1. Bhattacharya, Pamela. **Detecting climate change impacts through soil bacterial communities in Alpine Regions of Gangotri National Park, Western Himalaya.** (Dr. G S Rawat), Department of Wild Life Science, Saurashtra University, Rajkot.

2. Bhim Singh. **Molecular phylogeny and population genetics structure of Northern and Muntjac (Muntiacus Vaginalis) in India.** (Dr. V P Uniyal), Department of Wild Life Science, Saurashtra University, Rajkot.

3. Kharkongor, Mattilang. **Effects of chlorpyrifos, a pesticide, on development and morphology of anuran tadpoles.** (Prof. R N K Hooroo), Department of Zoology, North Eastern Hill University, Shillong.

4. Mohan Kumar, B S. **Biochemical studies in aging rat brain with relevance to the role of calcium in mitochondrial dysfunction.** (Dr. P Mahaboob Basha), Department of Zoology, Bangalore University, Bangalore.

EARTH SYSTEM SCIENCES

Environmental Science

1. Cholkar Nitin Balveer. **Ground water quality assessment of Dharmabad Tahsil, Dist. Nanded, Maharashtra.** (Dr. R K Narkhede), Department of Environmental Science, Swami Ramanand Teerth Marathwada University, Nanded.

2. Veenashree. **Environmental assessment of harmful algal blooms and Eutrophication in Lakes of Bengaluru: A climate change perspective.** (Dr. N Nandini), Department of Environmental Science, Bangalore University, Bangalore.

Geology

1. Sharma, C S Bhargava. **Biostratigraphy of upper cretaceous and lower tertiary sediments of Pondicherry Area Cauvery Basin, Tamil Nadu, Southern India.** (Dr. N Malarkodi and Dr. Sambuddha Misra), Department of Geology, Bangalore University, Bangalore.

ENGINEERING SCIENCES

Chemical Engineering

1. Konda, V V Lutukurthi D N. **Synthesis and characterization of metal oxides and metal oxide based nanocomposite photocatalysts.** (Prof. Suman Dutta), Department of Chemical Engineering, Indian Institute of Technology, Dhanbad.

Civil Engineering

1. Ansari, Ubaidurrahman Salik Ahmed. **Study of flow over labyrinth spillway.** (Dr. L G Patil), Department of Civil Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

Computer Science & Engineering

1. Bhardwaj, Hanu. **Requirements engineering for target driven data warehouses.** (Prof. Jyoti Pruthi

and Prof. Naveen Prakash), School of Engineering, Manav Rachna International Institute of Research and Studies, Faridabad.

2. Ginny. **Modeling & development of energy optimization techniques for smartphones.** (Prof. Chiranjeev Kumar), Department of Computer Science & Engineering, Indian Institute of Technology, Dhanbad.

3. Goyal, Mani. **High performance mobile cloud framework through optimal subdivision of mobile services by active monitoring.** (Dr. Avinash Sharma), Department of Computer Science & Engineering, Maharishi Markandeshwar University, Ambala.

4. Nayak, Soumen. **Techniques to enhance the fault detection rate using regression test prioritization.** (Prof. Chiranjeev Kumar), Department of Computer Science & Engineering, Indian Institute of Technology, Dhanbad.

5. Varinder Pal Singh. **Word sense disambiguation for Punjabi language.** (Dr. Parteek Kumar), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.

6. Suman, Amrit. **Improving vehicular ad-hoc network protocols for safety in realistic scenarios.** (Prof. Chiranjeev Kumar), Department of Computer Science & Engineering, Indian Institute of Technology, Dhanbad.

Electrical & Electronics Engineering

1. Banoth, Ravi. **Stochastic analysis in vehicular ad hoc networks.** (Prof. Jaisingh Thangaraj), Department of Electronic Engineering, Indian Institute of Technology, Dhanbad.

Electronics & Communication Engineering

1. Gupta, Saruti. **PAPR reduction techniques for efficient performance of OFDM system.** (Dr. Ashish Goel), Department of Electronics and Communication Engineering, Jaypee Institute of Information Technology, Noida.

Geophysics

1. Kannaujiya, Suresh. **Multiparametric geodetic and geophysical approaches to unveil the linkage of crustal deformation and seasonal variation in the Northwest Himalaya.** (Prof. Sanjit Kumar Pal and Prof. Paresh Nath Singha Roy), Department of Applied Geophysics, Indian Institute of Technology, Dhanbad.

Mechanical Engineering

1. Alam, Tanweer. **Dynamic response evaluation of thin film gauge in different heat transfer modes for transient measurements.** (Prof. Rakesh Kumar), Department of Mechanical Engineering, Indian Institute of Technology, Dhanbad.

Mining Engineering

1. Chandan Kumar. **Investigations into the design and operating parameters of surface miner for performance optimization.** (Prof. L. A. Kumaraswamidhas and Prof. V M S. R Murthy), Department of Mining Machinery Engineering, Indian Institute of Technology, Dhanbad.

2. Sunil Kumar. **Assessment and prediction of mining and coal fire induced surface land subsidence in Jharia coalfield using modified PSInSAR and GNSS techniques.** (Prof. Dheeraj Kumar), Department of Mining Engineering, Indian Institute of Technology, Dhanbad.

MATHEMATICAL SCIENCES

Mathematics

1. Naik, Shweta. **On almost contact metric manifolds.** (Dr. H G Nagaraja), Department of Mathematics, Bangalore University, Bangalore.

2. Radhika, M. **Numerical investigation of boundary layer flow and heat transfer of dusty nanofluid.** (Dr. Siddabasappa), Department of Mathematics, Bangalore University, Bangalore.

3. Ray, Anusree. **Wave characteristics in piezoelectric, piezomagnetic and microcontinuum structures with boundary peculiarities.** (Prof. Abhishek Kumar Singh), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

4. Singh, Ngangom Rojitkumar. **Graph theoretic characterization of some algebraic structures.** (Dr. Sanghita Dutta), Department of Mathematics, North Eastern Hill University, Shillong.

5. Yadav, Arun Kumar. **Station-keeping strategy with perturbing forces in sun-Jupiter system.** (Prof. Badam Singh Kushvah and Prof. Uday Dolas), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

MEDICAL SCIENCES

Ayurveda

1. Jadav Rajnik Karsan. **Role of Tagaradi capsule in the management of Anindra (Insomnia).** (Dr. A R Dave), Faculty of Ayurved, Gujarat Ayurved University, Jamnagar.

2. Pawar, Deepak Kashinath. **Effect of ayurvedic treatment protocol in the management of Madhumehajanya Timira wsr to background diabetic retinopathy: A clinical study.** (Prof. Manusha R), Department of Ayurved, Gujarat Ayurved University, Jamnagar.

3. Prakashbhai, Mori Bhumi. **A comparative clinical study of Shrungyadi Churna and Balchaturbhadradi yoga in the management of Pratishyaya in children.** (Prof. K S Patel), Department of Ayurved, Gujarat Ayurved University, Jamnagar.

Dentistry

1. Jain, Mahesh. **Estimation of optimum adhesive thickness and its effect on Shear bond strength and debonding pattern while designing orthodontics bracket positioner with pressure Gauge for precise force application during bonding procedure.** (Dr. Dolly Patel), Department of Orthodontics, Gujarat University, Ahmedabad.

2. Patel, Shital Suryakant. **Evaluation of elongated styloid process in patients with oral submucous fibrosis using panoramic radiograph.** (Dr. Deval Mehta), Department of Oral and Maxillofacial Surgery, Gujarat University, Ahmedabad.

Microbiology

1. Dadwal, Rajneesh. **Development of a rapid drug resistance detection method for *N gonorrhoeae*.** Department of Medical Microbiology, Postgraduate Institute of Medical Education and Research, Chandigarh.

Neurology

1. Pandey, Hriday Shanker. **Cellular and molecular events regulated by coronin 1A in astrocytes and astrocyte-mediated neuronal damage in HIV-1 neuropathogenesis.** (Prof. Pankaj Seth), NBRC, National Brain Centre, Manesar.

Nursing

1. Mohammad, Ishak. **A study to assess the effectiveness of Self Management Support (SMS) on self efficacy, Physical symptoms and general well being of the chronic kidney disease patients.** (Prof. Pity Koul), School of Health Sciences, Indira Gandhi National Open University, New Delhi.

Pharmaceutical Science

1. Digge, Vajinath Gulabrao. **Quantitative determination of drugs in bulk and pharmaceutical dosage form and its validation using HPLC.** (Dr. S S Patil), Department of Pharmacy, Swami Ramanand Teerth Marathwada University, Nanded.

2. Panchal, Chandrawadan Vishwambharrao. **Pharmacognostical, phytochemical and pharmacological evaluation of plants of sesbania genus from India.** (Dr. D R Jadge and Dr. Shivappa N Nagoba), Department of Pharmacy, Swami Ramanand Teerth Marathwada University, Nanded.

3. Samal, Ramanuj Prasad. **Design, formulation and activity study of some nanoparticle based antiepileptic drug.** (Dr. Pratap Kumar Sahu), Department of Pharmacy, Siksha O Anusandhan University, Bhubaneswar.

Physiology

1. Dey, Rubi. **Changes in physiological variables and plasma biomarker BNP in acute stroke and its relation to the 7th day outcome: A hospital based prospective study.** (Dr. D K Jha and Dr. Bidita Khandelwal), Department of Medical Physiology, Sikkim Manipal University, Gangtok.

Physiotherapy

1. Goyal, Manu. **Diffusion tensor imaging values in posterior tibial nerve in healthy controls and in patients with diabetic peripheral neuropathy: Pre and post nerve mobilization.** (Dr. Asir John Samuel Dr. Amit Mittal), Department of Physiotherapy, Maharishi Markandeshwar University, Ambala.

PHYSICAL SCIENCES

Chemistry

1. Abraham, Cisy. **Photocatalytic activity of W⁶⁺ and N³⁻ doped TiO₂: Effect of incorporation of additional metal/non-metal ions, surface sensitization, correlation of structure with electronic properties and photocatalytic activity.** (Dr. L Gomathi Devi), Department of Chemistry, Bangalore University, Bangalore.

2. Anjana Kumari. **Isolation and characterization of bioactive compounds from picrorhiza Kurroa, origanum vulgare and rubus ellipticus.** (Dr. Vinit Parkash), Department of Chemistry, Maharishi Markandeshwar University, Ambala.

3. Gaikwad, Vaishali Hanmantrao. **Synthesis and characterization of some biological important first transition metal series complexes with medicinally active molecules.** (Dr. B C Khade), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.

4. Kharrngi, Balamphrang. **Study on syntheses and pharmacological properties of O-and N-heterocycles.** (Prof. Ghanashyam Bez), Department of Chemistry, North Eastern Hill University, Shillong.

5. Kher, Seema Narsingh. **Design, synthesis and study of liquid crystals.** (Dr. H R Prajapati), Department of Chemistry, Gujarat University, Ahmedabad.

6. Kommareddy, Sridhar Reddy. **A novel integrated development and validation strategy of drug substances and drug products for multipurpose using reverse phase liquid chromatography.** (Dr. Samit Kumar and Dr. R S Nigam), Department of Chemistry,

AKS University, Satna.

7. Narbir Singh. **Design of novel deep eutectic solvent based electrolytes for electrochemical supercapacitors.** (Prof. Kamalika Banerjee and Dr. Yogesh Kumar), Department of Chemistry, Indira Gandhi National Open University, New Delhi.

8. Omar, Rahul. **Hydrodynamics and phenol degradation study of a trickle bed.** (Dr. Dinesh Kumar Mishra), Department of Chemistry, AKS University, Satna.

9. Priyanka. **Synthesis, characterization, physiochemical and biological studies of some organotin compounds.** (Dr. Manoj Kumar), Department of Chemistry, Maharishi Markandeshwar University, Ambala.

10. Rola, Rakesh Ranchhodbhai. **Design, synthesis and biological evaluation of some heterocyclic compounds.** (Dr. H D Joshi), Department of Chemistry, Saurashtra University, Rajkot.

11. Sachdeva, Diksha. **Synthesis, characterization and X-ray structural study of hexaureachromium (III) and Tris (Biuret) Chromium (III) complexes.** (Dr. Vinit Parkash), Department of Chemistry, Maharishi Markandeshwar University, Ambala.

12. Saraswat, Vandana. **Studies on corrosion inhibition of mild steel in acid environment: Experimental and theoretical approach.** (Prof. Mahendra Yadav), Department of Chemistry, Indian Institute of Technology, Dhanbad.

13. Vasta, Aditi. **Catalytic water oxidation and dehydrogenation of formic acid by ruthenium-based molecular catalysts.** (Prof. Sumanta Kumar Padhi), Department of Chemistry, Indian Institute of Technology, Dhanbad.

Physics

1. Dhupar, Anu. **Synthesis and characterization of group IIIA doped zinc sulphide nanoparticles via coprecipitation techniques.** (Dr. J K Sharma), Department of Physics, Maharishi Markandeshwar University, Ambala.

2. Jadhavar, Vikas Vasanttrao. **A study of synthesis and characterization of transition metals doped zinc sulfide nanoparticles.** (Dr. B S Munde), Department of Physics, Swami Ramanand Teerth Marathwada University, Nanded.

3. Solanki, Pankaj Pravinbhai. **Investigations on electrical and magnetic properties of some multifunctional oxides.** (Dr. B R Kataria), Department of Physics, Saurashtra University, Rajkot.

□

**CARMEL COLLEGE OF ARTS, SCIENCE AND
COMMERCE FOR WOMEN, NUVEM, SALCETE,
GOA-403 713**

**Minority Institution under Article 30(1) of the Indian
Constitution**

**Re-Accredited by NAAC 4th Cycle with "A"
Grade Score 3.25**

Applications from Indian Nationals are invited in ONLINE
MODE for the post of College **Director of Physical Education
& Sports (Aided; General Category)**

Hard copy of the application along with the required documents
should reach the undersigned **within 20 days** from the date
of publication. Those already employed shall upload their
applications through proper channel and shall account for break,
if any, in their academic career. Late submission or incomplete
applications will be rejected.

All communications concerning the candidate's applications will
be sent through the email address/mobile number provided.

For detailed information and link to apply Online for the above
post, visit the College **Website <https://carmelcollegegoa.org/>**
recruitment 2022

Scale of Pay, Terms and Service Conditions as per the norms of
UGC, Government of Goa & Goa University.

Mandatory Requirement: Valid Residence certificate for 15
years, knowledge of Konkani essential and knowledge of
Marathi desirable.

The above appointment will be subject to Government/DHE/
Goa University approval. The Principal reserves the right to fill
up the above mentioned post.

**Dr. Sr. Maria Lizanne A.C.
OFFICIATING PRINCIPAL**

ATTENTION ADVERTISERS

Advertisers are requested to send their text
matter at following Email IDs:

1. advtn@aiu.ac.in

2. publicationsales@aiu.ac.in

**Text matter may be sent in MS-Word
document file OR in PDF file in original
(as per Mechanical Data/Size of the
Advertisement).**

All the correspondence may be addressed to
the **Under Secretary (Publication & Sales)**,
Association of Indian Universities, AIU House,
16 Comrade Indrajeet Gupta Marg, New
Delhi-110002.

Mob: 09818621761

Phone Office: 91-11-23230059, Extn. 208/213.



Dr.D.C.Pavate Memorial Fellowships in Cambridge, 2023 Karnatak University, Dharwad



The Dr.D.C.Pavate Foundation in collaboration with Karnatak University, Dharwad and Sidney Sussex College, Cambridge offer three visiting fellowships annually for a period of four months to be held at the Centre of International Studies / Department of Politics and International Studies, Judge Business School and the Department of Applied Mathematics and Theoretical Physics / Department of Material Sciences and Metallurgy / Department of Chemistry / Department of Zoology, University of Cambridge.

Candidates below the age of 40 years as on 1st May 2023, who have secured a Ph.D., or a first class Masters Degree or its equivalent are eligible to apply for the following fellowships:

(a) One fellowship at the Centre of International Studies / Department of Politics and International Studies, Cambridge, selected on all India basis: The fellowship will be effective from September 2023. Candidates with good academic record in the areas of History, Political Science or International Relations, International Economics, International Law or Military Affairs will be considered.

(b) One fellowship at Judge Business School, University of Cambridge, Cambridge, selected from among Karnataka Candidates: This fellowship will be effective from January 2024. Candidates from Karnataka with good academic record and interest in Indian Business will be considered.

(c) One fellowship at the Department of Applied Mathematics and Theoretical Physics / Department of Material Sciences and Metallurgy / Department of Chemistry / Department of Zoology, selected from among Karnataka Candidates: This fellowship will be effective from May 2023. Candidates from Karnataka with good academic record in the area of Mathematics and Theoretical Physics, Material Sciences and Metallurgy, Chemistry and Zoology will be considered. The selection and award is subject to the Department concerned identifying a host research group accepting the successful candidate. Further information on the research groups and / or their faculty members' research interests can be found on the departmental websites of the University of Cambridge.

Karnataka Candidate: (i) Educated for a minimum of 5 years continuously at an educational institution located in Karnataka, or (ii) employed in Karnataka for a minimum of 5 years continuously.

The fellowships will cover economy class return air fare, stipend of 4500 pounds sterling and the appropriate academic charges. For more information and application form visit us www.pavatefoundation.org/home/fellowship_application. Duly filled application form along with the proposed research work, CV, best three research publications relating to the proposed area of interest, and supporting statement from a mentor at the University of Cambridge should reach by **5th November, 2022**. In case of fellowship at Centre of International Studies and Judge Business School, supporting statement from a mentor at the University of Cambridge is not mandatory.

The filled application form along with related documents may be submitted online or directly to Dr.B.H.Nagoo, Coordinator, Dr.D.C.Pavate Foundation, Vidya Soudha Building, First Floor Karnatak University, Dharwad, Karnataka -580003. (Mobile-09448112166 E-mail: nagoo_bh@yahoo.co.in). For more details kindly visit <http://www.pavatefoundation.org/>

Sd/-Registrar

WANTED

Applications are invited for the post of Perspectives in Education, Pedagogy Subjects, Health & Physical Education and Performing Arts to be filled in **Raosaheb Patil Adhyapak Mahavidhyalaya (B.Ed), Pachpimpali, Tq. Biloli, Dist. Nanded**, run by **Chhatrapati Shahu Shikshan Sansthan Sanchalit (Akhada Balapur) (Permanently Non-Granted)**. Eligible Candidates should submit their application along with all necessary documents **within 15 Days** from date of publication of this Advertisement by registered post only.

Sr. No.	Position	No. of Posts	Name of Post	Nature	Reservation
B.Ed					
1	Perspective in Education	08	Assistant Professor	Regular	Open-03, SC-01, ST-01, VJ-A/NT-01, OBC-01, EWS-01
2	Pedagogy Subject (Math., Science, Social Science, Language)				
3	Health & Physical Education				
4	Performing Arts (Music/Dance/Theatre) Fine Art				

Qualifications:- As per UGC & NCTE (2014 Rule)

The faculty shall possess the following qualification.

A) Perspectives in Education or Foundation Courses

- I) Post Graduate degree in Social Science with minimum 55% marks.
- II) M. Ed. degree from a recognized university with minimum 55% marks.

OR

- I) Post Graduate (M.A.) degree in Education with minimum 55% marks.
- II) B.Ed./B.El.Ed. degree with minimum 55% marks.
- III) SET/NET/Ph.D. in Education.

B) Curriculum and Pedagogic Courses

- I) Post Graduate degree in Sciences/Mathematics/Social Sciences/Languages with minimum 55% marks.
- II) M.Ed. degree with minimum 55% marks.
- III) SET/NET/Ph.D. in Education.

C) Health & Physical Education

- I) Master of Physical Education (M.P.Ed.) with minimum 55% marks.
- II) SET/NET/Ph.D. in Physical Education.

D) Performing Arts (Music/Dance/Theatre) Fine Art

- I) Post Graduate degree in Fine Arts (MFA) with minimum 55% marks.

OR

- I) Post Graduate degree in Music/Dance/Theatre Arts with minimum 55% marks.
- II) SET/NET/Ph.D. in Fine Arts.

Salary and Allowance Pay: Scale as per UGC, State Government & Swami Ramanand Teerth Marathwada University, Nanded rules from time to time.

Note:

1. Prescribe application form is available on the University Website: (www.srtmun.ac.in).
2. No T.A./D.A. will be paid to attend the interview.
3. Eligible candidates those who are already in services should submit their application through proper channel.
4. 3% Reservation for handicapped and 30% for woman candidates.
5. All attested Xerox Copies of Certificates and other relevant document should be attached to the application form.

Address of Correspondence**President/Secretary :**

- 1) Raosaheb Patil Adhyapak Mahavidhyalaya (B.Ed), Pachpimpali, Post. Kolheborgaon, Tq. Biloli, Dist. Nanded (M.S.) Pin Code-431710.

President/Secretary

Principal

WANTED

Applications are invited for the post of **Principal** (permanent non-grant) to be filled in **Savitribai Phule B.Sc. & BCA Mahavidyalaya, Basmat, District Hingoli**, (permanent non-grant) run by **Manav Shram Shakti Sansodhan v Vikas Pratishthan, Basmat- 431 512, District Hingoli (Minority College)**. Eligible candidates should submit their application along with all necessary documents **within fifteen days** from the date of publication of the advertisement by registered post only.

Sr. No.	Post	No. of Post	Full Time	Reservation
01	Principal	One	Full Time	Unreserved

a) Educational Qualification :-

- 1) A Master's Degree with a least 55% marks (or an equivalent grade a point scale whenever grading systems is followed) by a recognized University.
- 2) A Ph.D Degree in concerned/allied/relevant disciplines(s) in the institution concerned with evidence of published work and research guidance.
- 3) Professor/Associate Professor with a total experience of fifteen years of teaching/research in University, Colleges and other Institutions of Higher Education.
- 4) A minimum of 10 research publications in peer reviewed or UGC listed journals.
- 5) A minimum of 110 research score as per appendix II, Table 2 of UGC Regulation 2018.
- 6) Academic Eligibility and other rules regulations as per UGC Regulation 18 July, 2018 and Govt. Resolution No Misc-2018/C.R.56/UNI-1 Date 08 March, 2019.

- b) Tenure:-** A College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment committee appointed by the University constituted as per the rules of UGC and Govt. of Maharashtra.

Salary and allowances:-

Pay scales as per the University Grant Commission (UGC), State Government and Swami Ramanand Teerth Marathwada University, Nanded.

Note:-

- 1) Prescribed application form is available on the university website (www.mu.ac.in).
- 2) No T.A./D.A. will be paid for attending the interview.
- 3) Eligible Candidate should submit their application through the proper channel.
- 4) Attested Xerox copies of S.S.C., certificate degree, marks sheet etc., should be attached to be application.
- 5) The original Certificates must be provided at the time of interview.

President/Secretary

Manav Shram Shakti Sansodhan v Vikas Pratishthan, Wasmat, District Hingoli

Email : savitribaiaphuleb@gmail.com • Secretary: anilgachhe@gmail.com

Mob. No. 8379830978 / 9168205918

Guidelines for Contributors

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

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

- **Books**

Miles, M., and Huberman, M., (1994). Qualitative Data Analysis. London: Sage.

- **Articles**

Over, R.(1982). Does research productivity decline with age?
Higher Education, 11, 511-20.

- **Chapter in a Book**

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

- **Article Retrieved from Website**

Mazumdar, T (Year, Month, Date Published). Article Title. Retrieved from URL.

Dr. S Rama Devi Pani

Editor

University News

Association of Indian Universities

AIU House, 16 Comrade Indrajit Gupta Marg

(Kotla Marg) New Delhi- 110 002



INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

invites applications for

Ph.D. PROGRAMME IN MANAGEMENT

The Programme seeks candidates with outstanding academic credentials, intellectual curiosity and discipline needed to make scholarly contribution to society. The programme is offered in the following Areas of high levels of specialization:



AGRICULTURE



ECONOMICS



FINANCE &
ACCOUNTING



HUMAN RESOURCE
MANAGEMENT



INFORMATION
SYSTEMS



INNOVATION &
MANAGEMENT IN
EDUCATION



MARKETING



ORGANIZATIONAL
BEHAVIOUR



PRODUCTION &
QUANTITATIVE
METHODS



PUBLIC
SYSTEMS



STRATEGY

FOR ELIGIBILITY AND OTHER DETAILS LOG ON TO >

www.iima.ac.in/phd

Last date of submitting online application

January 17, 2023