DHYANRANJAN KRIDA BAHUUDDESHIYA SANSTHA, PARSEONI
SAIBABA ART'S AND SCIENCE COLLEGE
PARSEONI DIST.NAGPUR- 441105 (M.S.)
(Affiliated to Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.)
Email: saibabaclg1014@gmail.com
College Code: (368) Ph.& Fax No. 07102 225500,9021752160,7507023909 (Estd.2013)

Ref: NAAC 2024/ MLD/Cr-3.3.1 Date-11/10/2024

Criteria 3.3.1	**Number of research papers published per teacher in the Journals notified on UGC care list during the last five years**
Findings of DVV	Please provide a direct link to the research paper, the journal's website, and the URL of the content page if it's a print journal.
Response/ Clarification	As per the clarification, cover page showing the title, authors name and ISSN number as published in UCG CARE list an data template is attached for verification are attached year wise **(Appendix I)** *Majority of the research papers are in UGC Care list and SCOPUS*

Saibaba Arts And Science College 368 Parseoni, Dist. Nagpur - 441105

Principal
Saibaba Arts And Science College
Parseoni, Dist. Nagpur - 441105

Appendix I

2019-20

NAAC Sponsored
One Day National Seminar
ON

REVISED NAAC FRAMEWORK: OPPORTUNITIES FOR EXCELLENCE IN HIGHER EDUCATION

Friday, 4th January, 2019

Seminar Proceedings

Organized by

Internal Quality Assurance Cell (IQAC)

Renuka Shikshan Prasarak Mandal's

RENUKA COLLEGE

Accredited 'B' by NAAC

Near Petrol Pump, Besa, Nagpur – 440037
Phone-07103-281455

Renuka College, Besa, Nagpur-440037

Website: www.renukacollege.org
Email: renukaiqac@gmail.com ,renukamv.ngp@gmail.com

NAAC Sponsored
One Day National Seminar
ON
REVISED NAAC FRAMEWORK: OPPORTUNITIES FOR EXCELLENCE IN HIGHER EDUCATION
Friday, 4th January, 2019

Concept of the Seminar:

In view of NAAC process being mandatory for all higher educational institutes, this Seminar is providing a platform to all those institutions in 1st, 2nd or 3rd cycle of NAAC to discuss and deliberate issues related to Revised NAAC Framework in the rapidly changing global scenario. Everything is constant in the world except change. It is quite true in each and every field and Higher education is no exception to this. Therefore, keeping this view in mind the NAAC always strives to abreast with changes in higher education keeping in view the global scenario. Likewise, the NAAC has recently brought drastic changes in the process of Assessment and Accreditation in order to make it more transparent and effective involving all the stakeholders for bringing excellence in Higher Education. Therefore, various changes have been made in the process of Assessment and Accreditation and the preparation of AQAR in order to make them complement each other. It also provides a platform to the higher educational institutions to make new policy and strategies as per the revised guidelines of the NAAC so as to compete and come up to the global expectations. With the help of the National Conference, the academicians will deliberate and discuss the new amendments in the process of NAAC so as to develop work culture to bring quality enhancement, sustenance and improvement for the overall benefits of the various stakeholders. It will penetrate the concept of excellence at the national level.

Sub- Themes

- Revised NAAC Procedures and Processes.
- Development of Quality Culture in Higher Education.
- Institutionalization of IQAC.
- Qualitative & Quantitative Metrics.
- Students Satisfactory Survey for Overall Institutional Performance.
- Use of ICT, LMS & E-Learning Resources for Creative & Innovative Teaching Learning Process.
- Innovation Ecosystem and Incubation.
- Extension, Best Practices and Institutional Distinctiveness.
- Academic and Administrative Audit.
- Preparation of Annual Quality Assurance Report (AQAR) of HEI according to revised guidelines
- Post Accreditation Initiative for quality assessment, sustenance and enhancement.
- Human Values & Professional Ethics.

NAAC Sponsored
One Day National Seminar
ON
REVISED NAAC FRAMEWORK: OPPORTUNITIES FOR EXCELLENCE IN HIGHER EDUCATION

Friday, 4th January, 2019

Seminar Proceedings

Editor
Asst. Prof. Abdul Shamim

SubEditors
Dr. Pravin Patil
Dr. Santosh Mendhekar
Dr. Atul Mahajan

Internal Quality Assurance Cell (IQAC)

Renuka Shikshan Prasarak Mandal's
RENUKA COLLEGE
Accredited 'B' by NAAC
Near Petrol Pump, Besa, Nagpur - 440037
Phone-07103-281455
Website: www.renukacollege.org
Email: renukaiqac@gmail.com ,renukamv.ngp@gmail.com
Email: renukaiqac@gmail.com ,renukamv.ngp@gmail.com

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नितिन गडकरी
NITIN GADKARI

सत्यमेव जयते

मंत्री
सड़क परिवहन, राजमार्ग एवं पोत परिवहन
जल संसाधन, नदी विकास, गंगा संरक्षण
भारत सरकार
Minister
Road Transport, Highways & Shipping,
Water Resources,
River Development, Ganga Rejuvenation,
Government of India

Do No. .....
Date :- 11 DEC 2018

I am pleased to know that the Internal Quality Assurance Cell of the Renuka College, Nagpur, MS has organised One Day National Seminar on Revised NAAC Framework : Opportunities fir Excellence in Higher Education. I extend my best wishes to the event and the souvenir being released to mark it.

The very purpose of holding the seminar is praiseworthy as dissemination of the information of various quality parameters of NAAC among the stakeholders for quality enhancement, sustenance and improvement of institution is necessary.

The guidance and enlightenment by experts is feast for the participants and can be helpful for giving insight to the various participants to be catalytic agent of change for excellence of the higher education in the country as it can be potential for the students to stand the test of the time and face challenges.

Again, I extend my best wishes to the event, the souvenir and wish success to the efforts of the organisers.

With Regards !

Yours,

(Nitin Gadkari)

Dr Jyoti Patil,
Principal,
Renuka College,
Near Bank of India,
Opposite Petrol Pump,
Besa, Nagpur, MS.

Room No. 501, Transport Bhawan, 1, Sansad Marg, New Delhi – 110 001, Tel: (011) 23710121, 23711252, 23719023 (F)
Room No. 210, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110 001, Tel: (011) 23711780, 23714200, 23710804 (F),
E-mail: nitin.gadkari@nic.in, minister-mowr@nic.in

Devendra Fadnavis
Chief Minister
Maharashtra

सत्यमेव जयते

Mantralaya
MuMbai 400 032

17th November 2018

MESSAGE

I am happy to know that Internal Assurance Cell of Renuka College is organizing National Seminar on 'Revised NAAC Framework: Opportunities for Excellence in Higher Education' at college auditorium.

It is praiseworthy that college has decided to complete all the papers presented at this conference in the peer Reviewed ISSN journal. It will be a collectors' issue for researchers and various stakeholders dealing with quality enhancement, sustenance and improvement of the institution. I hope that this seminar will provide a springboard to the upcoming experts and will catalytic agent of change for excellence in higher education.

I wish the seminar, all success.

(Devendra Fadnavis)

Tel. : 022-2202 5151/ 2202 5222 Fax : 022-2202 9214
E-mail : cm@maharashtra.gov.in, website : www. maharashtra.gov.in

महाराष्ट्र विधानसभा

Dr. Nitin Raut
B Sc, MA, FPM (IIMA), MFA, Phd, CPL
Ex-MOS Home
Ex-MOS State Excise. Labour & Jail
Ex-Minister, Animal Husbandry, Dairy Devlopment & Fisheries
Ex-Minister, EGS & Water Conservation,

Dt. 04/12/2018

MESSAGE

It is a matter of great pride for Vidarbha Region and Nagpur in particular that Internal **Quality AssuranceCell (IQAC)** of **Renuka College, Besa,** Nagpur is organizing a National Level Seminar on **Revised NAAC Framework: Opportunities for Excellence in Higher Education** being sponsored by National Assessment and Accreditation Council (NAAC), Bangalore for the principals, IQAC coordinators and other stakeholders from all over the country. I am immensely pleased to know that your college has been instrumental in bringing quality culture and awareness amongst the higher education institutions in this region as well as all over the country despite being located in a remote area. Bringing out the proceedings in the form of a peer-reviewed journal will surely add to the quality and impact of this academic endeavor.

I am convinced that under the able leadership of Dr. Jyoti Patil, Principal of the college, the seminar will be conducted in highly systematic manner and the proceedings will be highly fruitful and useful for the delegates coming from every corner of India.

Today holding such quality-related event is the need of the hour for all higher educational institutes. I wish the seminar to be successful and impactful.

Nitin Raut
(Dr. Nitin Raut)

24, Garden Lay-Out, Bezanbagh, Nagpur-440 004. Phone (0712) 2631111, Fax (0712) 2633322, E-mail : office@nitinraut.org

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद
विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL
An Autonomous Institution of the University Grants Commission

डॉ. जगन्नाथ पाटिल
सलाहकार
Dr. Jagannath Patil
Adviser

30/10/2018

MESSAGE

I am glad to know that **Renuka College, Nagpur, Maharashtra** is organizing a One Day National Seminar on the theme **"Revised NAAC Framework, Opportunities for Excellence in Higher Education"**, and that souvenir is being brought out on this occasion.

The topic of the Seminar is extremely relevant and very much the need of the hour. I hope it will provide an opportunity for discussions and knowledge dissemination on Revised Accreditation Framework (RAF).

NAAC's RAF is designed with aim of capacity building of HEIs with new tools of quality improvement such as benchmarks, ICT integration, student engagement, innovations and value systems.

I send warm greetings on the occasion and extend my best wishes to the Principal, organizers, faculty, staff and students of the college.

(Dr. Jagannath Patil)

पो. ओ. बाक्स नं. 1075, नागरभावी, बेंगलूरु – 560 072, भारत. P.O. Box No.1075, Nagarbhavi, Bengaluru - 560 072, INDIA
दूरभाष Phone : + 91-80-23005116 (D), 23210261, 62, 63, 64, 65, Fax : +91-80-23210270
ई-मेल : e-mail : jp.naacindia@gmail.com / naacjp72@gmail.com वैबसाइट Website : www.naac.gov.in

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*(Established by Government of Central Provinces Education Department by Notification No.513
dated the 1st of August, 1923 & presently a State University governed by Maharashtra Public Universities Act, 2016 (Mah. Act, No. VI of 2017)

Dr. Siddharthavinayaka P. Kane
Ph. D.
Vice-Chancellor

डॉ सिद्धार्थविनायक प. काणे
पीएच.डी.
कुलगुरू

Re-accredited by NAAC "A" Grade

Office : Chhatrapati Shivaji Maharaj Administrative Premises, Ravindranath Tagore Marg, Nagpur - 440 001.
Tel. : 0712-2523045, Fax : (0712) 2555701 / E-mail : vc@nagpuruniversity.nic.in

MESSAGE

I am delighted to know that Renuka College, Nagpur is organizing NAAC sponsored one day National Seminar on "Revised NAAC Framework: Opportunities for Excellence in Higher Education" on 4th January, 2019 and is bring out Peer Reviewed ISSN Journal containing research papers.

The main aim of this Seminar is to give the insight to the various stakeholders to be catalytic agent of change for excellence in higher education. I hope that the Seminar will disseminate information of various quality parameter of NAAC among the various stakeholders for quality enhancement, sustenance and improvement of the institution.

I extend my best wishes for successful organization of the National Seminar.

Nagpur/October 17, 2018

(S.P. Kane)

Dr. BABAN B. TAYWADE
M.Com., M.Phil., B.Ed., Ph.D.

DNC/SSG/My Doc./DNC Backup

Principal
DHANWATE NATIONAL COLLEGE,
Congress Nagar, Nagpur- 440012
Ph. 0712-2422759
Fax. 0712-2454193

Resi. : 13, Pawan Bhoomi, Wardha Road, Nagpur-440025, Ph. No. : 2291702, 3299288, Mobile : 9422145290

Dated : 23rd Oct.2018

MESSAGE

*I am pleased to know that **Renuka College, Nagpur** is organizing NAAC Sponsored One Day **National Seminar** on **"Revised NAAC Framework; Opportunities for Excellence in Higher Education "** on **Friday the 4th January 2019** and is bringing out a souvenir on the occasion, which I am sure, will go a long way in disseminating information for the benefit of the delegates.*

In the era of global competition there are new challenges before Higher Education in India and in the evolution of Indian Higher Education system, the role of Institution is of immense importance so far as the sustenance and enhancement of Quality of Higher Education to be practiced at Instituitional level which delebrates and provides necessary inputs to various institutions in Maharashtra.

*I hope that this **National Seminar** will serve as a forum for exchange of ideas, experiences, collection and dissemination of information on various subjects and bring coordination in curriculum of revised process of **NAAC Assessment and Accreditation** at National Level.*

*I congratulate the Principal, Renuka College, Nagpur for Organizing the **National Seminar** and I am sure that deliberations will be meaningful and would focus on various aspects of the revised process of **NAAC Assessment and Accreditation.***

I send my greetings and best wishes to all the participants and organizers and wish the event and publication good luck and grand success.

(Dr.B.B.Taywade)
Ex- Principal
Dhanwate National College, Nagpur &
Member, Senate,
R.T.M.Nagpur University, Nagpur.

Place :Nagpur

Mr. Himanshu Gedam
President
Renuka Shikshan Prasarak Mandal,Nagpur.

MESSAGE

On behalf of Renuka College I extend my warm greetings to the dignitaries distinguished Guests, Resource Persons and delegates of this National Seminar. I am immense pleased to know that the IQAC of Renuka College is organizing One Day NAAC Sponsored National Seminar on Revised NAAC Framework Opportunities for Excellence in Higher Education. The deliberation and discussion on the present topic is the need of the hour. It will help all the stakeholders to bring quality initiatives in their institutions.

I congratulate the IQAC team and all the faculty members for bringing out the Online Peer Reviewed ISSN Journal of the Seminar Proceedings. It will certainly prove fruitful for all stakeholders.

I give my best wishes for the success of this National Seminar.

From the Principal's Desk...

It is a matter of immense pleasure and pride that National Assessment and Accreditation Council (NAAC), Bangalore has entrusted us with such a coveted task of holding this IQAC National Seminar on an extremely burning issue of New NAAC guidelines for higher educational institutes. The topic of the Seminar "Revised NAAC Framework: Opportunities for Excellence in Higher Education" has been chosen in consultation with NAAC and considering the prime requirement of all educational institutions to inculcate and imbibe the quality culture to compete with the global educational scenario.

Renuka College has a rich tradition of holding many UGC sponsored national and local conferences, seminars and capacity-building workshops successfully and publishing as many as 10 books with ISBN to inculcate research culture amongst the teachers and students. Research papers on various sub-themes have also been invited to make it more relevant and result oriented. Selected papers after peer-review assessment will be published in an International online journal with ISSN and an impact factor of more than 4.2.

The Seminar will focus on the quality-culture in higher education through the quality parameters set by NAAC and its revised framework and guidelines. It will be a highly fruitful exercise for all the principals, IQAC coordinators, members and other stakeholders who are participating as delegates in this seminar. During the course of the seminar, a symposium on "Opportunities for Quality Enhancement in Higher Education" has also been organized to provide an interactive platform to all the participants to clear their doubts and share their experiences regarding quality sustenance and continuous enhancement. As Nelson Mandela has appropriately put it, "Education is the most powerful weapon which can be used to change the world and change is the end result of all high learning", I look forward to see this academic endeavour as a concrete step towards changing ourselves and understanding our responsibilities towards quality culture.

Dr. Jyoti Patil
Principal and Convener

From the IQAC's Desk

Throughout the world, the Higher Educational Institutions (HEIs) underscore quality. The University Grants Commission (UGC) in its 532nd meeting held on 24th May 2018 on Quality Mandate set the objectives to improve the quality in Higher Educational Institutions (HEIs). One of the principal objectives is that every institution needs to get accredited by 2022.The process of Assessment and Accreditation (AA) of HEIs lies on the shoulder of National Assessment and Accreditation Council (NAAC) and the watchword Quality is quite conspicuous in its vision and modus operandi. The NAAC has revised its process of Assessment and Accreditation since July 2017. It represents an explicit Paradigm Shift making it ICT enabled, objective, transparent, scalable and robust. But it has brought stress and strain on non–accredited institutions by virtue of their lack of knowledge regarding the revised process of Assessment and Accreditation (AA) by NAAC.

Thus the Internal Quality Assurance Cell (IQAC) of Renuka College, Besa, Nagpur has decided to dispel the misgivings and doubts of non-accredited institutions in and around Maharashtra by organizing IQAC National Seminar on Revised NAAC Framework Opportunities for Excellence in Higher Education which is the need of the hour in today's scenario. The Proposal has been sent to NAAC in August 2018 and the proposal has been approved by NAAC in its meeting on 28th September 2018.

The rationale behind organizing this IQAC, National Seminar is to disseminate information regarding the revised process of Assessment and Accreditation to all the stakeholders and academicians of Higher Educational Institutions (HEIs) at large. The research papers are invited on the apt themes synchronize on the title and the selected papers are published in the Peer Reviewed online ISSN Journal in Seminar Proceedings covering the topic ranging from Relevance of 'NAAC' in today's Scenario for Better Higher Education is dealt in detail, while in some Role of NAAC in Shaping Higher Education are highlighted. Some outline the Use of ICT, LMS & E-Learning Resources for Creative & Innovative Teaching Learning transaction; few emphasize Human Values and Professional Ethics in Higher Educational Institutions (HEIs). Some propose novel ideas in Library such as Green Library: An Overview others make critical analysis of revised AQAR, Academic and Administrative Audit.Some propound the theory of institutionalization of quality culture in higher education while some underline Students Satisfactory Survey, Students Support and Progression, Feedback of Stakeholders and Best Practices for involving various stakeholders and bringing transparency and deployment for the betterment of Higher Educational Institutions (HEIs).

The discussion and deliberation in this National Seminar on ***Revised NAAC Framework Opportunities for Excellence in Higher Education*** and the Symposium on ***Opportunities for Quality Enhancement in Higher Education*** is organized to make crystal clear the subtlety and intricacies in the process of (AA) in order to encourage the accreditation Institutions in general and the non-accreditation Institutions in particular to accelerate them for accreditation.

The financial support for the seminar has been provided by NAAC, Bangalore. We acknowledge them. We would also like to acknowledge Hon'ble Nitin Gadkari,Minister for Road Transport & Highways, Shipping and Water Resources, River Development & Ganga Rejuvenation , Hon'ble Devendra, Fadnavis,Chief Minister of Maharashtra, Dr.Jagannath Patil,Adviser,NAAC Coordinator, Western Region, Bangalore, Dr.Siddhartvinayak Kane ,VC, RTM, Nagpur University, Dr. Nitin Raut, Ex. Minister, Government of Maharashtra, Dr.Babanrao Taywade ,President Sachidanand Shikshan Sanstha & Former Principal Dhanwate National College for their inspirational words and wishes. We sincerely express our gratitude to Dr.Siddhartvinayak Kane ,VC,RTM,Nagpur University for accepting our invitation to be the Chief Guest and Dr.Devender Kawady , Deputy Adviser,NAAC-Bangalore for his consent to be a keynote speaker in this seminar.

I would like to extend my sincerest gratitude to our Management for their support, our Principal for her meticulous planning, the Resource Persons for showing expedition in giving their acceptance ,the Peer Review Team for their critiques and comments on the research papers to be incorporated in the online ISSN Journal , the organizing committee for their extensive cooperation and coordination and the faculty members for their constant efforts and endeavours and finally the delegates for their Research papers and active participation .

It is our steadfast belief that this National Seminar Proceedings will prove productive and beneficial to usher the concept of excellence at the national level.

Asst.Prof. Abdul Shamim
Coordinator-IQAC

CONTENTS

INVITED TALK –I

A CRITIQUE OF THE REVISED NAAC METHODOLOGY FOR ASSESSMENT AND ACCREDITATION OF HEIS

Dr. Prantik Banerjee
Vice Principal & IQAC Coordinator
Hislop College, Nagpur

The new NAAC methodology for institutional assessment and accreditation has come into effect from July, 2017. The document released states that "the main focus of the revision process has been to enhance the redeeming features of the accreditation process and make them more robust, objective, transparent and scalable as well as make it ICT enabled". The NAAC also wants to reduce duration of accreditation process of HEIs.

The revised process has been the outcome of the collective wisdom and experience of various experts as well as the feedback received by the NAAC from different stakeholders. The manuals have been revised separately for universities, autonomous colleges and affiliated/constituent colleges. Some of the salient features of the revised A& A process are:

- 70% online and 30% onsite evaluation
- 100% offsite evaluation, 4th cycle onwards
- Quality to quantitative evaluation
- Extensive use of ICT
- Reduction in
  - Number of probes in the SSR
  - Size of the SSR
  - Number of days for onsite visit by Peer Team
- Emphasis on students' participation and alumni engagement
- No disclosure of Peer Team members
- No logistics arrangement to be made by HEI

Indeed, the efforts of the NAAC are praiseworthy in going back to the drawing board and devising a new methodology for carrying out the A&A process of HEIs.

One positive change introduced by the revised methodology is the reduction in the number of questions in the Self-Study Report (SSR) that HEIs have to answer – from 198 in

the earlier format to 121. The questions reframed are crisp and precise, and thereby, duplication of information has been avoided in the new format.

Another welcome change has been to relieve HEIs from the trouble of making travel and stay arrangements for the peer team. By taking care of this logistics, the NAAC has allowed HEIs to concentrate their efforts solely on gearing their campus for the onsite visit of the assessor's team.

The NAAC has also made a few adjustments in the assessment rubric. For example, HEIs are allowed to opt out of 5% of the total metrics that may not be applicable to them. So some degree of flexibility has been brought in to make the system relevant and robust.

Already, the process of assessing HEIs under the revised methodology has started. Now that the system with its new methodology has been implemented and around 40-50 colleges have been graded, it is time to review its impact.

What follows is a critique of the new assessment methodology that may, in the fashion of NAAC, be put into five heads:

Process and Input Driven Methodology

It appears that the fundamental premise underlying the new methodology is that processes are more important than products/results. A comparison with the previous methodology shows several changes in metrics, key aspects and the various stages of the assessment process. It also shows that the revised methodology is predominantly geared toward measuring quantity over quality in the evaluation of the HEI. The revised manual states that it "places greater confidence in the latter (facts and figures) as reflective of internal institutional processes".

The revised scoring system for grading HEIs is thus input-oriented. What is lacking in the new metric system is the tool to effectively measure outcomes – outcomes of courses/ programmers, of organizational culture, and of public perception. It has been observed that quantitative data, even when impressive, need not necessarily show commensurate quality; the correlation between the two factors is not always direct and interdependent. One believes that the designing of the new methodology was necessitated by some of the flaws of the old one – subjectivity of the peer team being one of them. Moreover, there was a need to review and revamp the old evaluator system in keeping with the rapidly changing landscape of higher education. The primary reason for the revision as stated in the manual has been "to enhance the redeeming features of the accreditation process and make them more robust, objective, transparent and scalable as well as make it ICT enabled".

Undoubtedly, many of the changes made by the NAAC in the process are positive and useful. However, one problem area of the new process is the factor of scalability. In its attempt to measure processes and practices that define the ecosystem of an HEI, and reduce them to numbers and statistics, the new methodology brings with it a set of problems.

The much talked about game changer is the data validation and verification process: the HEI is required to submit data on quantitative metrics that is processed by a third party outsourced by the NAAC. It might seem that because of their operational characteristics HEIs provide ideal contexts, wherein data is collected and analysed to derive actionable knowledge affecting their core activities. But the fact remains that an education institution cannot be treated like a company or an industry whose quality certification is based predominantly on quantitative data. The DVV process, however, seems to treat HEIs precisely as production processes where inputs and stages need to be verified at every level. In HEIs, data is to be collected and stored, and formats typically integrated into different organizational units. However, in spite of such compliance the contrast between these rigid and usually siloed institutional units of data management and the need for a holistic approach to education can cause significant friction.

Educational institutions are complex organizational structures that require a combination of optimization of human resources together with technical and administrative solutions at different levels to create a vibrant innovative learning environment. But as a consequence of data requirements, HEIs labour with the task of collecting, compiling, and storing huge amount of data throughout the year. This obviously puts enormous pressure on teachers whose time and energy are as it is stretched in completing syllabus, writing and publishing research, heading committees, organizing conferences and workshops, etc. The need to handle and sort big data demands teachers to be experts in accounting and computing as well. This puts a premium on the quality of teaching, learning, and research, the core activities of the faculty in an institution.

The operating principle of what we know as TQM (Total Quality Management) says: "Measure your success!" Quantitative methods for quality assessment of any business product, software programme or organization use numbers. Measures are easy to take when there are countable objects e.g. number of persons, elements, features, or when there are standard devices for objectively measuring a given feature, e.g. time, cost. In those conditions when a number that represents a state according to a defined goal is needed, it is necessary to quantify that feature. However, there may be problems of imprecision and

incorrect interpretation of the accrued data. Even international quality assurance frameworks like the British Quality Assurance Agency or the European Association for Quality Assurance have been trying to negotiate the problem and design the right quality measuring tools.

Qualitative methods use tools different then numbers and figures to analyse and interpret data. The techniques include interviews, discussions, observations, comments, notes, questionnaires, and schemas. Usually the results are more subjective and more difficult to process, and thus require more work during analysis. But they give richer and more informative results.

It seems that the revised methodology shows a rather disproportionate faith in the efficacy of component tools of data analysis – indexing, cataloguing, categorization, codification, tabulation – to judge institutional performance. The name of the game is a number game! Number of curriculum enrichment courses, number of students enrolled, are more important than the value or relevance of the course. There is an over dependency on processes and participation rates over actual outcomes. For instance, HEIs will not be asked what difference does a particular add-on course make to the skill set of a student so long as the course is there and happening. This is a serious flaw in the methodology and the standard makers of the NAAC need to think over it.

Take the case of add-on courses that NAAC urges HEIs to introduce in student's curriculum. Measuring value requires assessing students' development or attainments at the entry-level of a programme/course, and assessing them at exit level. Value added is the difference achieved in terms of skills and competencies. Value added is the difference a college makes in their education.

In cases such as this, the estimation of an institution only on the basis of the number of programmes added in the last five years will be insufficient to present a true picture of its academic growth. After all, if a value added course does no more than hand over an extra certificate to the student along with his degree it clearly makes no significant contribution to his career or his employment prospects. Surely, such a course exists only in namesake.

What we need is a careful calibration of specific, measurable institutional data with less tangible but more experiential institutional culture. We need outcome measures that assess students' attainments across a variety of higher order thinking and life skills: critical thinking, writing, quantitative abilities, problem solving, understanding of their own culture and of the cultures of others, development of a sense of civic responsibility, and the like.

After all, as Dr. Sarvepalli Radhakrishnan has said, *"anubhavavasanameva vidya phalam"* (the fruit of learning is experience).

It is true that the NAAC has tried to make the process of revision open and participatory by inviting feedback from all stakeholder institutions across the country. The problem with the old methodological system was that there was no uniform evaluation – even though the parameters were uniform, results had been unpredictable because there was a different visiting team to each institution leading to much subjectivity and criticism. Also perhaps, the experts in the revision committee of the NAAC methodology, in their anxiety to redress the many allegations that were levelled by HEIs against the fairness and credibility of peer teams, have overcompensated by reducing their role and the importance of the onsite visit.

One may conclude that despite the many positive changes already effected by the system, there are a few areas that need correction.

Ratio of Qualitative to Quantitative

The new metric system devised is based on 70:30 ratio – 70 for quantitative, 30 for qualitative. Why 70:30 metric ratio? Why not 80:20 or 40:60 or 50:50? What is the rationale behind it?

The question of right combination of qualitative and quantitative metrics for assessing an HEI's excellence is always debatable. One would have expected a clearer statement in the NAAC manual as to the raison d'etre for concluding that the 70:30 ratio is the best. Was this ratio arrived at after administering the methodology to a few institutions as a pilot study? Were other models of quality assurance framework and reports of international audit agencies reviewed before determining the current ratio as the most suitable yardstick for quality measurement of an HEI?

Poor grades for HEIs under the revised methodology

Consider the results of reaccreditation of HEIs under the new mechanism that came into effect from August, 2017. A careful study of the reaccreditation results provided on the NAAC website reveals some disturbing trends.

Several colleges that were accredited by NAAC in the $2^{nd}/3^{rd}$ cycle under the previous methodology and graded A/A+ with CGPA above 3/3.5 have fared poorly under the new system, with a few losing even their 'A'grade.

This can mean one or more of the below mentioned things:

i) The old methodology was too liberal and therefore flawed

ii) The new methodology is also faulty and unreliable.

iii) There is room for course correction in the new methodology itself.

Lack of congruence between NAAC and NIRF rankings of universities and colleges

The NIRF uses a five-criterion mechanism as opposed to NAAC's seven, but shares a fair amount of common ground. A comparative study of NIRF ranking and NAAC grading of HEIs reveals considerable disparity in their positions. Some colleges (affiliate/autonomous) bagging pole positions in the NIRF list have been graded lower by NAAC than those colleges that do not even figure in the former list.

Another discrepancy that is noticed is the mismatch between colleges accorded the status of Centre of Potential for Excellence (CPE) by the University Grants Commission and the grade with CGPA given by the NAAC. There are several colleges that have CPE status but with poor NAAC scores.

Clearly, this trend demands critical attention because it points to a serious disconnect between the assessment systems of various external agencies in the country. While some degree of variability between scales of quality measurement is inevitable and admissible, it clearly cannot justify how a college with an NIRF ranking in the top five can be graded by NAAC with a score that places it somewhere between positions 25-30.

Issues with DVV and SSS

Some information inputs for Data Validation and Verification (DVV) is unnecessary and Student Satisfaction Survey (SSR) has functional problems.

For example, HEIs are required to scan and upload copies of disability certificates of students in the category of *divyangjan for the current year* during the pre-qualifier stage of DVV. Why is this necessary? What is important is whether an institution is sensitive to the needs of differently-abled students and has in place special facilities, irrespective of the number. Even if there is not a single such student enrolled, the HEI must have on its campus amenities that cater to the special needs of special students.

A second case in point. To ask HEIs to collect and upload domicile certificate of students from other states is to make the job tedious and cumbersome with no apparent useful outcome. This may be especially true for top colleges most sought after by students who migrate to the city of its location. Moreover, while student diversity may be a key quality

indicator of a few colleges in metro cities, factors such as type of institution, its location (rural/urban), does not allow every institution to meet this requirement.

Student Satisfaction Survey (SSS) is a key new component of accreditation. HEIs are supposed to upload data of all currently enrolled students with their email address for a questionnaire to be filled by them and sent back. In reality, there still are a large number students in rural colleges who have no email accounts.The analysis of the survey administered to a stratified random sample will generate a score out of 50 for the HEI. In this instance, despite the NAAC injunction there is enough scope for the institution to influence students to project it in a flattering manner. The charge against an institution of tutoring students during the onsite peer team and student interaction in the previous system is very much applicable in the revised method too. In addition, survey based outcomes can be highly unreliable when it is dependent on variables such as sample size, composition, location, literacy level, etc. Face to face interaction with the peer team could have been retained as part of onsite evaluation. A dynamic exchange with the members often brings out the best and honest responses from the students about their institution. It gives to the students, the most important stakeholders, a sense of ownership and participation in the exercise about quality education.

Whose SSR is it anyway?

The SSR of each college is supposed to be an institution's intellectual property and involves the authorship of the document. The process of writing, designing and formatting of the SSR involves innovation, creativity and a lot of labour. While the SSR of most institutions adheres to the prescribed format suggested by the NAAC manual, however, there is a lot of scope given for every institution to add value and uniqueness to the standardised format. After all, just as no two institutions are alike in character and performance, it is reasonable to suppose that the SSR of a particular institution should also be discrete and distinctive. The SSR of each institution must reflect not only the quality of its academic and administrative processes, but must also read as a quality document, original in style, design and organization of content. The originality brought into the SSR often includes the use of tables, charts, organograms, layout, in addition to matters of language and structure. A good SSR truly becomes the USP of the institution.

Unfortunately, a recent trend that is noticeable is that many colleges visit the website of high-grade institutions and simply copy the stylistic features that have made the SSR a readable document and a signature of the quality of the institution itself. In several instances,

even the language of the SSR of a high ranking institution is shamelessly lifted and reproduced, word for word, with mere changes in the factual information provided in the document. This nefarious habit has become rampant and has allowed several kinds of malpractices to come into:

- SSRs have become cut and paste documents for many institutions desirous of assessment and accreditation.
- It kills incentive and motivation to those few institutions who wish to produce the SSR as a quality document representative of their own quality campus practices.
- It has allowed the mushrooming of several private agencies who make false claims about their expertise in writing SSRs and charge institutions willing to pay a hefty sum as 'professional fee'!

The NAAC rightly makes the uploading of the document on the college website compulsory so that the information contained in it may be easily accessible and widely disseminated in the public domain to all stakeholders. However, in the light of the above mentioned malpractice of institutions and private agencies, I appeal to the NAAC to formulate a measure by which this serious flaw may be rectified.

Final Remarks

Undoubtedly, the quality of higher education in the country can only improve if the mandate of quality assessment agencies are positively and rigorously institutionalized and internalized by the HEIs. However, mere compliance with ticks in the boxes will not suffice. Institutions must align the recommendations of external auditors with continuous improvement in processes to deliver the best learning outcomes for the students. It is important that the benefits and results of assessment cycles are commensurate with the time, cost and resources that are involved in the processes. After all, nothing reflects the true grade and ranking of an institution more than the quality of the students leaving its portals. Finally, the best way forward for higher education in the country is to continually evolve more effective mechanisms of assessment and accreditation. The NAAC has been admirably shouldering the responsibility of ushering in a 'quality revolution' for nearly three decades. It is hoped that it continues to help HEIs in turning mandate into milestones.

References:

1. Manual for Affiliated/Constituent College (effective from July 2017) available on NAAC website www.naac.gov.in

INVITED TALK –II

PREPARATION FOR NAAC: STRENGTHENING WITH APPLICATIONS OF ICT

Dr. Veena A. Prakashe
Information Scientist/Professor
RTM Nagpur University, Nagpur

ABSTRACT: *National Assessment and Accreditation Council of India has revised its process of submission of Self Study Report that the higher education institutes are required to undertake as a part of Assessment and Accreditation (A & A) by NAAC. As the entire process has become ICT driven, this paper focuses categorically on those metrics under each Key Indicator of all the criteria that deals with ICT related infrastructure, activity, etc. Various suggestions are given to improve the ICT infrastructure, initiate new ICT based activities in accordance to NAAC A & A process. The colleges can strengthen their environment and also allocate the funds appropriately for the ICT related activities like - e-resources in the library, Internet bandwidth, number of computers available for teachers and students, enterprise resource planning (ERP) softwares, Digi Lab, comprehensive and up-to-date website of the institute, etc. The benefits of A & A to the institute, students and other stake holders are also discussed in the paper.*

Keywords: Benefits of NAAC, Higher Education Institutes, ICT in colleges, Key Indicators, Metrics, NAAC, Quality Framework, Quality of Education.

1. **INTRODUCTION:**India has one of the largest education systems not only in the Asia Pacific region but also in the world. Though there is not a single governing body for the diversified education unfolding in terms of various faculties, subject and disciplines however, there are certain agencies which act as regulatory authorities like University Grants Commission (UGC), All India Council of Technical Education (AICTE), Medical Council of India (MCI), National Council for Teacher Education (NCTE), etc. Increased autonomy and introduction of programs in new subjects or disciplines have resulted in improved access to higher education in the society. Nevertheless, while making efforts to improve the overall

Gross Enrollment Ratio, there has been a serious concern on the quality of education and its productivity in terms of making the students industry ready. To address these issues, the government has devised certain mechanisms for qualitative and quantitative assessment of higher education institutes. As a result, National Assessment and Accreditation Council (NAAC) was established in 1994 by UGC. The core values of NAAC which form the back bone for the entire accreditation framework are- (i)Contribution to national development (ii) Fostering global competencies among students, (iii) Inculcating value system in students, (iv)Promotion of ICT and (v)Quest for excellence.

To enable the students to contribute to national development, it is necessary for the higher education institutes to do the capacity building of students. Global competencies can be developed in the students by the way of providing them global platforms through establishing collaborations with industries and other institutes involved in innovation and research. It is essential that the students imbibe proper value system. As Information and Communication Technology (ICT) has grown by leaps and bounds in terms of its availability, affordability and ease of use, it is imperative for the higher education institutes to make use of various tools and technologies of ICT in their teaching, learning and research. The governance and the administration of these institutes should also adopt state-of-the-art educational technologies.

NAAC Assessment and Accreditation (A & A)provides a golden opportunity to the higher education institute to know there strengths, weaknesses, opportunities and challenges through a well-documented inspection process. It also helps the institutes in allocation of their funds effectively.

The use of ICT in higher education has gained importance recently owing to researches that have proved that it can lead to improved teaching and learning methods. Moreover, the students have a positive attitude towards ICT based education and curriculum. The continuous exposure of technology in the education empowers the students with better knowledge, presentation skills, research abilities and innovative capabilities. Perhaps, this is the main factor which is driving the popularity and acceptability of Massive Open Online Courses (MOOCs) worldwide. However, these trends in higher education have also called for capacity building of faculties in the use of ICT for enhancing their teaching skills and raising the quality of research.

2. OBJECTIVES

1) To find out the aspects of NAAC Quality Indicator Framework (QIF) where metrics that are related with ICT have been mentioned.

2) To give suggestions to improve the total outcome of the Higher Education Institutes with the use of ICT under each criteria of NAAC QIF.

3. LITERATURE REVIEW

Anthony[1] has done the impact analysis of NAAC on Higher Education Institutes. She observed that institutes have started copying the top-bracket institutions which will result in decrease in diversity. She has further opined that in a developing countries like India, which has a long way to go in increasing access to higher education, linking assessment with basic funding may not be appropriate. Sandeep Kumar[2] in his article "Quality Parameters for Teacher Education in India" has observed that the teaching education system needs to be overhauled making them more lucrative. The teachers are required to be thorough professionals, fully equipped with high academic standards, values etc. He further emphasized on quality indicators that need to be identified and implemented to maintain the quality of teaching education. The NAAC Manual[3] "Manual for Self-study Report Affiliated/Constituent Colleges" has brought about guidelines for A & A of Affiliated/Constituent Colleges in accordance to the revised norms which has been adopted from July 2017 across India. This manual extensively gives the data requirements for Self Study Report (SSR) along with description of essential metrics. Miglani & others[4] in their research paper titled "A Graph Theoretic Approach for Quantitative Evaluation of NAAC Accreditation Criteria for the Indian University" have focused on evaluation of assessment criteria using graph theoretic approach and fuzzy treatment of data collected from the students. Miglani & others[5] in their research paper titled "Interpretive Structural Modeling of NAAC Criteria" have evaluated NAAC criteria for university education quality using interpretive structural modeling techniques. This model helps to explain the inter relationships between the criteria. Singh[6] in his research article "NAAC Assessment for Higher Education: ABoon" has elaborated on need, role and significance of A & A and its benefits to the institution, students and other stake holders.Varghese & others[7] in their book titled "India Higher Education Report 2017: Teaching, Learning and Quality in Higher" have discussed various aspects of quality concerns in higher education in India. They have primarily emphasized on rankings, quality assurance, teaching and research in India.

4. DISCUSSIONS

On detailed analysis of the "Manual for Self-study Report Affiliated/Constituent Colleges" which has been brought out by NAAC along with giving new guidelines and norms of NAAC in June 2017, an attempt has been made to bring at one place all those metrics under each Key Indicator of all the seven criteria of A&A which are about or related with ICT activities in the higher education institute.

Criteria	Key Indicator	Sub Section	Metric/Questions	Weightage
Curricular Aspects	Feedback System	1.4.1.	Structured Feedback received from • Students • Teachers • Employers • Alumni • Parents for design and review of syllabus.	20
Teaching-Learning and Evaluation	Teaching Learning Process	2.3.2.	Percentage of Teachers using ICT for effective teaching and Learning Management Systems (LMS), e- learning resources, etc.	10
Teaching-Learning and Evaluation	Students Performance and Learning Outcome	2.6.1.	Programme outcomes, Program specific outcomes and course outcomes for all programme offered by the institution are stated and displayed on website and communicated to teachers and students.	10
Teaching-Learning and Evaluation	Student Satisfaction Survey		Database of All Currently enrolled students	50
Research, Innovations and Extension	Research Publication and Awards	3.3.1.	Code of ethics on Institutional website	01
Research, Innovations and Extension	Research Publication and Awards	3.3.3.	Number of Ph.D.'s awarded per teacher during last 5 years. "Research" page on Higher Education Institute website	04

			having details like name of Guide, title of Thesis, Year of Award, etc.	
Infrastructure and Learning Resources	Physical Facilities	4.1.1.	The Institution has adequate facilities for teaching, learning viz., classroom, laboratories, computing equipment, etc.	05
Infrastructure and Learning Resources	Physical Facilities	4.1.3.	Percentage of classrooms and seminar halls with ICT enabled facilities such as smart class, LMS, etc. • LCD in classrooms • Wi-Fi/LAN in classrooms • ICT in seminar Halls	10
Infrastructure and Learning Resources	Library as a Learning Resource	4.2.1.	Library Automation and LMS.	05
Infrastructure and Learning Resources	Library as a Learning Resource	4.2.3.	e-journals e-books e-shodhsindhu shodhganga membership Databases	03
Infrastructure and Learning Resources	Library as a Learning Resource	4.2.5.	Remote Access to e-Resources	01
Infrastructure and Learning Resources	Library as a Learning Resource	4.2.6.	Per day usage of Library by teachers and students including e-Access	04
Infrastructure and Learning Resources	IT Infrastructure	4.3.1	Institution frequently updates its IT facilities including Wi-fi	10
Infrastructure and Learning Resources	IT Infrastructure	4.3.2	Student- Computer ratio	10
Infrastructure and Learning Resources	IT Infrastructure	4.3.3	Available bandwidth of internet connection in the institution	9
Infrastructure	IT Infrastructure	4.3.4	Facilities for e-content	01

and Learning Resources			development such as media center, etc.	
Infrastructure and Learning Resources	Maintenance of Campus Infrastructure	4.4.2.	Established system for maintenance of Lab, Library, computers, classrooms, sports {Describe the policy on Higher Education Institute website}	01
Governance , Leadership and Management	Strategy Development and Deployment	6.2.1.	Strategic Plan and Development documents on the website	02
Governance , Leadership and Management	Strategy Development and Deployment	6.2.2.	Link to Organogram of Institution webpage	02
Governance , Leadership and Management	Strategy Development and Deployment	6.2.3.	Implementation of e-Governance in areas of operation • Planning and Development • Administration • Finance and Accounts • Student Admission and Support • Examination	04
Institutional Values and Best Practices	Institutional Values and Social Responsibilities	7.1.5.	Waste Management including e-Waste Management	1/3
Institutional Values and Best Practices	Institutional Values and Social Responsibilities	7.1.7.	Green Practice • Paperless Office	1/2
Institutional Values and Best Practices	Institutional Values and Social Responsibilities	7.1.9.	Divyangjan friendliness • Braille Software	1.5/10
Institutional Values and Best Practices	Institutional Values and Social Responsibilities	7.1.13.	Display of Core Values of Institution on its website	01
Institutional Values and Best Practices	Institutional Values and Social Responsibilities	7.1.15.	Provide link to courses on Human Values and Profession ethics on Higher Education Institute website	01

ICT related metrics

The onus lies on the Higher Education Institutes to transform their administration with effective use of ICT. The NAAC has laid down seven criteria for A & A of higher education institutes which are:

1. Curricular Aspects
2. Teaching-Learning and Evaluation
3. Research, Innovations and Extension
4. Infrastructure and Learning Resources
5. Student Support and Progression
6. Governance, Leadership and Management
7. Institutional Values and Best Practices

The quality indicator framework which includes above seven criteria has also identified different set of key indicators under each. The key indicators describe different sets of metrics. Let us have a look at each criterion and find out various areas wherein the higher education institutes can improve their performance with the use of ICT. Within "Curriculum Aspects", as the colleges do not have a significant direct role in design of curriculum, however, they are entrusted to implement the curriculum effectively. Various initiatives can be taken by the colleges for incorporating ICT as mentioned below:

i. Preparation of audio video and textual lectures by eminent teachers of the college.
ii. Submitting them to e- PG Pathshala , NDL, NPTEL, Vidya Mitra and other such platforms.
iii. Providing links on college website.
iv. Adoption of MOOC and SWAYAM courses.
v. Taking online feedback from stake holders regarding strengths and weaknesses of curriculum.

The second criteria of A & A, namely "Teaching, Learning and Evaluation" deals with the endeavors of teachers in their methods of teaching as also the learning environments provided to the students in the classrooms. It further includes the modernization of examination and Evaluation system which is mainly executed by the universities. The colleges do have some role here in terms of internal assessment and evaluation. Some suggestions are given below wherein applications of ICT will bring about efficiency in Teaching, Learning and Evaluation.

i. Use of smart boards, interactive boards.

ii. Use of Digital podiums.
iii. Establishing E- Classrooms.
iv. Use of Learning Management Software (LMS).
v. Use of Video Conferencing.
vi. Use of Virtual classroom.
vii. Online assessment for internal evaluation
viii. Online submission of internal marks
ix. Teachers co-operation in digital evaluation done by their universities

The third criteria, namely, "Research, Innovations and Extension" asks the Higher Education Institutes questions regarding policies, practices and outcomes related with research activities, initiatives and innovations and steps taken regarding community services through extension. ICT can play a major role during various stages of research. Therefore, Higher Education Institutes can undertake the following initiatives:

i. Establishing Network resource center
ii. Use of E- resources and Digital documents
iii. Publish the research articles in indexed journals or peer- reviewed journals
iv. Have collaborations with reputed institutes like IITs, IIMs, etc.
v. Becoming online and making their research visible and more cited one
vi. By having computer labs , Wi Fi and good internet connectivity on campus

ICT has brought about a roundabout change in the way the Higher Education Institutes look and their environments are perceived by the students. The following "Infrastructure and Learning Resources", which is also fourth criteria of NAAC A & A are expected in any Higher Education Institute:

i. ICT as a resource (MATlab, Tally lab, Language lab)
ii. NKN connectivity
iii. High speed internet
iv. Campus network
v. Wi Fi hotspots in classrooms, laboratories, canteen, library, hostel, auditorium, gymnasium, parking, etc.
vi. Use of Digi class and Digi labs
vii. Library as a learning resource
    a) E Books
    b) E Journals

c) E Databases

d) E Alerts

Smart Digi Class solution comes with Computer, Interactive whiteboard with speakers, Projector,Syllabus-specific course content, UPS and Server.

The DigiLab is a multi-use space allocated in a library and is open to all faculty and students when not reserved for a class. One checks the calendar for events and room availability. The Lab is open all hours of the Main Library and the computers are open to the entire academic community. The tools available in a DigiLab may include:

a) Graphic Design
   Adobe Creative Suite (Photoshop, Acrobat, etc.)
   SketchUp Pro
b) Text Mining
   Ant series (AntConc, VariAnt etc.)
   Mallet
c) Mapping
   ArcGIS
   QGIS
d) Text Editing
   jEdit
   Komodo Edit
   Notepad++
   Oxygen
e) Network Analysis
   Gephi
   NodeXL
f) Programming
   MATLAB
   Perl
   R

The fifth criterion is the most critical in terms of the scope and variety of information that is sought through various metrics. Use of appropriate utility softwares can come to the rescue of Higher Education Institutes in dealing with it. The softwares should include but not limited to, the following modules:

a) Students Admission
b) Attendance
c) Fee Structures
d) Time Table
e) Library
f) Academic Progress
g) Kiosk
h) Laboratory
i) Hostel
j) Events
k) Scholarship
l) Training & Placement

Emphasis should be given by the Higher Education Institutes for deployment of ICT to the following activities:

Student Support and Progression

a) Promotion of online scholarships
b) Use of biometric attendance in classrooms and hostels
c) Use of social media (Whatsapp, Facebook, twitter, instagram, etc.)for student mentoring
d) Use of computer generated SMS to keep parents informed about their ward's whereabouts and performance
e) Online Alumni
f) ICT based facilities for PwD (Persons with Disabilities)

The management and governance of Higher Education Institutes are also looked into rigorously by the NAAC through their A & A process to precisely measure the extent to which these colleges are leveraging the latest technologies to bring about efficiency and transparency in their functioning. Some suggestions are given below through which the colleges can increase the level of use of ICT.

i. Use of ERP (from admission to migration)
ii. Having an up-to-date college website
iii. Institutional email ids to the regular employees of the college
iv. Use of PFMS for resource mobilization

v. Uploading all the MoM (Minutes of Meeting) of the various committees, bodies and their action taken, on the website or in meeting management module of ERP
vi. Teachers profile system
vii. Participation in AISHE, MIS, NIRF, NAAC
viii. Use of Library Management System
ix. Use of Financial Management System
x. Provision for e payment gateways
xi. Biometric based attendance for employees
xii. Use of computerized Inventory and payroll systems
xiii. Automated Human Appraisal systems
xiv. Proactive disclosure of information on college website under RTI
xv. Online Alumni Management System

5. CONCLUSION

There has been a paradigm shift in the way the Higher Education Institutes are expected to render themselves for A & A by NAAC. The data capturing by NAAC has become ICT enabled while the submission of documentary proof and evidences have been made more precise and available in terms of scanned copies available on URLs. Therefore, it is observed that with the use of technology in education, it is easier to create easy-to-manage learning environment were the delivery of information is faster and easily available. ICT has emerged as a tool that cannot be ignored at all by the Higher Education Institutes. The growth of the colleges is directly related with the quantum of latest technologies used by these institutions. The students are the ultimate beneficiary. It becomes easier for them to choose a college and simultaneously, it also gives a signal to the institutions whether they should move forward or perish.

REFERENCES

1. Anthony, S. (2015). Institutional Accreditation. *INTERNATIONAL HIGHER EDUCATION*, 17-18.
2. Kumar, S. (2017, September). Quality Parameters for Teacher Education in India. *Paripex - Indian Journal of Research, 6*(9), 554-555.
3. Report on Manual for Self-study Report Affiliated/Constituent Colleges, accessible at http://www.naac.gov.in/resources/publications/manuals (accessed on 13/12/2018)

4. Nameesh Miglani, R. S. (2017). A Graph Theoretic Approach for Quantitative Evaluation of NAAC Accreditation Criteria for the Indian University. *International Journal of Industrial and Manufacturing Engineering, 11*(7), 1955-1960.
5. Nameesh Miglani, R. S. (2017). Interpretive Structural Modelling of NAAC Criteria. *International Journal of Engineering Technology Science and Research, 4*(6), 258-267.
6. Singh, S. K. (2017). NAAC ASSESSMENT FOR HIGHER EDUCATION: A BOON. *International Journal of Current Research, 9*(8), 56798-56800.
7. N.V. Varhese, A. P. (2018). India Higher Education Repport 2017:Teaching, Learning and Qualitity in Higher Education. In A. P. N.V. Varhese, *India Higher Education Repport 2017:Teaching, Learning and Qualitity in Higher Education.*

(SYMPOSIUM PAPER)
ROLE OF INTERNAL QUALITY ASSURANCE CELL IN PURSUIT OF EXCELLENCE IN HIGHER EDUCATION

Expert
Dr. Jyoti Patil
Principal, Renuka College, Besa, &
NAAC Assessor, Revised NAAC Framework
Bangalore, Karnataka

Develop a passion for learning. If you do, you will never cease to grow. As Nelson Mandela has put it, "Education is the most powerful weapon which can be used to change the world and change is the end result of all high learning." Knowledge is power and has been the significant criterion in the growth and development of the society. Learning and acquiring knowledge is a continuous process and this is possible with an active collaboration between people, educational institutions and industries. Technologies are growing rapidly and changing the way we live. Updating skills is the key to success today. There is need to keep enhancing the way education is imparted at Educational Institutions.National Assessment and Accreditation Council (NAAC) has been playing a pivotal role in the quality improvement of HEIs all over India since its inception in 1994.

Internal Quality Assurance Framework: An Overview

The very first thing to systematize the quality initiatives and sustenance measures envisaged by NAAC is the concept of Internal Quality Assurance System or framework and to make it compulsory for the HEIs undergoing NAAC's procedure for subsequent cycles. In the process of first accreditation and during preparation of Self Study Report (SSR) the HEIs undertake and introduce many new quality practices in their institutions. These initiatives should continue and simultaneously keep upgrading and improving such practices. For ensuring these parameters to work properly, NAAC has devised the concept of IQAS and IQAC to continue and enhance with the quality initiatives.

Criterion VI: Governance, Leadership and Management

Out of the seven criteria given in the Self Study Report (SSR), criterion VI: Governance, Leadership and Management carries 100 weightage points. There are 5 key indicators included under this criterion, they are 1. Institutional Vision and Leadership (10 weightage points), 2. Strategy Development and Deployment (10 weightage points), 3. Faculty Empowerment Strategies (30weightage points), 4. Financial Management and

Resource Mobilization (20 weightage points), 5. Internal Quality Assurance System (30 weightage points).

Internal Quality Assurance System (Key Indicator no. five)

The key indicator, Internal Quality Assurance System under Criterion VI: Governance, Leadership and Management, has 30 weightage points. This key indicator has 5 Metrics out of which, three are QlM (Qualitative Metrics) and the rest two are QnM (Quantitative Metrics). As this metric system has been incorporated in the revised NAAC framework with effect from July 2017, there are two areas of assessment, qualitative metrics and quantitative metrics. As far as quantitative metrics are concerned, it is assessed by System Generated Score (SGS) system and Data Validation and Verification (DVV) by the NAAC and 70% weightage is given to it. Qualitative metrics has 30% weightage which are examined by NAAC Peer Team (NPT) during Peer Team Visit (PTV).

The Qualitative Metrics

1. The first metric which is a QlM (6.5.1) **"Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes"** (Carries 8 weightage points). Here, the HEIs are asked to upload two examples best practices institutionalized as a result of IQAC initiatives.
2. The second metric which is a QlM (6.5.2) **"The Institution reviews its teaching-learning process, structures & methodologies of operations and learning outcomes at periodic intervals through IQAC set up as per norms"** (carries 8 weightage points)**.** Here the HEIs are asked to upload two examples of institutional reviews and implementation of teaching learning reforms facilitated by the IQAC.
3. The third metric is a QnM (6.5.3) **"Average number of quality initiatives by IQAC for promoting quality culture per year"** (carries 3 weightage points). Here the HEIs are asked to provide data in the following format for the last five years:
    - Name of quality initiative by IQAC
    - Duration (from-to)
    - Number of participants

4. The fourth metric is a QnM (6.5.4) **"Quality assurance of the institution include:** (carries 6 weightage points).

(1) Regular meeting of Internal Quality Assurance Cell (IQAC); timely submission of Annual Quality Assurance Report (IQAR) to NAAC; Feedback collected, analysed and used for improvements

(2) Academic Administrative Audit (AAA) and initiation of follow up action

(3) Participation in NRIF
(4) ISO certification
(5) NBA or any other quality audit

Options: (a) Any 4 of the above (b). Any 3 of the above(c) Any 2 of the above (d) Any 1 of the above (e) None of the above (opt any one).

Here the HEIs are required to provide data for last five years: **Quality initiatives:**

- AQARs prepared/submitted
- Academic Administrative Audit (AAA) and initiation of follow up action
- Participation in NIRF
- ISO Certification
- NBA or any other certification received

Documents required:

- Annual reports of institution
- AQARs of IQAC
- Upload accreditations and certifications

5. The fifth metric is a QlM (6.5.5) **"Incremental improvements made during the preceding five years (in case of first cycle), post accreditation quality initiatives (in case of subsequent cycles) (carries 5 weightage points).** Here is HEIs are required to upload description of quality enhancement initiatives in the academic and administrative domains successfully implemented during the last five years.

Quality Initiatives to be undertaken by IQAC

1. **Making Academic Calendar:** It is a mandatory requirement to publish academic calendar of the institution at the beginning of each session in consonance with the university's academic calendar. It includes academic plan, date wise academic activities and co-curricular activities. There may be Sports Annual Calendar, NSS Annual Calendar and department-wise annual plans.
2. **Annual Teaching Plan, Attendance Registers and Daily Diaries:**Each individual teacher can prepare annual subject plan to sketch out assignments, seminars, tests, course-portions, credits, project submissions, exams, result declarations, parents meet, departmental meetings, functions and competitions. Regular attendance record to be maintained offline/online and daily diaries to be maintained by teachers and students which are regularly checked by the authority through IQAC.

3. **Teaching techniques and Methods:** Use of teaching aids, methods used for teaching and learning are to be highlighted. New methods like brain-storming sessions, ice-breaking sessions, flip classrooms, role playing, visits, use of ICT, various online methods, podcasts, web-based resources, use of learning games and use of more innovative methods for teaching and learning.
4. **Evaluation system:** Regular exam system, unit tests, online tests and assignments, project assignments, practice exams, surprise tests can be employed to improve the evaluation system. The concept of re-exam, open-book exam, multiple choice tests and other innovative methods can be employed.
5. **Feedback system:** Feedback system includes regular feedback from students, parents, teachers, employers and all other stake-holders and feedback thus collected should be assessed and examined to initiate improvements through planned manner. Recommendations should be put before various committees through IQAC for overall development on the basis of feedback reports.Action taken on such reports are equally important.
6. **Monitoring Quality measures:**Through IQAC all academic as well as extra-curricular activities should be conducted through various committees and sub-committees. Their objectives and functions should be clearly marked for their transparent working in an attempt to monitor quality measures.
7. **Preparation of AQAR:**It should be a team work through regular meetings of IQAC to prepare AQAR and sending it regularly. Minutes of IQAC meetings should be maintained properly for quality planning and action taken initiatives should be used for future quality initiatives.

References:

1. Shirgurkar, V. R. and Shirish Chindhade, *Mentoring Colleges for Assessment and Accreditation.* Association of Indian College Principals, 2018. pp 164-192.
2. Institutional Accreditation. *NAAC Manual for Affiliated Colleges* (Effective from July 2017), NAAC, Bangaluru, 2017. pp 67-72.

USE OF ICT, LMS & E-LEARNING RESOURCES FOR CREATIVE & INNOVATIVE TEACHING LEARNING PROCESS

Dr. Ms. Kaneez Banoo Quraishi
(Asst. Prof.)H.O.D. English
Smt. Gopikabai Bhure, Mahila Mahavidyalaya,
TumsarDist. BhandaraMob : 8379909924
E-Mail : kaneezquraishi@gmail.com

Abstract: *The objectives of the present paper are to provide better understanding and appreciation of the use of ICT, LMS and E-Learning Resources for Creative and Innovative Learning and Teaching process in the current scenario. Learning is not a transfer of knowledge rather than a constructive process. All the above mentioned tools can play the role of catalyst for education reforms. They are learner centered, interdisciplinary adaptive to individual learning and as per the needs. The teacher who is a professional developer needs to incorporate the use of ICT, LMS and E-Learning which will prove to be a paradigm in their classroom teaching. ICT gives opportunities for learning because it enables learners to access, extend, transform and share ideas and information in multi-modal communication styles and format. Whereas E-Learning is delivered electronically via a web browser, through internet, multimedia platforms. LMS helps in the teaching-learning process by handling all aspects.*

Keywords:E-Learning, LMS, Pedagogical, Phenomenal, Staff-Proficiencies

Introduction: -During the past few years the world has witnessed a phenomenal growth in communication technology, computer network and information technology. It has the potential to transform the nature and process of the learning environment and envision a new Learning culture. Interactivity, flexibility and convenience have become the order of the day in the ICT supported environment. ICT opens up opportunities for learning because it enables learners to access, extend, transform and share ideas and information in multi-modal communication styles and format. It helps the learner to share learning resources and spaces, promote learner centered and critical thinking, creative thinking and problem solving skills.

ICTs stand for information and communication technologies and are defined, for the purpose of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information". A greater flexibility is provided through online access to learning – when, where and how to it. Today anyone can obtain education anywhere, anytime through online education. Thus breaking the shackles of traditional classroom and adapting to new and electronic learning Technologies

empowers all learners irrespective of their diversities. This development in ICT has resulted in a learning environment called e-learning.

Not only mastering ICT skills, but also utilizing ICT to improve teaching and learning is of utmost importance for teachers in performing their role of creators of pedagogical environments. While literature provides some evidence of the effectiveness of using ICT in technical considerations, little is known about which learning strategies and pedagogical framework should be used for education and training. To appreciate the integration of ICT in teaching and learning, we need to understand the major paradigm shifts in education in recent years.

Paradigm Shift

Education around the world is experiencing major paradigm shifts in educational practices of teaching and learning under the umbrella of ICT enabled learning environment. Whereas learning through facts, drill and practices, rules and procedures was more adaptive in earlier days, learning through projects and problems, inquiry and design, discovery and invention, creativity and diversity, action and reflection is perhaps more fitting for the present times. The major hallmark of this learning transition is from teacher centered to learner focus paradigm. During the last three decades, the changes in teaching – learning environment has taken a new turn i.e. from traditional model it has shifted to PC plus network. ICT provides powerful tools to support the shift from teacher centered to learner centered paradigm and new roles of teacher, learner, curricula and new media ICT has the potential to transform the nature of education : Where, how and the way learning takes place.

Creating New Cultures

Learners are expected to collect, select, analyze, organize, extend, transform and present knowledge using ICT in authentic and active learning paradigm. Teachers are expected to create a new flexible and open learning environment with interactive, experimental and multimedia based delivery system. It is important to understand the roles of ICT in promoting educational changes. A basic principle is that the use of ICT changes the distribution and ownership of information resources in the space of teaching and learning and thus changes the relationship among educational participants.

Pedagogical Practices Using ICT

Mere learning ICT skills is not sufficing, but using ICT to improve the teaching and learning is the key for pedagogy-technology integration. A young teacher who has just started

to use ICT needs to prepare lesson plans, drafting, editing & revising & finally publishing the lesson plans. The teachers also need to make lists of the name of the students for monitoring and recording their academic performance and to analyze and performance and to analyze and perform a statistical analysis etc. While delivering class lectures, teacher needs to draw diagrams, show pictures, play some video & even of power point presentation can be a good choice

Learning Management System (LMS)

After so many years of technology use in education, it is felt that educators today need a web-enabled relational database that links curriculum, instructional resources assessment strategies, student data, and staff proficiencies all on a single platform. This is possible by adopting a comprehensive and systematic integration of a multi-dimensional system called Learning Management System (LMS). LMS provide an infrastructure platform through which learning content is delivered and the learning and learners are managed. An LMS makes it easy to enter, track, manage, and report on learning activities and competencies. Tasks of the LMS are to manage learners taking whole courses, curriculum, to manage courses in various curriculums, present options depending on learner profiles, track learner needs and preferences, track course completions and scores.

Feature of LMS

LMS has specific features meant for instructor, course interaction, and student. The focus of an LMS is to deliver online courses or training to learners, while managing students and keeping track of their progress and performance across all types of training activities. An LMS is not used to create course content.

LMS Functionality

- Course Content Delivery
- Student Registration and Administration
- Skills and Competencies Management
- Assessing
- Reporting
- Training Record Management
- Resource Management
- Performance Management System

E- Learning – Concept and Characteristics

E-learning is essentially imparting education through computer and network enabled digital technologies which include among other things, internet, intranet, computer, satellite TV, CDROM, audio and video resources. The term e-learning was first used in the professional environment in the year 1999 at CBT Seminar at Los Angeles. Therefore, e-learning could be broadly defined as use of Information and Communication Technology (ICT) to enhance and support Learning. This could range from teachers and students using e-mail for communication to entirely online courses. E – Learning is currently changing the way schools and colleges teach and the students learn. The letter "e" in e – learning stands for the word "electronic", e – learning would incorporate all educational activities that are carried out by individuals or groups working online or offline via networked or standalone, computers and other electronic devices, E – learning is the use of technology to enable people to learn anytime and anywhere. E –learning could also be considered distance education in an evolved form, which has taken advantages of all the emerging technologies for enhancing learning experiences for every learner. In that sense e – learning could be considered as a new generation of distance education.

Characteristics of E – Learning

E – Learning Is Learner – Centric Learning

The Learner Centric e- learning model makes an array of resources available to the learner, who is free to choose when, where and how to learn.

E – Learning Is Flexible Learning

The Learner has historically been linked with distance education and flexible learning. In distance education, various technologies can be used to link learners, instructors and resources that are removed in time or space. The hall mark of flexible learning, as its name suggests, is its adaptability to learner's needs and circumstances.

E–Learning Is Social

E–Learning seeks to foster collaboration and peer's interaction. Various e – learning technologies facilitate various types of collaboration among learners and teachers.

E–Learning Involves Learning Objects

E–Learning uses reusable learning objects.

E–Learning Involves Effective Communication

The effectiveness of e-learning also depends on establishing two-way communication between teachers and learners, and among learners themselves. There are many standalone

tools as well as learner management system integrated tools to foster interactive and collaborative engagement.

The link between distance learning and telecommunications is becoming even stronger, yielding new solutions to old problems, innovative educational resources and new teaching / learning practices. One of the most innovative and promising outcomes of this relationship is e-learning and online education, notably a process whereby teachers and students are linked up in an electronic media/ computer network. The concept of e-learning and how it relates to effective use of ICT is critically important for teacher education, because it places the focus firmly where it should be jointly on pedagogy and the new ICT. The term e-earning, or learning via electronic media, nicely combines this twin concept; first, the changing focus of pedagogy to learning and, second, the new technologies stretching beyond the walls of the traditional classroom. In other words, e-learning for teacher development is learning about, with and through all electronic media (i.e. ICT) across the curriculum to support student learning. ICT is the means, and e-learning and the effective integration of pedagogy and ICT constitute the goal. There are a number of benefits to e-learning. These include any time learning, anywhere learning, asynchronous interaction and group collaboration.

References:

1. Mujumdar, S. Network based flexible Learning: *Prospects and Challenges in the 21st Century*: Invited keynote address, Helsinki, Finland, August 24-28, 1997.
2. Singh & Sharma: *E-Learning New Trends and Innovations*, New Delhi, Deep and Deep Publications Pvt. Ltd. 2005. English

ACADEMIC AND ADMINISTRATIVE AUDIT

Dr. DEEPALI KOTWAL
PRINCIPAL
L.A.D. & Smt. R.P. College for Women, Nagpur

Abstract: *An increasingly prevalent trend in the higher education scenario in India in recent years is the willingness and drive by institutions and universities to introduce systems and practices in their work environment and establish high standards and benchmarks to guide their performance in keeping with the institution's vision and mission. More and more colleges and universities in the country volunteer to subject their activities and performances to be critically reviewed and audited by national and international agencies. The contributions by national bodies such as the National Assessment and Accreditation Council (NAAC) in the educational sector, NABH in healthcare practices and NABL in laboratory practices have sensitized an increasing number of progressive establishments in the country to participate, learn and benefit from the expertise and readiness of these agencies to foster such participatory learning. By establishing Internal Quality Assurance Cells (IQAC) and conducting External Quality Assurance (EQA) checks it is possible to go for a Total Quality Management (TQM) in an Academic Institution. The monitoring and evaluation of the institutional processes require a carefully structured system of internal and external introspection. The current paper intends to highlight on the functions and implications of AAA in the present scenario of Indian academia.*

Keywords:AAA, AQAR, EQA, IQAC, LPG, NAAC, TQM

INTRODUCTION: Education holds the greatest key to development for any nation. It lays the foundation for a continuous and equitable growth for the country. Education in the global world seeks to preserve, transmit and advance knowledge, and is committed to bring the change for the betterment of society. In educational institutions effective record keeping benefits all – the students, teaching and non-teaching staff. Both teacher and students are responsible for audit whether it is Academic or Administrative. Teacher must possess perfection in teaching. Teaching will prove a futile exercise if it does not ensure learning. Teacher is considered to be the backbone of the society, a nation builder who plays an important role for the development of the nation. Today, the world needs more better and more committed teachers to meet the challenges of LPG (Liberalization, Privatization and Globalization). The curriculum and contents are to be revised. Teaching methods and process of teaching and learning are to be innovative.

New techniques and technology to support learning should develop habits of self-learning and reduce dependence on teachers. In this age of globalization and liberalization

new technologies are helpful for teachers and learners to ensure better learning which is normally not possible through any other means. It is advisable to blend learning approaches for quality teaching. Multimedia technology promotes communication and interaction that transcends traditional language based and culture based forms. New innovative web-based technologies, E-learning, Multimedia etc. are employed to promote efficiency and effectiveness of education. Focus should also be given on the transaction part of the curriculum; mere possession of qualifications or intelligence alone is not sufficient to quality teaching. If the teacher will not fulfill their responsibilities with devotion obviously the students' performance will suffer. Self-evaluation is must for better quality teacher education-with the main focus that of preparing professional and human Teachers. Research work should be an integral part of teaching. Innovative techniques reflect qualitative aspect of a teacher. Creativity is the habit of thinking new thoughts and working over them. Student's feedbacks are necessary for teachers. Every learner learns according to one's pace, one should not forget the individual differences. More emphasis should be given on Teaching-Learning Process. Different activities should be organized so that students may learn more. Collaboration efforts are must for assigning quality in education. Aims should be clear among the students that what they want to do in future.

Higher Education institutes play an important role in the progress of the nation and qualities of these institutions depends on its efficiency, coordination and effective implementation of its academic and administration plans. All Higher Educational Institutions in India are expected to go through this stringent quality assessment procedure by an external peer review and series of accreditation based on a set of predetermined academic and administrative audit criteria. In the present competitive educational environment, it is necessary to achieve remarkable academic standards. Accreditation and Reaccreditation have now become regular processes among Higher Education Institutions for showing continuous improvements. The NAAC expect all the Institutions to undertake continuous Academic and Administrative Audits by external peers, after every Assessment and Accreditation. As this is attributed as an important step to evaluate independently as to how well the improvement processes are taking place and what more needs to be done by the institution to uphold its quality standards.[1]

The NAAC of India has evolved certain benchmarks for ascertaining and ensuring quality at different levels of Higher Education and for its continued sustenance. During the last ten years, Universities in India have taken serious note of these emerging needs and

demands and trying to update the curriculum, design new Programs and offer better educational services while maintaining high quality.[2] Creation of internal quality assurance mechanisms that help to inculcate the gains made from such efforts in the day-to-day work ethics and organizational culture of the institution is an indispensable requirement in any quality assurance scheme.

For the pursuit of excellence, an institute be assured, inevitably to organize its quality of education. "Quality is never an accident; it is always the result of intelligent effort." The quality assurance is a process to determine and accomplish the standard of institutional service, which is done consistently and continuously to satisfy all stakeholders. Quality in higher education means the educational process is such that it ensures students achieve their goals and thereby satisfy the needs of the society and help in national development. NAAC has initiated involvement of stakeholders in the process of quality assurance. It has recognized student community as its major stakeholder. Students should be provided necessary knowledge about quality so that they feel a necessity to demand quality education. In future, the existence of higher education will not be merely depending on the government, but mainly be depending on the assessments by stakeholders (Students, Parents, Communities, Government, Lecturers, Supporting Staff and other interested parties) on the quality of its education.[3]

The quality of education varies from institution to institution. The criteria of institutional audit cover two broad areas which will form the focus of evaluation during the audit: Mission of the institution; links between planning, resource allocation and quality management; and teaching learning, research, consultancy and knowledge transfer and community engagement. The IQAC advocated by NAAC and mid-term quality appraisal drives belong to such recommendations. IQAC is supposed to reach the grass root levels of the Institution's academic and administrative systems, collate pertinent data and document institution-wide efforts at quality sustenance and improvement. It should also take up oversight responsibilities in quality issues soon after its preparation of self-study report and/or Annual Quality Assurance Reports (AQAR).

Definition of AAA

AAA is defined as a systematic process of designing, implementing, monitoring and reviewing the quality of academic systems. An institution needs to ensure the correctness of all accounts pertaining to the institution. Academic Audit is a mechanism to examine and enhance the quality of academic aspects and it emphasizes on reviewing the performance of

the academic inputs with respect to quality assurance. Academic standards set by particular institution are called as the benchmarks of that institution about the quality it provides. In academic institutions they are always defined by student achievements, the main aspects of it are the acquisition of knowledge.[4] The Administration Audit is a method of assessing the efficiency and effectiveness of the operating system of the administrative procedures, policies, decision-making authorities and functionaries, strategies, process, feedback, control mechanism and so on.[5]

Academic and Administration Audit is a model of self- reflection of the institution. It can be understood as the process of evaluating the progress undertaken by Higher Education Institutions to survive and compete with private and overseas Institutions. Academic management, Academic Practices, infrastructure facilities are key parameters of Academic Audit. It further, assesses the effectiveness and efficiency of all the administrative department of the institution, the administrative departments are responsible for all the proper implementation of policies, procedures, regulations and strategies framed by the Institutions. The vision and mission of the Institution need also to align with the seven criteria's that have been identified by NAAC for AAA.[6] at present, NAAC has sponsored a good number of seminars across the country on the theme of AAA. HEIs are advised to take benefit from deliberation of these seminars to update recent trends in AAA as tools for continuous quality improvement. However, it is important to note that in past few years the implementation of the internal quality assurance in India is not fully in practice when compared to the external quality assurance activities. Quality assurance in higher education comprises of internal and external quality assurance systems. Institution can perform and manages its quality assurance with both internally driven mechanism and externally mechanism organized by the NAAC, Bangalore, India. [7]

Rationale of the Audit

The purpose of the audit is not to complicate the procedure of maintaining the financial academic or administrative records but it is merely to simply it, not to criticize, but to assist the institution. Some of the institutions are not prepared to undertake this step mainly due to their reluctance to expose their weaknesses. The rationale of the Academic and Administrative Audit is to evaluate the performance of the educational institutions and appreciate their achievements and give suggestions for further improvement of the quality of teaching, research, administration, and curricular and extracurricular activities. The purpose of academic and administrative audit should not only be to evaluate the performance but also

to give suggestions for further improvement in teaching, research, administration and other academic and nonacademic activities. Effective academic audit tries to explore various institutional difficulties and determines various quality parameters for effective functioning. Hence Higher Educational Institutions should take the audit as a challenge and should not run away from it. Any administrative decision may prove contrary to the interest of the students if teachers are not involved in decision making, because teachers know well the needs of the students. It is needed to encourage strategic developments that enriches the curriculum, promotes high quality teaching learning environment and enhances students learning opportunities and skill education for employment, career development and lifelong learning opportunities whereby happy human index of the younger generation is boosted. The institution should also play an active role in inculcating the spirit of a healthy community and in providing its services and expertise to it to promote psycho-socio-economic integration and development.[8]

The institution should adopt a working definition of quality assurance which is compatible with its mission. A quality assurance handbook addressing all the affected activities should be made available to all the departments and staff. Staff be informed of management's recorded perception of their strengths and weaknesses. The AAA Committee must be invited by an Institution after preparing the Self-Study Report (SSR) to conduct a comprehensive review of the facilities and workings of the Institution after its assessment and accreditation by NAAC as a Mid-term quality assessment initiative with particular reference to changes in academic and administrative mechanisms the Institution has introduced during the post-accreditation period. Importance of academic audit is thus to increase the goodwill of institution, Students confidence, teachers' up gradation, helpful in ranking of institution, satisfaction of stakeholders, etc.

Objectives of AAA

1. To produce concrete developments in education quality.
2. To facilitate structural procedures and systems to ensure quality enhancement and realization of goals set in higher education.
3. To move in the direction of an accreditation and audit system that enables mentoring more than monitoring.
4. To review the implementation of Government schemes in all colleges of the State.
5. To arrive at a feasible supervised-AAA Score which can be unanimously utilized as a tool to identify the areas for special focus and improvement.

6. To evaluate the performance of the institution and to identify the issues that are to be attended to in order to improve the quality of Teaching and Research.

Benefits of AAA

The entire activities of self-evaluation, peer review, assessment and accreditation have to be seen as ingredients of a development-oriented process. It has to be viewed as a participatory process. The philosophy underlying the whole process is ameliorative and enabling rather than penalizing or judgmental, so the institutions are empowered to maximize their resources, opportunities and capabilities. The accreditation process helps the institution to know its strengths, weaknesses, and opportunities through an informed review; it identifies internal areas of planning and resource allocation; it enhances collegiality on the campus. Accreditation process initiates institution into innovative and modern methods of pedagogy. It gives the institution a new sense of direction and identity. It provides the society with reliable information on the quality of education offered by the institution. As a result of the accreditation process the employers have access to information on standards in recruitment. It also promotes intra-institutional and inter-institutional interactions.

Terms of Reference for the AAA Committee

1) The Academic and Administrative Audit is expected to provide an objective insight to the Institution on the level of holistic quality improvements that have been implemented during the post accreditation period on all aspects of the seven criteria of assessment adopted by NAAC.

2) The audit process will involve escorted tours to the physical facilities, interaction with heads of departments, faculty, administrative officials, students, their parents, alumni, employees and other stakeholders and review of documents pertaining to the information included in the Self-Study Report. The members may request for any additional documents/clarifications that may be required for successfully completing the audit process. The audit process will also include the assessment of the compliances based on the recommendations made by the Peer Team that conducted the earlier NAAC assessment and accreditation cycle.

3) After the three-day period of audit process, the exit meets in which Faculty-briefing coupled with Handing over of the signed final AAA Committee Report to the Management including provisional summary covering all the seven criteria adopted should be made. At the end of the audit the panel gives an oral feedback to the top

management. Deliberations and Decision of the Audit Panel should take note of all the findings of the AAA wherein all the members discuss their observations and decide on their conclusion, ensuring that it is a true reflection of the state of affairs at the institution.

Conclusion

Education, in fact is quality in itself. Education is the starting point of every successful human activity. Education makes a person right thinker and a correct decision maker. Educational institutions at various levels constitute the foundation of the technological, administrative, civic, legal and other domains of a country. Higher Education institutes play an important role in the progress of the nation and qualities of these institutions depends on its efficiency, coordination and effective implementation of its academic and administration plans. The quality of education is a big issue. Quality can be ensured through quality assessment that the potential for quality enhancement is determined by the manner in which the evaluation is conducted and subsequent change implemented.

No system in the world can be perfect. It needs continuous improvement. The academic, administrative, curricular and extra-curricular activities carried out by the faculty of the Institution needs to be assessed by internal committee as well as by external academicians and peers as their appreciations and valuable suggestions boost the confidence of the faculty. Academic audit is based on structured conversations among faculty, stakeholders and peer reviewers. The main aim is to improve quality processes in teaching and learning and thus enhance student success. So, Academic and Administrative Audit play vital role to bring quality in education and maintain it at global level.

The main intention of the present article may help the aspirants of quality assurance of respective institution. Audits at many institutions should grow significantly in the future, as they can spur improvement and accountability in flexible and in expensive ways. Academic and Administrative Audit gives a standard system based on parameters for Quality education. Quality enhancement is defined in terms of institutional policies, procedures and activities that are designed to promote the learning experience and learning outcomes of students and also contribute to the enrichment of the curriculum. The approach to enhancement will involve an institutional assessment of the strengths and weaknesses of current academic practice and the identification of potential areas for improvement. It may also reflect the particular mission and strategic priorities of institutions, where enhancement is seen in terms of a strategy for driving change and promoting student achievement and capabilities. Hence it

is concluded that there is a dire need to pay proper attention to institutional strategies and policies for global engagements, extending the experience and aspirations of students to participate in an increasingly global community.

However, since the past decade, Universities in India have taken serious note of these emerging needs and demands and trying to update the curriculum, design new Programs and offer better educational services while maintaining high quality. By establishing Internal Quality Assurance (IQAC/ AQAR/SSR/Self-Appraisal/Feedback etc.) and conducting External Quality Assurance checks (Peer Review/ AAA/ NAAC Peer team review) it's possible to go for a Total Quality Management (TQM) in an Academic Institution. All Higher Educational Institutions in India are expected to go through stringent quality assessment procedure by an external peer review, and series of accreditation based on a set of predetermined academic and administrative audit criteria. Accreditation and Re-accreditation have become regular processes for showing continuous improvements. The monitoring and evaluation of the institutional processes require a carefully structured system of internal and external introspection. The National Assessment and Accreditation Council (NAAC) expect the Institutions to undertake continuous Academic and Administrative Audits by external peers, after every Assessment and Accreditation.

REFERENCES

1. Dabhade Dilip Shaligram "NAAC, IQAC AND AAA – A SYSTEM FOR QUALITY ASSURANCE IN HIGHER EDUCATION" Laxmi Book Publication's International Research Journal Review of Literature, ISSN: 2347-2723 Impact Factor: 3.3754(UIF) Volume - 5 | Issue - 1 | august - 2017 website: www.lbp.world.
2. Ikhfan Haris (2013): Assessment on the implementation of internal quality assurance at Higher Education (An Indonesian Report): Journal of Educational and Instructional Studies in the world; November 2013, Vol. 3 Issue: 4 Article: 06, ISSN: 2146-7463. retrieved from- http://www.wjeis.org/FileUpload/ds217232/File/wjeis_4.1.pdf
3. National Assessment and Accreditation Council (NAAC) "National Assessment and Accreditation Council (NAAC)". Naac.gov.in. N. p. 2016. Web. 24 May 2016.
4. Nitonde Rohidas and Jadhav B.U. : Academic and Administrative Audit: A Parameter of Quality Education, The South Asian Academic Research Chronicle ISSN 2454-1109 A Refereed Inter-disciplinary Indexed International Open Access Monthly e-Journal Vol 2.Issue 9; August 2015 Special Issue (Proceedings of National

Conference), Shri Shivaji College,Parbhani, file:///C:/Users/Shree/Desktop/AAA/13.AcademicandAdministrativeAuditAParameterofQualityEducation.pdf

5. Rawal C.N. : Academic and Administrative Audit: Need of Time, B.M College of Commerce, SP Pune University, Pune (Maharashtra)India.
6. httpwww.rjsfgc.edu.inpdfISBN%20BOOK.pdf
7. Rangaswami S., Thangamuthu C., Bhaskar Rao, and Ramasamy P. April 2013, Report of the Academic and Administrative Audit Committee Sri Ramachandra University, Porur, Chennai. http://portal.sriramachandra.edu.in/documents/iqac.pdf.
8. Suresh, B.K. and Paramashivaiah, P., Academic and Administrative Audit: The Criteria Considered for HEIs (August 16, 2016). OIDA International Journal of Sustainable Development, Vol. 09, No. 08, pp. 17-20, 2016. Available at SSRN: https://ssrn.com/abstract=2876320 Ontario International Development Agency, Canada, ISSN 1923-6654 (print) ISSN 1923-6662 (online) www.oidaijsd.com,retrieved from http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html.
9. Sonawane Vilas : Academic and Administrative Audit: A Parameter for Quality in Higher Education, International Journal of Advanced Scientific Research and Management, Vol. 2 Issue 6, June 2017. www.ijasrm.com ISSN 2455-6378 66

HUMAN AS A CORE FACTOR IN THE CONTEXT OF WOMEN
THRUST AREA OF SEMINAR
HUMAN VALUES AND PROFESSIONAL ETHIC

Dr. Bhavesh Chandrakant Bhuptani
Asst. Prof. Dept.of Commerce
VMV Commerce, JMT Arts & JJP Science College,
Wardhaman Nagar, Nagpur

Abstract: *The thrust for the living of quality life is increasing throughout the world within the people (human beings) of the world day by day. This can be evident from the researches made on human behaviour; in this process the theory of motivation discovered by Prof. Abraham Maslow is a land mark to understand the overall human behaviour.*

The objects of the study are to know the style of assessment and accreditation awarded by the NAAC, to know the main object and subject of the style and centre of the assessment and accreditation to compare the objects of UGC vis a vis with the NAAC in accreditation and assessment.

It is seen that the centre figures of all the inventions and researches are the human beings. Hence, this core factor remains today also in every field of development anywhere in the world, and the UGC's NAAC is also not untouched with this aspect.The data of women enrolment is considerably getting towards upward trends as compared to total enrolment of men and women as discussed here in.

Introduction: The basic natural needs of human beings are **Light**, **Water** and **Air** above allthe other needs of the human beings. We all know that the human needs are infinite like the universe, which is so infinite. The earth is also part of it; there was also an edge of ice on this earth when all the frozen state was there on the earth. Then after many of the edges the earth evident, the beings in which many animals and other beings were produced by this earth. Out of many beings one of them was the Ape (Kind of Monkey) and these ape were become the first progenitor. Thus the apes were the origin of the human beings.

Now, in this universe only the earth is having human civilization. In addition, it is seen that the evolution of human beings and their civilization leads to the overall development of the world which is evident from the 'Edge of Stone' to today's 'World of Information Technology'. The entire human activities have certain reasons to perform the same. Moreover, it is very clear that the human beings doing all the activities to fulfil their basic want. They are searching the way to secure & satisfy their wants consistently and regularly. After fulfilling their wants, they are going for the further development of their lives

for comforts and luxurious way to live & enjoy their lives. All these activities are known as 'businesses. Hence, it can be construed that business is concerned with human beings on this planet and not to other beings.

Business has its wider sense; here business not only means to earn profit but to secure the life. As the development and evolution of the human beings was continued they started more to concentrate over the business and other activities to earn more to secure their life. The human beings are thus motivated to live the peaceful and quality life. According to Prof. Maslow's theory of motivation, the human beings in their lives are motivated all the time throughout their lives. The priorities may differ from time to time and accordingly their behaviour and activities are affected.

Needs:

The needs of the human beings are changing apart from the basic natural needs mentioned earlier in very first paragraph of this paper. The basic needs are not changeable because these needs are natural but the human made needs are changing. Popularly, the human needs termed as Food, Clothing and Shelter whereas the food is basic natural need. Today, apart from other needs like clothing and shelter a need rapidly growing within the human beings and that is to live The Quality Life. The thrust for the living of quality life is increasing throughout the world within the people (human beings) of the world day by day. Hence, every policy maker within the world are now keeping the human being as centralized issue to think for them. The marketing people, the business and commerce, the governments are keeping the human beings as central figure for achieving the quality life as the thrust of the people. The human beings are categorized further in to two categories as Male (Men) and Female (Women).

This can be evident from the researches made on human behavior, in this process the theory of motivation discovered by Prof. Abraham Maslow is a land mark to understand the overall human behavior and this is the base of the theme.

"NAAC SPONSORED IQAC NATIONAL SEMINAR 2019 ON REVISED NAAC FRAMEWORK: OPPORTUNITIES FOR EXCELLENCE IN HIGHER EDUCATION

The theme is framed here in the context of the Sub Theme

Human Values and Professional ethic- vis a vis in the context of women:

As discussed here in above that the human beings are highly motivated for improving lives of them by doing researches and inventions. They are always in search of the mode

where they can live their lives comfortably, luxuriously or in other words the hazel free. In this process they have to manage their lives systematically the professionalism inserted automatically which is the source of the things being done in an efficient manner for the achievements of their goals. The professionalism is a serious attempt since it is directly related with the human; therefore, the ethics are required to accomplish the goals without humiliating the world because all these things are done by the human and for the human.

Now a day, the world is shrink due to introduction of information technology and the human worldwide being waken that their real progress only can be achieved when they develop themselves without harming themselves and the earth. That is why they are now keen to preserve the values and accordingly they are utilizing the resources with optimum use and in least harming style, so that they can pass over the healthy legacy to the next generation and that is why the development of professional ethic took place throughout the world. The development of professional ethics is the need of today for the better tomorrow.

It is evident that in present scenario the women are proving themselves as the genuine competitor to the men and many male dominating fields are now predominated by women right from the lower economic section to the highest one. The women are driving the man driven vehicles (*HathGadi*) to auto driven vehicles from E-Rickshaw to Aero-plane as well as the women are the CEO of top leading corporate sectors worldwide. They proved themselves with their quality and efficiency of proficiency by maintaining the ethics in much preservative manner than the men. It is also seen that the bribe offering and taking ratio in the women are very less than the male category. Therefore, the professional ethics are more preserved within the women today.

Then, the NAAC cannot leave this fact untouched and the figures discussed below are the base to discuss this subject here in this paper.

About the National Assessment and Accreditation Council (NAAC):

This is an Autonomous Institution of the University Grant Commission (UGC) set mainly to assess the Colleges and Universities with predetermined criteria set in this regard and awards the accreditation on the basis of the assessment in the context of the fulfilment of the affirmations made by the Colleges and Universities. In short it is a fact finding autonomous agency set by the UGC.

The Genesis about UGC (University Grant Commission)

(As mentioned on the site of UGChttps://www.ugc.ac.in/page/Genesis.aspx)

From ancient Bharat to modern India, higher education has always occupied a place of prominence in Indian history. In ancient times, Nalanda, Taxsila and Vikramsila universities were renowned seats of higher learning, attracting students not only from all over the country but from far off countries like Korea, China, Burma (now Myanmar), Ceylon (now Sri Lanka), Tibet and Nepal. Today, India manages one of the largest higher education systems in the world.

The UGC, however, was formally established only in November 1956 as a statutory body of the Government of India through an Act of Parliament for the coordination, determination and maintenance of standards of university education in India as well. (https://www.ugc.ac.in/page/Genesis.aspx)

Objectives of this study:

Any study carried by any one that should be carried with a certain base or bases. Without base no study has meaningful sense. All these base or bases has certain objectives for which the study has to be carried out. So it can be summarized that every study has certain objectives accordingly this study also focused on the following objectives.

- To know the style of assessment and accreditation awarded by the NAAC (National Assessment and Accreditation Council)
- To know the main object and subject of the style and centre of the assessment and accreditation
- To compare the objects of UGC vis a vis with the NAAC in accreditation and assessment.

It is clear from the sub themes mentioned here as the topic of the seminar which is also the area of working of NAAC for the accreditation and assessment, and this study categorizes in to two aspects one is the procedural aspect and the other one is human aspect The sub themes can be enumerated as per following

PROCEDURAL ASPECET	HUMAN ASPECT
Revised NAAC Procedures and Processes. Institutionalization of IQAC Academic and Administrative Audit. Preparation of Annual Quality Assurance Report (AQAR) of HEI according to revised guidelines.	Development of Quality Culture in Higher Education Qualitative & Quantitative Metrics. Students Satisfactory Survey for Overall Institutional Performance. Use of ICT, LMS & E-Learning Resources for Creative & Innovative Teaching Learning Process. Extension, Best Practices and Institutional Distinctiveness.

The Reason:

It seems right from the originating this modern world whether it may be an edge of stone or frozen ice state, whatever the edge of this world the manmade researches were carried for the betterment of the human beings. It is seen that the center figures of all the inventions and researches are the human beings. Hence, this core factor remains today also in every field of development anywhere in the world, and the UGC's NAAC is also not untouched with this aspect. It is clear from the above mentioned categorizing table.

As discussed above the main object of setting up of the UGC is not as regulating institution of the Universities within India but to search the need of the education for the development of human society. For this it was searched that the India is doing its growth in almost every sector of this competitive world but the growth in higher education was not satisfactory. On the basis of this fact, the UGC emphasize on the development of higher education within women. It was seen that the ratio of higher education in women is very low. The higher education then picked acceleration somewhat since the year 2011-12, the ratio of higher education in women is a trend changer year, since than the ration of higher education in the women is increasing positively. Though, the ratio of higher education in women is greater in western developed country as compared to India. India is a developing country which is eager to fetch the standard set by the developed world on this earth.

	Women Enrollment As % Of All Students
1955-56	14.6
1975-76	24.5
1995-96	34.1
2015-16	45.91

Source: *Journal of Education and Practice www.iiste.org ISSN 2222-1735 (Paper) ISSN 2222-288X (Online) Vol.7, No.34, 2016*

Area of Assessment:

The NAAC may emphasize its focus on the basis of data mentioned above regarding the women's enrolment as percentage to all the students within India. The percentage of women enrolment is now almost thrice then compared to percentage in the year of newly set up of UGC right from 1955-56 to 2015-16. The women enrolment percentage in the year 1955-56, it was 14.60% as compared to all students is now almost thrice at 45.91% in the year 2015-16. This drastic change may attract the attention of NAAC towards this fact that the efforts taken by UGC towards higher education trait in women within India have a positive impact.

Therefore, the emphasis may be on the issues where the involvement of human factors are there and especially in the case of women. The institute may carry the activities which induce the women to enroll more on not only at UG level but at PG level too. For example, where the institutes not having the vehicle facility to carry the students from remote areas, such institutes may arrange at least some facilities to provide bus pass or rail pass reimbursement especially to women students who are economically challenged and residing in rural areas for the purpose of education to attend the educational institution. Likewise, the fiscal aids towards admission fees, examination fees to be provided. Some arrangements may have to provide by the educational institution where such female students may earn some money by applying their academic skill while learning within the institute which may grow the self-respect trait within the women.

Conclusion:

It seems from the above discussion that, since 2011-12 the UGC & NAAC are much serious about the involvement of women in the higher education and the data are the evidence of such positive efforts. So, this factor of human is core there in NAAC. The Government of India is also emphasizing on the women participation in the higher education. The data of women enrolment is considerably getting towards upward trends as compared to total enrolment of men and women as discussed here in above. That is why the human are considered as a core factor especially in the context of women.

Sources:

1. Journal of Education and Practice www.iiste.org ISSN 2222-1735 (Paper) ISSN 2222-288X (Online) Vol.7, No.34, 2016
2. https://www.amazon.in/Theory-Human-Motivation-Psychology-Classics/dp/1482011239/ref=sr_1_1?s=books&ie=UTF8&qid=1542013756&sr=1-1&keywords=hierarchy+needs+on+motivation+abraham+maslow
3. https://www.ugc.ac.in/page/Genesis.aspx)
4. http://www.naac.gov.in/

OPPORTUNITIES FOR LIBRARIES IN HIGHER EDUCATION SETUP BY WAY OF NAAC REVISED FRAMEWORK

Dr.Manju N.Dubey
Librarian
R.S.M Dharampeth College,Nagpur
libraryrsmdacc@gmail.com

Abstract: -*This article highlights the key features revised NAAC framework opportunities for libraries in new generation in higher education. Amongst the 7 criteria data form of NAAC criteria 4.2 is related to learning resources center which is important for library and librarian also hence researcher wants to highlight on this qualitative process and also attempt to suggest opportunities for learning resource center to showcase their unending importance in higher educational institution framework by way of their contribution in the criteria 4 as well as holistic contribution in different ways in all the seven criteria's.*

Keywords: - **HEI,ICT, Key Indicators, NAAC, NAAC Criteria**

Introduction: -The Quality status of an educational institution needs assessment and accreditation body with systematic, objective and complete approach for quality assessment and improvisation and also providing opportunity for the institution to measure its effectiveness and efficiency, identify its strengths and weaknesses and take necessary steps for improvement. National assessment and accreditation council (NAAC) is apex organization responsible for the grading of educational institutes. The mandate of NAAC as reflected in its vision statement is in making quality assurance (QA) an integral part of the functioning of higher education institutions including library. Quality improvement is the main focus of NAAC in every aspect of higher educational institutions. NAAC is an autonomous accrediting agency established by UGC and it is a member of the International Network for Quality Assurance Agencies in Higher Education comprising of over 120 different national agencies engaged in Assessment, Accreditation and Academic Audit.

NAAC has been regularly updating and revising its assessment process to fine tune its grading pattern and assessment process in terms of the local, regional and global scenario as well as standardization of the practices which ultimately will lead to quality sustenance in the educational field. The revised process is being adopted on July 2017. NAAC infused spirit into its process of assessment and accreditation by associating its criteria wise pattern of assessment with key factors of transparency, pin pointedness, scalability, Student centric and pro-technology oriented. The onus of this technological advancement lies on the ICT enabled

system adoption in the educational institutes and the major share of this will be through the work and services offered by the Libraries.

The Digital age has brought metamorphic change in the libraries and it is reflected through the growing importance of libraries in quality assessment process of any educational institute. In this ICT age there is a great role of library services to users through information technology. Various ICT enabled facilities like internet, computer, mobile technology, Wi-Fi technology, Li-Fi technology etc. are easing out the various barrier of time, space and other physicality in establish the near to perfect rapport between the trio- Librarians, Learning Resources and Library Users. Thus information technology tools brought tremendous changes in all the fields in academic library services in enhancing academic library services effectively for users.

Although the transformation of libraries into the Gen X libraries all depends on the adoption and use technological advancements in library services. Libraries have tremendously transformed themselves to merge continuous evolving technology environment in their work and practices.

Revised Accreditation Framework:

NAAC has launched Revised Accreditation Framework since July, 2017 and hence AQAR format also modified, in cognizance with the new methodology. The tools and parameters are designed in the new AQAR format are in such a way that the preparation of AQAR would facilitate the HEI's for upcoming cycles of Accreditation. Data collected/prepared infuses quality enhancement measures undertaken during the years. Further, it also adds quality enhancement and quality sustenance measures undertaken in teaching, learning, research, extension and support activities of the Institution. It is expected that the new AQAR would facilitate Educational Institutions for creating a good database at Institutional level for enhancing the quality culture. The renaming of library as learning resource center is a part and parcel of the increasing role of ICT in libraries and the transformation of libraries from brick and mortar format to the digital datasets and virtual hub.

As per the Revised Accreditation Framework (RAF), the NAAC Accredited institutions need to submit the AQAR online. Similarly, the marking pattern has become more objective by ICT integration in Assessment and Accreditation process.

New Revised format of AQAR:

The new revised format has become more pinpointed and quantitive. Criteria IV of AQAR section 4.2 covers information detailing about the library. ICT has been given importance in it and 20 marks has been allotted for section 4.2.

Format for Library in AQAR

[Version 5 dated 12-01-2018 (23/05/2018)]

(Revised as per Revised Accreditation Framework in November, 2017)

4.2 Library as a Learning Resource (20 Marks)

4.2.1 Library is automated (Integrated Library Management System-ILMS)

Name of the ILMS software	Nature of automation (fully or partially)	Version	Year of automation

4.2.1 Library Services:

	Existing		Newly added		Total	
	No.	Value	No.	Value	No.	Value
Text Books						
Reference Books						
e-Books						
Journals						
e-Journals						
Digital Database						
CD & Video						
Library automation						
Weeding (Hard & Soft)						
Others (specify)						

It can be found that in the overall criteria wise AQAR marking format learning resource center holds only 20 marks under the criteria 4.But then the question arises if section 4.2 holds the complete mandate about the importance of libraries or it goes beyond. Libraries has undergone many changes and many adaptations as well and is relentlessly growing Organism as per Dr.Ranganathan fifth law.

There lies opportunities for the LIS professionals to make their mark by their genuine presence and contributing role in all the seven criteria by their resourcefulness and Omni essential role and contribution due to their practical exposure to the new ICT developments in their working pattern and learning resources.

Criteria wise role framework of Learning Resource Centre

Learning Resource Centre holds its presence in Criteria 4 -Infrastructure and Learning Resources in section 4.2. Its weightage is 20 points. Metric No, Library Information and

weightage point are the three representative columns under it. Metric 4.1.2 Q_1M is focused on application of library software and details about 5 year's description about various learning resources. The Metric 4.2.2 Q_1M is related to collection of rare books, manuscripts, special reports and any other knowledge resource for library enrichment. NAAC encourages availability of rare collection in the libraries. The Metric 4.2.2 Q_nM is related to e-journals, e-shodhSindhu, Shodhganga membership, e-books and databases. As per as NAAC view it is mandatory for Arts and Commerce Colleges to have subscription of Inflibnet-National Library Infrastructure for Scholarly Content. There is 6000+ hundreds journals and 31, 35000 e-books. It is mandatory to purchase N-List programme for users as per NAAC guidelines. Through this programme e-journals and e-books also available for users for free of cost. Average Annual expenditure of last five years has been discussed in the Metric 4.2.4 Q_nM. This criterion is to keep a check on qualitative and quantitative increase in the library collection every year. The Metric 4.2.5 Q_nM is related to availability of remote access to e-resources of the library. It is a good point for who already purchased N-List programme because all usershave their user id and password. This service is very good for users. They can use from any place. The Metric 4.2.6 Q_nM is related to percentage per day usage of library by teachers and students. Its again good criteria. They want find out best possible process or strategy for those students and teacher who are regular visitors to the library.

Thus Library as a Learning Resource criteriawise holds weightage of only 20 points which reflects very meagre contribution of libraries and Learning Resource centers. A brief look at the gross marking pattern is as follows:

NAAC Weightages, Criteria, Key Aspects and Grade Points

Criteria	**Title**	**Total Marks**
I-Curricular **Aspects**	1.1 ***(U)**Curriculum Design and Development 1.1. ***(A)** Curricular Planning and Implementation 1.2 Academic Flexibility 1.3 Curriculum Enrichment 1.4 Feedback System	100
II- **Teaching- Learning and Evaluation**	2.1 Student Enrolment and Profile 2.2 Catering to Student Diversity 2.3 Teaching-Learning Process 2.4 Teacher Profile and Quality 2.5 Evaluation Process and	350

	Reforms 2.6 Student Performance and Learning Outcomes 2.7 Student satisfaction Survey	
III- **Research, Innovations and Extension**	3.1 Promotion of Research and Facilities 3.2 Resource Mobilization for Research 3.3 Innovation Ecosystem 3.4 Research Publications and Awards 3.5 Consultancy 3.6 Extension Activities Collaboration	120
IV- **Infrastructure and Learning Resources**	4.1 Physical Facilities 4.2 Library as a Learning Resource 4.3 IT Infrastructure 4.4 Maintenance of Campus Infrastructure	100
V- **Student Support and Progression**	5.1 Student Support 5.2 Student Progression 5.3 Student Participation and Activities 5.4 Alumni Engagement	130
VI- **Governance, Leadership and Management**	6.1 Institutional Vision and Leadership 6.2 Strategy Development and Deployment 6.3 Faculty Empowerment Strategies 6.4 Financial Management and Resource Mobilization 6.5 Internal Quality Assurance System	100
VII- **Institutional Values and Best Practices**	7.1 Institutional Values and Social Responsibilities 7.2 Best Practices 7.3 Institutional Distinctiveness	100

Most important tools of NAAC is Weightages, Criteria, Key Aspects and Grade Points. It plays very important roles for performance based scoring. Following description indicate the criteria and key aspects, Weightage, Key Aspects Grade Points, Key Aspect Wise Weightage Grade Points.

NAAC Weightages, Criteria, Key Aspects and Grade Points

Criteria and Key Aspects	Weightage (w)	Key Aspects Grade Points 4/3/2/1/0	Key Aspect Wise Weightage Grade Points
Criteria 4 – Infrastructure and Learning Resources (100)			
Physical Facility	30	2	60
Library as a Learning Resource	**20**	**4**	**80**

IT Infrastructure	30	2	60
Maintenance of Campus Infrastructure	20	2	40
Total		100	240

The question arises whether this visible marking pattern is the only way for Learning Resource center to score in the overall gradation system or it is beyond. The answer lies in percolating into all hooks and corners of the criteria framework and establishing the overall counterproductive efficiency and role of library as a quality enhancer element in the overall assessment and accreditation process.

An opportunity proposition for Libraries

With the revision of NAAC assessment and accreditation framework ICT application has been the prime focus in each and every activities of the HEI. Henceforth we find all the criteria in some or other way ensures that ICT application percolates in various objectives,functioning, actions of HEI work pattern and results thereoff. If we look into the criteria wise detailed AQAR form then it can be found that each and every criteria is an opportunity for Libraries to make their role more essential. Given below is a brief proposition (criteria Wise) in this regard where libraries can contribute effectively:

The very first Criteria is **curricular aspects**. With the induction of CBCS system there is a complete overhaul in the subject's choices as well options availability. Now the Learning Resource center can contribute to this in the following way:

- Sensitizing students to cross-cutting issues relevant to the current pressing concerns both nationally and internationally (Awareness programme ,information literacy on latest topics of concern)
- Value Added Course in Library Science can be started in the institute
- Library can act as an **'Active Feedback Centre'** for in-house as well as external feedback mechanism

The second criterion is very important aspect of **Teaching, Learning and Evaluation** but it has been found that libraries have always been a facilitator in this aspect of education by providing a pool of learning resources and empowering the users to the fullest. This can be done in the following way:

- Facilitating Teaching Learning process by regular Updation and rich resource collection and mobilization thereof

- Library can act as a hub for all the ICT related teaching Learning mechanism as well as a mainstay facilitator of the all E- Learning modules and ways like Moodle LMS and Swayam platform learning experiences
- Examination related work of the teachers are not only facilitated by libraries but also they can enrich their collection as per the need and demand of its patron

The third major criteria holding 150 marks is **Research Innovation and Extension**. Without libraries research cannot be even thought of and hence following can be the contribution of Learning Resource center in this criteria:

- Inculcating Research Habits as well as Research culture rests majorly with libraries by supplementation of the research urge of its users by providing appropriate research tools to them and resource mobilization of the library's collection and holdings
- Libraries can set up research incubation hub by providing various learning resources as well as academic ambience to its users and initiatives in transfer of knowledge to its patrons in various ways
- Libraries can be a part of consultancy services in a big way due to their constant exposure and updation of the latest ICT technology as well as new and innovative ways of rendering services.
- Libraries can be a part and parcel of the extension activities by outreaching to the society and unreachable by way of continuous activities beyond the Institutional ambit.
- Libraries can collaborate with many academic counterparts in unleashing its potential in serving as backbone of the HEIs

The fourth criteria as discussed earlier is the hardcore functional area of library activities, participation, Initiatives, and output. It covers **Infrastructure and Learning Resources.**

The fifth criteria of **Student Support and Progression** is again a major criterion to continue to the everlasting support system library is extending to the students. Few are the propositions in this regard:

- Student progression cannot be thought off without the role of libraries and its resources and services in every segment of the curricular as well as extracurricular part like in Value added courses, in vertical and horizontal progression, furnishing of the employment related information in all sense (Study material, Examination registration

and online form submission, counselling, reading ambience, competitive exam information and study material etc.)

- The Holistic Development of the students requires social, cultural platform and opportunities and hence libraries which are rich in all these aspects can act as a torch bearer and guide for the students

The Criteria No Six on **Governance, Leadership and Management**is the pointer which helps to envision the role and importance of libraries in the new educational framework as well as highlights the changing modus operandi of the library.

- This criterion is about the management as well as high hierarchical order initiatives by way of regular audit of the library resources, services and facilities

The last and seven Criteria is **Institutional values and Best Practices**

Libraries can play a major role in carrying out various activities and programmes which have a great impact on the people of the society. Thus such activities and initiatives which are unique and are related to academic, administrative benefits of the institute as well as society at large. Thus Libraries can carry out various 'Best Practices' activities at its end as follows:

- Various distinctive and appealing works can be adopted by Libraries to consolidate the role and importance of Libraries for the academic institutions in real sense. 'Out of the Box' activities to facilitate, enhance, highlight, appeal library role will ensure major contribution to this criterion.

If we examine the various libraries and try to explore the various activities which will really help Learning Resource Centre to carve a niche for themselves are as follows:

- Training session, Information Literacy programme
- Active feedback system
- Data building facility by way of Institutional Repository
- Regular audit practices in various ways like stock checking etc.
- Online facilitation centre in various ways and means
- Research ecosystem provider
- Publication hub
- Human resource training for the future
- Technical support of all sort
- Multitasking support
- Web support

Conclusion:

Education and Libraries have always existed in a symbiotic relationship which will continue forever. Revisions in the grading and marking pattern will be a continuous process but the role of Libraries is undeniable. Libraries are and will be an important part of Higher educational institutions. All the revisions in the NAAC framework has rather provided an opportunistic platform to libraries to showcase their role, importance, and continuous patronage to the academic field in wake of various changes and technological revolutions.

Evolution and adapting to changes are the need of the hour and libraries have faced all the technological and other challenges and converted them into an opportunity and Libraries have sustained and remain important and its presence universalized in true sense.

References:

1. Institutional Accreditation Manual for Affiliated/Constituent Colleges (Effective form July 2017)
2. *Guidelines for the Creation of the* Internal Quality Assurance Cell (IQAC) and Submission of Annual Quality Assurance Report (AQAR) by Accredited Institutions *(For Affiliated/Constituent Colleges)* (Revised as per Revised Accreditation Framework in November, 2017)
3. Hulagabali, S. (2018, February 16). *Preparing Libraries as per NAAC's Revised Accreditation Framework.* Retrieved from www.slideshare.net: https://www.slideshare.net/santoshlib/preparing-libraries-as-per-naacs-revised-accreditation-framework-88090394
4. https://www.quora.com/What-is-the-importance-of-NAAC accessed on 20 November 22, 2018

VALUES AND PROFESSIONAL ETHICS ENHANCED BY YOGA EDUCATION

Ms. Pratima Vashishtha
Assistant Professor
Department of Yogic Sciences, LNIPE, Gwalior
pratimavashishtha@yahoo.com, MOB : 9713228563, 9406928843

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ABSTRACT: *Values and professional ethics are interconnected with each other. Today's life style is full of imbalance in society and peoples mind are not in peace. Most of the people are suffering with disease like stress, tension, fear, anxiety, aggression frustration, jealous, depression moroseness, blood pressure, diabetes, thyroid etc. So society is being cranky and education today has degenerated into a process of information transmission, with its sole objective being passing examinations. When, we, therefore, talk of value education, we wish to draw attention to the effective objectives of education — the development of social, moral, aesthetic and spiritual sides of a person's personality, which has been undermined.*

Desirable behavioral changes may bring by the practice of an ancient science of body, mind and spirit which is called Yoga. In the very first aphorism of the Yoga Sutra of Patanjali ji is prescribed "CHITTAVRITTINIRODHA" The control of mental modes, provided a large scope for a disciplined life. The eight fold of yoga Yamas, (five abstentions) Niyamas, (five dedications) Asana, Pranayama, Pratyaahara, Dharna, Dhyana, and the last salvation state of mind is Samadhi. From these the control of mental modes, first & second fold of yoga sutra is related with thought process. If Yamas & Niyamas are getting introduced in education system than the Revolution of thoughts will start. These Yamas and Niyamas are directly related with our think / thoughts. Yoga education can help people in differentiating what is good and bed for them and others.

Key words: **Astanga Yoga, Disease (Kleshas), Koshas, Life Style, Society, Value, Yoga Counselling.**

Introduction: Today's present life is leading so many problems like emotional imbalance and psychosomatic disease like stress, tension, fear, anxiety, aggression frustration, jealous, depression moroseness, blood pressure, diabetes, thyroid etc. Because of all this society is also being cranky. There are so many problems in society as violence, terrorisms, crime, rape, illegal gratification and dakauties. So by seeing society is indisposition, I feel it is necessary adopt thoughts of yoga and give education thru yoga.

Values are considered desirable objects and things which have an importance in one's life. They may be material things or abstract qualities and ideals like truth, happiness or peace. Education is a process of bringing about desirable changes of behavior in the way that

she or he feels, thinks and acts in accordance with concept of good life. In other words, it is a process of developing in the mind, knowledge, skills, attitudes, values and behavior patterns that we consider desirable for him or her to have, both as an individual and as a member of society. It is through education that society seeks to preserve and promote its values. It is true that all good education is in essence a process of developing the human personality in all its dimensions. But, for a variety of reasons, the effective dimension of personality has, in recent times, been seriously neglected in our Indian education.

Education today has degenerated into a process of information transmission, with its sole objective being passing examinations. When, we, therefore, talk of value education, we wish to draw attention to the effective objectives of education - the development of social, moral, aesthetic and spiritual sides of a person's personality, which have been undermined.

We are passing through a phase in our social and political life which poses a special danger of the erosion of long-accepted values. The goals of secularism, socialism, democracy and professional ethics are coming under increasing strain. The world today faces a catastrophe, threatened with a possible nuclear holocaust. As never before in the history of the world, we are in need of peace and international understanding. All these problems cannot be effectively tackled through piece-meal efforts, educational or social. What we need is a drastic change in our very outlook, in our own values and the environment.

What is Value:

"Value" is a latten word which means worth.It is self-explanatory that is something valuable important, enriching.Values may be easily understandable than to define a thing has a value when it is perceived as good & desirable. Values lie at the heart of human behavior.Values determine How we live and in what direction we take our life.If we try to understand the true concept of values we shall find that values are indicative of doing right thing for right reason from a socio-cultural perspective, values are regarded is as key element in socialization from an individual perspective, value is regarded as a key element in belief system,attitude formation and behavior determination. Any country is as good as its citizens,their ethos, their values and their characters reflects in the country make up. Values are the modification of thoughts and behavior and implementation in society.Values are related with our mentality, thinking process,behavioral pattern etc. Society is living in the edge of erosion in values.Erosion of values has led to stealing,robbery, terrorism,bloodshed, drug abusing,no securities of children,women girls and old edge citizen, human life has no values .so we may say this is the time of crises.

Types of values:

Individual values:set of psycho-physical value as healthy fulfillment

Social value: ethical & moral code of conduct, justice, liberty etc.

National value:patriotism, spirit of national unity, humanistic outlook etc.

International value: Human rights, democracy, tolerance & mutual understanding, ecosystem etc.

Intrinsic and instrumental value.

Indian Education System and Values:

Now days Why Indian education system is talking about Yoga education, value education, professional ethics etc.? The question which comes to my mind is why we forgot our values or why Indian education system is stressing to give moral education and wants to include books in syllabus on moral education. Just after that time answer also comes to my mind –Its simple we forgot our culture our education principles, our beliefs, our responsibilities for self and society? There is one thing also that is "Pleasant distant drum" so drum is western education system. We adopt that and now our society also is in crises of values. We Indians have the nature of following others, we forgot what we are but now the time to think that what we were? What we are? And in future what we will?

After the independence the union government from time to time,gave importance to value education. The Radha Krishnan commission for university education (1948-49) underlined the balance of mind and body among the youth. The Kripa Shankar committee on religion and moral instruction (1960) made provision for inculcation of moral and spiritual values in educational institution at all levels. After these commissions /committees also recommended the same. But till this time Indian education system is unable to make people moral or morally developed instead of this now we are talking about the crises of values and how we overcome the crises. "Value education is an integral part of school curriculum. It highlighted the values drawn from national goals, universal perception, ethical considerations and character building. It stressed the role of education in combating obscurantism, religious fanaticism, exploitation and injustice as well as the inculcation of value." By National Policy on Education (1992)

What is Yoga:

There are so many definitions of yoga in different texts of yoga and each definition says about remove ignorance.

Here I am coating the definition of yoga from Brudhyajnavalkasmruti "yoga teaches us to realize our own problems, our drawbacks, our wrong ideas and views, our faulty attitudes, wrong concepts" This definition covers all aspects of life of a man. So it means we need to think before we act.

Value education by Astanga Yoga:

Now we are at a point of recognizing the need, the need for values. Just like a fish which can survive only in water in same manner the society can develop and flourish only with good human values, which is the need of the hour. The thinking process of the people should change. They need to have time for themselves and others in this busy and competitive life. We need to take a few minutes to meditate on where we are moving to! Thinking is progress non thinking is destruction thinking leads to action. A nation is great because of the way its people think. Can we make an education system which will generate civilized people?

Yoga is an ancient science of body, mind and spirit (Physical, behavioral, Emotional, Moral, social, mental).Our Indian philosophical thoughts are based on certain values, principles and beliefs. In the very first aphorism of the Yoga Sutra of Patanjaliji is prescribed "CHITTAVRITTINIRODHA" The control of mental modes, provided a large scope for a disciplined life. The eight fold of Yoga Yamas, (five abstentions) Niyamas, (five dedications) Asana, Pranayama, Pratyaahara, Dharna, Dhyana, and the last salvation state of mind is Samadhi. From these the control of mental modes, first & second fold of yoga sutra is related with thought process which says us to thinking for being human (think before action) and to gain humanistic values.When we read or think about Yamas & Niyamas something strikes to our mind that is, what is right? And What is wrong?

A society cannot exist without some concept and practice of morality. If Yamas &Niyamas are getting introduced in education system than the Revolution of Thoughts/behavior will start. Because, Yamas and Niyamas are directly related with our think / thoughts. So if a person starts thinking, the thinking automatically comes in their behavior and if our behavior is good & humble with each other than society will get benefit.Who is society?We are the society.

So when there is a change in me and my neighbor slowly and obviously there will be a change in my neighborhood at place of study, work, journey etc. and thus there will be a thought processing change which will lead to a revolution of the thinking process and the day is not far when the society will see a change.

After all negative activities like rape, murder, crimes that has been happening around, the citizens have felt the need for a change. Change in behavioral pattern can take place at a younger age. People cannot have their vices and pleasure at the cost of others. So yoga education can help people in differentiating what is good and bed for them and others.

Behavior and attitude needs to be developed through Education of Thoughts/Education of behavior by behavior, which can only be through Yamas (Truth, non-violence, non-stealing, Bramacharya reduce one's need) which is the principles of behavior in relation to other members of the society. And Niyamas (Cleanliness, contentment, austerity, self-study, ishwarpranidhan) which is personal conduct regarding of Do's and Don'ts.

What distracts and disturbs the mind?

1. Violence and violent thoughts.
2. Lies and untruths, which keep bothering the mind and our conscience long after they have been said.
3. Guilt that we may feel after stealing or taking more than we really need.
4. Being unfaithful will bother you, long after the unfaithful act.
5. And having more things that you need will keep your mind preoccupied on the things, material possessions, rather than on the Inner Peace and Happiness.

As you can see, these are the reverse of the YAMAS. Practicing the yamas & niyamas is the core of Yoga. Practicing the yamas & niyamas will gradually minimize the distractions and make mind fit for enlightenment, which is the direct experience of lasting inner peace and happiness within. If the yamas & niyamas are too unrealistic at this point, start with the

Ten habits for peacefulness of mind:

These ten habits need to be in balance for great health in the body and perfect peace in the mind.

1. Positive mental attitude
2. Good Relationship
3. Healing Sensory Input & Environment
4. Mental Relaxation & Reduce Stress
5. Right Livelihood
6. Energy Cultivation
7. Rest and Sleep have to sufficient
8. Good food good digestion
9. Practicing yogasana and pranayama

10. Meditation

Conclusion:

Lastly I would like to conclude by saying people have to follow our own Indian philosophical educations as well as psychological aspects. And for this it is necessary we have to include books, practicals of yoga and syllabus in course curriculum from the age of 11 because this age is starting of early adolescence (starting age of a person/development starts). This should not only on papers this has to on physical reality. And for elders, everybody has to read at least a book on Astanga Yoga and try to follow at least one principles of yoga. Than only we will overcome from value crisis, lead a positive life style and professional ethics can be developed.

References:

1. B.K. Shekhar Chandra. Science of mind simplify. New Delhi: Diamond Pocket Books (P) Ltd., (2006). English.
2. Gupt Rambabu. Educational psychology. Kanpur: New Publishing House (1998). Hindi.
3. Swami Digambar Ji, Dr Pitambar Jha. Hathapradipika. Puna Maharashtra: Kaivalya Dham Yoga Prakashan Lonawala, (2003). English.
4. Jayaswal Sitaram. Indian psychology. Delhi: Delhi publication Arya book depo, (2003). Hindi.
5. Mishra Girish. Psychological Perspective Stress and Health. New Delhi: Concept Publishing Company (1999). English.
6. Mathur S.S. Educational psychology. Agra: Vinod Pustak Mandir, (2003). Hindi.
7. Nagendra H.R & R. Nagratna. New Prospective in stress management. Banglore: Swamin Vivekanand Yoga Prakashan. (2005). English.
8. Nagratna R. & Nagndra, H.R. Yoga Practice for Anxiety and Depression. Banglore: Swamin Vivekananda Yoga Prakashan, (2005). English.
9. Patanjali Yoga Sutra, Gorakhpur: Geeta press, (2005). Hindi.
10. Sarafino P. Edward and Smith I Timothy W., Health Psychology, Wiley India Pvt. Ltd., (2014). English
11. Swami Swatmaram. Hathpradipika. Puna Maharashtra: Kaivalya Dham Yoga Prakashan Lonawala. (2007). English.
12. Swami Swatmaram Astangayoga, Kaivalya Dham Yoga Prakashan Lonawala Puna Maharashtra.
13. UDUPA, K. N. Stress and its management by Yoga. Delhi: Motilal Banarsi Das, Dehli, (2007). English
14. Woolfolk Anita. Education Psychology. Publication: Pearson Publication, (2013). English

TEACHING-LEARNINGTHROUGH FLIPPED CLASSROOM

Dr. Vaishali Meshram
Assistant Professor
Dr. D. V. Naik
Principal
Dr. M. K. Umathe College, Nagpur

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Abstract: *Students carrying mobile phones, iPads, laptops and other gadgets and clicking, surfing, talking and listening to something with ears plugged in is a common scene. Today's college students live in an age of opportunities and demands. In such circumstances, adopting hybrid teaching-learning approach is the need of the hour. The flipped classroom concept has garnered much attention from educators around the globe.It is an active, student-centric pedagogical model in which the typical face-to-face mode of instruction and homework elements of a course are reversed. Short video lectures are delivered to students at home through electronic means before the class session, while in class time is devoted to collaborative and practical application activities such as exercises, projects, or discussions with the peers. This hybrid teaching-learning approach changed the role of both teachers and students. Teachersareno longer"sage on the stage" but become facilitators,coaches or "guides on the side" mentoring, correcting, facilitating and encouraging students tobecome active participants in the learning processin order to achieve desired noticeable outcome.In the present paper we tried to study the concept of flipped learning and flipped classrooms in detail, its benefits to students, challenges faced by the teachers and the outcome of the flipped classroom.*

Keywords:Conventional, Facilitator, Flipped Learning, Flipped Classroom, Flipped Learning Network, Outcome, Pedagogy.

Introduction: In the century we are in, rapidly developed technologies affect education training fields as they do in all fields. In parallel to the speed of development in technology, education conditions develop as well and different learning demands come out (Celen, Celik, & Seferoglu, 2011). In order to compensate these demands that come out with this transformation, are among the prior responsibilities of education systems. That is why a qualified education system should not limit learning and transform traditional structure into modern structure with technological opportunities (Bas, 2010; Rakhmetullina& et al, 2014).

What is Flipped Learning?

There are many definitions of flipped classroom in literature. According to Bishop and Verleger (2013) flipped classroom is a student-centered learning method consisting of two parts with interactive learning activities during lesson and individual teaching bases

directly on computer out of lesson. Mull (2012) defined it as a model that provides students prepare themselves for the lesson by watching videos, listening podcasts and reading articles. According to Milman (2012) it is an approach aims the efficiency of lessons by transferring knowledge to students via videos and podcasts as well as by discussions, group works and applications during course. Toto and Nguyen (2009) expressed that flipped classroom is an approach that increases active learning activities and gives opportunity for student to use his knowledge in class with guidance of teacher. Hamdan and others (2013) explained flipped classroom is not a defined model instead it is a model that teachers use as compensating the demands of students by using different equipment. Since the educators in different countries use flipped classroom with various methods, this caused changing of flipped classroom concept to flipped classroom approach. It is emphasized that this new approach can be used with different learning methods (Flipped Learning Network-FLN, 2014).

Origin:

The phrase 'Flipped Learning' came into general use in the early mid-2000s and was propagated by Jonathan Bergmann and Aaron Sams, high school chemistry teachers fromWoodland Park, Colorado, who began using recorded lectures in 2006. These two teachers needed to help students who had missed class due to some reasons, catch up on their school work. It was impossible for them to teach each student each missed lesson, one at a time. So they decided to create a series of videos of their lectures for the absent students to watch at home. Soon, Woodland Park students who had attended class began watching the videos for clarification as they worked on their homework assignments. Then, educators and students from other districts found and used the videos as well. Later on Salman Khan,the founder of the Khan Academy also popularized this concept in TED Talk. (TED 2011). In the 1990s, Harvard Professor Eric Mazur developed a model of 'peer instruction' in which he provided material for students to prepare and reflect on before class and then used class time to encourage deeper cognitive thinking via peer interaction and instructor challenge. He called this "just in time teaching" (Crouch and Mazur 2001).

This model was later extended to include technological elements. In 2000,a presentation was delivered on 'The Classroom Flip: Using Web Course Management Tools to Become a Guide by the Side' at the International Conference on College Teaching and Learning (Baker 2000). The flip evolved out of a history of experimentation with the concept of hybrid, or blended learning and problem based learning, using active learning techniques and new technologies to engage students. The flipped classroom has two defining

components: moving the lecture outside of class, usually delivered through some electronic means, and moving the practical application assignments, formerly homework, into the classroom (Educause, 2012). There are many other optional components that arguably optimize this structure and provide enhanced learning opportunities to students, creating a wide variation in practice ("Flipped classroom offers," 2011).

Flipped Learning Approach:

According to Wikipedia, flipped learning is a pedagogical approach in which the conventional notion of classroom-based learning is inverted, so that students are introduced to the learning material before class, with classroom time then being used to deepen understanding through discussion with peers and problem-solving activities facilitated by teachers. (Wikipedia)

All the experienced Flipped Educators of the governing board and key leaders of the Flipped Learning Network (FLN) have composed a formal definition of Flipped Learning. Flipped Classroom is a form of blended learning in which students learn content online by watching video lectures, usually at home, and homework is done in class with teachers and students discussing and solving questions. Teacher interaction with students is more personalized and guidance instead of lecturing is emphasized (Flipped Learning Network, 2014).

Flipped Learning is an approach that gives teachers a freedom to use and implement various modules and methodologies in their classrooms. In simple words it is very often defined as "**school work at home and home work at school**."

Four Pillars of FLIP:

The Flipped educators and leaders of Flipped Learning Network (FLN) have differentiated between a Flipped Classroom and Flipped Learning. These terms are not identical. One can flip a class, but it may not lead to Flipped Learning. Many teachers may already flip their classes by having students read text outside of class, watch supplemental videos, or solve additional problems, but to engage them in Flipped Learning, teachers must include the following four pillars into their practice.

a. Flexible Environment:

Flipped Learning allows educators to use a variety of learning modes and provide students with different ways to learn content. They create flexible spaces in which students

choose when and where they learn.This flexibility in place of learning and time allows students to interact and reflect on their learning as needed.

b.Learning Culture:

In conventional teacher centered approachthe source of knowledge is teacher. In flipped classroom approach, there is shift from teacher centered approach to student centered approach.

c. Intentional Content:

Flipped classroom educators think not only about how education is used to provide fluency but also how they can develop cognitive understanding of students.

d. Professional Educator:

The responsibility of flipped classroom educators is more than the ones using traditional approach. Flipped classroom educators continuously observe students during the course, evaluate their studies and make feedbacks (Flipped Learning Network -FLN, 2014). s

Technology used in Flipped Classroom:

Technology is the primary tool of the flipped classroom. Most of the educators and researchers prefer to prepare their own videos while using Flipped Classroom.Creating the video itself takes much time and planning. There are three stages to this process; recording, editing, and publishing. Henceany source that explains the subject such as PDFs, websites, Google Drive,slides, audio, podcasts, narrated presentations, to video casts,animations, screen captures, and other multimedia contentetc. Can be used. Khan Academy, Coursera, TED talks, and even YouTube are online resources associated with the flipped classroom, providing access to recorded lectures, instructional videos, and sometimes other interactive elements for teaching and learning.

Use of Flipped Classrooms in Indian Higher Education:

Ever since formal education began, the face to face mode of instruction has been the most practiced and preferred one wherein teacher was the main source of the knowledge. Teachers play significant role in improving the quality of higher education in India. However, the dominance of technology and the changing habits of the learners have entailed the use of variety of modes of instruction in teaching-learning. Though the use of ICT by teachers in Arts, Commerce and Science colleges has yet to become popular, the modern techno-savvy have eagerly and quickly favored the use of technology in learning and also in other activities. Students carrying mobile phones, iPads, laptops and other gadgets and clicking,

surfing, talking and listening to something with ears plugged in is a common scene. Today's college studentslive in an age of opportunities and demands.In such circumstances, adopting hybrid teaching-learning approach is the need of the hour. In this mode the face-to-face teaching is supplemented with communication technology.This is considered as a very effective teaching method wherein the teacher does not teach but guides and encourages them. Under the MOOC (Massive Online Open Courses) facility world-class experts' lectures are available. It seems that individual learning is the future of education and we can say that today's learner is an activeone who should be supported by and enriched with a variety of source.

The Features of Students:

The following features are expected to be present in the learner:

1. High level of motivation
2. Willingness to work hard
3. Curiosity and inquisitiveness
4. Ability to work individually as well as in collaboration
5. Focused approach
6. Maturity to own learning responsibility
7. Efficient documentation habits
8. Efficient time management

Benefits of the Flipped Classroom:

1. Students Get Helpwith Homework:

In theconventionalclassroom, when a topic is delivered through lecture method, students are then given home assignment and asked to complete it at home without any assistance. At home students spend hours struggling with homework and get stuck. They therefore cannot complete the assigned homework and fail to submit it the next day. Then they either copy it from friend's book or cheat. In a flippedclassroom, the students have to view avideo at home and the next day they discuss it with the teachers and peer team.

2. EnhancedTeacher-Student Interaction:

Moving the direct instruction outside of class time frees up more time for teachers to interact one-on-one or in small groups with students. Ideally, a teacher in a flipped classroom is able to talk to every student in every class every day.

3. Allows Differentiation:

It helps teachers to differentiate students as it is very difficult for teachers to give individual attention to all the learner according to their abilities. Since they meet each student every day, they are now able to individualize instruction to meet the individual needs of learners. Weak learners are identified and are given extra guidance and advanced learners are provided other resources.

4. It Creates an Atmosphere of Learning:

Since a flipped classroom involves the teacher interacting with each student, the teacher can help one student drill deeper into a subject while providing another with the appropriate support to become successful. This creates an atmosphere where Students begin to take more and more responsibility of their own learning and hence they are no longer passive recipients of knowledge but active learners.

5. Students Can Learn at Their Pace:

As teachers, we often speak too quickly. While teaching a specific topic, we often try to pace our instruction on the basis of the needs of the majority of our students. If we go too fast, then many students will be left behind; if we go too slowly, we will bore many. So in a flipped classroom a video is the fact that students have control of the pause and rewind buttons. Students can pause the teacher who is speaking faster than they can process. Students can rewind and go over a difficult topic as many times as necessary instead of asking the teacher to go back to the previous PowerPoint slide. By creating instructional videos, teachers can help students learn at a pace that is most appropriate for each of them.

6. It Helps When Students Are Absent:

Absent students in a flipped classroom nevermiss direct instructions. They will miss out on the engaging in-class activities, but the main content will have been covered on an asynchronously accessible video.

7. It Helps When the Teacher Is Absent:

Teachers are often out of the building for a variety of reasons: professional development, illness, coaching, meetings, and so on, and it can be difficult to find qualified substitute teachers. Creating instructional videos is a great way to prevent students from getting behind. Even if you don't completely flip your classroom, you could create short videos for when you are gone and redeem the time you are out of your classroom.

Conclusion:

The flipped mode of learning can best work in small classes or groups where the teachers can divide their attention equally and adequately to match each learner's needs and desired outcomes. Their efficient and timely feedback is a time consuming activity but they have to be willing for it if the desired outcomes are to be obtained. This mode of learning can be profitably used in the special classes where the number of students is usually limited. It is an stablished mode in research activity where the research guide is mainly a facilitator and motivator and the researcher himself has to be an "active learner".

REFERENCES

1. Celen, F. K., Celik, A., &Seferoglu, S. S. (2011). Turkish education system and PISA results. Academic Informatics 2011, 2-4 February 2011, İnonu University, Malatya.
2. Bas, S. (2010). Effects of Multiple Intelligences Instruction Strategy on Students' Achievement Levels and Attitudes towards English Lesson. Cypriot Journal of Educational Sciences, 5, 167-180.
3. Bishop, J. L., &Verleger, M. A. (2013). The Flipped Classroom: A Survey of the Research. 120th ASEE Annual Conference & Exposition. Atlanta: GA.
4. Mull B. (2012). Flipped learning: A response to five common criticisms. Retrieved from November Learning, 21 April, 2015,
5. http://novemberlearning.com/resources/articles/flippedlearning-a-response-to-fivecommoncriticisms-
6. Milman, N. (2012). The flipped classroom strategy: what is it and how can it be used? Distance Learning, 9(3), 8587.
7. Toto, R., & Nguyen, H. (2009). Flipping the work design in an industrial engineering course. ASEE/IEEE Frontiers in Education Conference. San Antonio, TX
8. Hamdan, N., McKnight, P., McKnight, K., &Arfstrom, K. (2013). A review of flipped learning. Retrieved from the Flipped Learning Network, 1/5/2015, http://flippedlearning.org/cms/lib07/VA01923112/
9. https://www.mindflash.com/elearning/
10. Educause (2012). 7 things you should know about… Flipped classrooms. EducauseLearning Initiative. Retrieved from https://net. educause.edu/ir/library/pdf/ELI7081.pdf
11. Flipped Learning Network (2014).
12. Bergmann, J., &Sams, A. (2012). Flip your classroom: Reach every student in every class every day. Alexandria, VA: International Society for Technology in Education; ASCD.

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ROLE OF "NAAC" IN SHAPING HIGHER EDUCATION

Dr. Vinay Kumar Upadhyay
IQAC Co-ordinator
Nutan Adarsh Arts, Commerce & SMT.M.H. Wegad Science College,Umred-441203 District-Nagpur(Maharashtra)
E-mail ID- upadhyayvinaykumar@gmail.com
Mobile No- 9766063386

Abstract: - *For any nation, a quality & sound education system is inevitable & indispensable for its overall growth and development. The time has come to look for new avenues for effective education with respect to all, imparting new life skills. The utmost aim of education is to impart the way to live life by developing high rank of intelligence which can deal with reality and be ready for consequences. The need to teach a segregated conceptual thinking process which had led many discoveries in past and think upon necessities and draw their way, a way how to think rather what to think. And while India might have made many a stride in several other sectors, education still reels under many problems, from a solid vision to effective execution of plans whose foundation have been laid for decades. With the advent of technology though, things are slowly changing for the better and the wheels of progress seem to be moving in the right direction. Yet, it would be pre- mature to think that digital education can solve the problems that plague the Indian education landscape. In a country where parents and even students have still not embraced technology to the fullest, only a seamless blend of technological and traditional pedagogical tools cannot create a palpable impact on the way education is consumed. The present paper is a modest attempt to analyses the aim, objective, role & impact of NAAC regarding the higher education in the context of the modern era.*

Introduction: -The National assessment and accreditation council (NAAC) was established in the year 1994 as an autonomous institution under the UGC.NAAC's agenda of total quality view point has made a profound effect on the institutional perception of quality.The past decade has witnessed Colleges and Universities adopting innovative methodologies so much so that the quality sustenance and quality enhancement are the two keywords reverberating in most colleges of higher learning in the country.

NAAC has been actively engaged in the performance evaluation and implementation of quality sustenance procedures in universities and colleges.NAAC vision and mission statements clearly specify its functioning highlighting quality assurance mechanism in higher education institutions with the combination of self and external quality evaluation,promotion sustenance activities and initiative.The prime agenda of NAAC is to assess and accredit institutions of higher learning with an objective of helping them to work continuously to

improve the quality of education.Assessment is a performance evaluation of an institution and/or its units and is accomplished through a process based on self-study and peer review using defined criteria.Accreditation refers to the certification given by NAAC which is valid for a period of five years.The process of Assessment followed by NAAC is in accordance with internationally accepted practice but,with certain modification to suit the Indian context.

Quality Assessment

NAAC points at seven criteria, criteria wise key aspects and sub key aspects.Besides seven criteria NAAC emphasizes upon core values as assessment indicators for accreditation. The purpose of the exploration is to analyse assessment indicators for quality culture in the context of Indian Higher Education.

CRITERIA: -

1 Curricular aspects
2 Teaching learning &evaluation
3 Research,consultancy &extension
4 Infrastructure &learning resources
5 Student support &progression
6 Governance & Leadership
7 Institutional value & best practices

Paradigm Shift in Education: -

In Present Indian system,which is the third largest after China and USA,one question consistently popped out from everyone's mind that whether the current educational scenario is compatible to fulfill the aspiration of students and parents and will it be capable of confronting an unknown future?What should be the purpose of education?Just to have an exemplary job and earn a 7 figure salary gathering wealth upon it or it should be the novel way to impart knowledge and character to students in such a negative world so that they can be deciphered into a responsible citizens and sphere their share in the development of the country.Every educational institution claiming to serve the required qualities needed to excel in their corresponding fields but inefficiency of educational scenario is clearly visible. India is the country where some parents spend lives saving take loans putting their properties mortgaged,inspite of that not getting a standard quality education is a matter of shame.The education our teachers are imparting is purely scheduled and syllabus based where teachers and students donot get enough space for experimentation. They have to stick to what board or universities have told them to do. Both the entities i.e teacher and student roam around under

stress to finish the syllabus or curriculum in given time period.Every student is tirelessly running to acquire a Degree anyhow jump into a neck-to-neck competition of getting a job.The education they are absorbing only telling them to go for higher percentage putting quality at stake.Only revolving around numbers they are forgetting that education is to show the path of success in life. The time has come to look for new avenues for effective education with respect to all,imparting new life skills. The unsatisfactory and absurd way of education need to revamp and make it more funfilled experience.We need to regard educational system which has the capability to execute the task and work with the potential to excel in the common effort of common people.What,how and why must strike every student's brain initiating thought process emphasizing to think deeper about every aspect not to just earn good CGPA but to understand thoroughly.

The utmost aim of education is to impart the way to live life by developing high rank of intelligence which can deal with reality and be ready for consequences. They need to teach a segregated conceptual thinking process which had led many discoveries in past and think upon necessities and draw their way,a way how to think rather what to think.

Time to Check Quality inEducation: -

QUALITY in Higher education provides human beings with essential learning tools and basic learning content which enables them to be able to survive live a life of dignity.It is seen as a force of change in which an individual is expected to transform a material consciousness towards superior planes of intellectual and spiritual consciousness.

India's value and culture are very old and of utmost important,similarly the Indian higher education system is centuries old having the universities of as old as of $5^{th}/6^{th}$ century i.e Nalanda and Taxshashila (the world's first universities). A Gurukul system was followed in these universities,which resulted into a powerful Bharat.It is because of this value in our system we have survived with an economic global system of 2008.All over the world during 2008 recessionGDP(Gross domestic product) ofdeveloped countries were in negative expect of India and China,they sustained because of their values.If we compare the GDP's (2015-16) of various country,India's GDP was well above 7.6 as compared to China 6.6, US 2.2, Japan0.1 and the world GDP around 3.1%. Thus we are best because of our values.

Our quality issues in education system are basically focused on the parameters likes:

1 Ethics
2 Value system
3 Self-improvement

4 Research and innovation

5 Improvement of the society

6 Education for all

7 Education that is affordable

8 Education system i.e accountable with an equivalent respect to teachers

Basically higher education has the power to change the overall scenario of the world. The necessity is to implement its qualitative things thoroughly, which can give its inclusive impact on total population of globe. Quality in higher education is basically related to the change in the thinking process,as people pursuing higher education are going to bring change in futuristic world. Thus if the power of their thinking changes positively and qualitatively, while pursuing higher education, they can change the path and growth of the world drastically and dramatically.

In order to inculcate such quality, it is necessary to eliminate the deficiency in the areas of inappropriate curriculum, lack of trained educators/faculties,ineffective pedagogy,poor infrastructure etc.Good quality of education can only be implemented when there is an amalgamation of globalization with localization.

In order to achieve the quality in higher education there is a need to shift from the information based education system to a value based education system.Imparting life skills which can contribute to man making and nation building. It means generating concern relating to sustainable development.The quality of higher education should be equipped with life skill and professional skills;it should be subordinate to adjust the society.In addition, it should be able to produce prepared minds for future i.e.it should be skill oriented.For improving quality in higher education system it is essential that the people recruited for the same shall be based on 2c's i.e.Competency and commitment. To bring quality in higher education,the faculties its respective institution plays a very important role.In respect of improvement in the faculty and in the institution or in order to encourage the excellence and efficiency in them the performance linked funding should be implemented.Thus in order to achieve the quality in higher education,incentive in funding should be categorized on at least two basics.

1) Teaching

2) Research

Many of the time it is found that the teachers who are good in teaching are poor in research and vice versa.The differentiation can be understood in terms of theoretical and

practical of any course,here the theory means teaching and practical means research. We are doing a mistake of clubbing both.Policies all over the world in higher education system have to be framed in order to implement both in different ways, as both the concepts does have its tremendous importance in achieving the quality of higher education. There is a need that institution in majority should be given autonomy with an equally and effective accountability as per their outlook and output.

We can change the world positively through our qualitative higher education system.By imparting understanding and implementing a theory that every individual has an inherent energy which if channelized and managed properly can lead to an improved life because 'energy only changes forms' and we have to change that form.

Conclusion: -

The formulation of the new national policy in education that had begun with great fervor four years ago is still in the making. In the meantime,the sector has been subjected to a paradigm shift.Accreditation of universities and colleges had been made mandatory some time ago,but its framework has now been made drastically different by making it nearly dependent on third party data validation and feedback from students,for which universities applying for accreditation are required to furnish digitally the names and contact details of each student on their roll.A uniquely distinct model,hardly tried and tested by any reputed quality assurance agency in the world,has made the highest education community utterly confused,as no one knows how the model will unfold.Equally bewildering is the fact that the premier higher educational institutions of the country are not required to undergo accreditation.The NIRF is now in the realm of reality and is impacting higher educational institutions and their stakeholders in a variety of ways.Despite the rise in the number of higher educational institutions participating in the ranking over the last three years,they account for no more than 9 percent of the total higher educational institutions in the country.Given the fact that the participation of universities and university level institutions are quite high,it is predominantly the colleges,which cater to a predominant portion of higher education enrolment,that have kept away from the ranking process.Besides as the top100 institutions do not account for even one percent of the students,99 percent of these students do not know how to benefit from the ranking,particularly if the purpose was to enable them to make informed choices.

In order to achieve a quality in higher education,an assessment and accreditation process of institution should be stringent as per the international standards and norms. The

quality in higher education can only be achieved when the students are ignited to opt the career as per their will or desire or passion or their inborn quality.We think quality aspect of higher education should be related with the psychology of the students.Before a student's proceeds to opt for an area in which he has to pursue higher education,he should be motivated for compulsory psychological test to choose his area of interest.

To achieve the quality in higher education the concept of KASH should be implemented among the stakeholders of higher education i.e.Knowledge,Attitude,Skill and Habits which one change the overall scenario of the higher education system globally.The output of the qualitative higher education should be in the form of real power,here the real power means the ability to make an impact on the quality on the life of people.This power needs to be measured by an impact of an individual's contribution to the movement of history.Thus we must make overall higher education research oriented,which will help in promoting inquisitiveness,knowledge,skill and value system.The only possible way for prospective nation development is by improving the quality of its human resource through well-defined lifelong quality oriented higher education, policies, programs with appropriate values.

Accreditation and rankings are potent tools to improve the overall quality of higher education; after all, we not only need a few best,but must also mitigate the gap between the best and the rest.

References-

1) UGC guidelines for the Quality Assurance in Higher Education.
2) NAAC guidelines for IQAC in colleges.
3) NAAC and UGC Newsletter.
4) Review of Recommended Quality Assurance Standards for Higher Education.
5) Council for Higher Education Accreditation
6) Institute for Higher Educational Policy and Quality on Line
7) Central Advisory Board of Education Committee Report
8) National Knowledge Commission Note on Higher Education
9) Objectives of National Policy on Education
10) Autonomous College's Data from UGC Website.

RELEVANCE OF 'NAAC' IN TODAY'S SCENARIO FOR BETTER HIGHER EDUCATION

Dashrath Jadhao (Principal),
Anil Bondre (Asst. Professor)
Department of Chemistry, Saibaba Arts and Science College,
Parseoni, Dist. Nagpur. Affiliated to RTMNU, Nagpur
E-mail : drdbjadhao3@gmail.com

Abstract: *The effective implementation of curriculum can be achieved through class-room teaching, e-learning and by arranging Seminars, Study tour, debate, Essay and quits competition. Extracurricular activities can be achieved through social gathering, Sports activities in the college. Several measures are taken time to time to ensure effective and quality oriented outcome. As far infrastructure is concern it is a continuous process. By arranging multidisciplinary seminars, symposia, workshop and national and international conference, one can achieve our required goal. Interaction occurs there by with Resource person master trainer and people with expertise, make fruitful results. Faculty and researchers get motivation out of it. So it helps them to enrich their performance in day to day work.*

It is very essential to have accountability of work done to enhance better quality in the higher education for better tomorrow of our citizen. In this regards the contribution readily made by Experts of National Assessment and Accreditation Council, Bangalore is highly appreciable and commendable. Making of self-study report (SSR) is the backbone of complete process of Assessment and Accreditation of higher education Institution as a college. The procedure adopted by the accreditation council is very wonderful and urgently required in the present scenario. In today's era of globalization, maintaining high quality in every field is very important aspect. A cut throat competition is there in the world. The responsibility of it can be on the shoulders of each and every person related to education like students, parents, teachers, managements, universities, State and Central Governments.

**NAAC provides opportunity to count institutions effectiveness and efficiency, identify its strength and weakness and give idea for necessary steps for its improvement.*

Keywords: Accountability, Better Life, Cut Throat Competition, Efficiency and Effectiveness, Interaction, Infrastructure, Opportunity, Responsibility, Resource Person.

Aim of NAAC: To show the accountability of college, self-Assessment and accreditation is must for every five years. To improve the status of the institution, quality of education creates study atmosphere in such a way that students should honestly work hard and achieve good career and profession in their life Teaching learning and evaluation method should be a continuous process and vertical improvement is required. Students should firmly stand on his

own in this cut throat competition. To create large number of successful students from the institution as college. To promote students to gain skills in entrepreneurship development, self- employment and self-confident in every walk of life.

Note: The revised process is being adopted on July 2017.

Procedure: To submit the application to the Director of NAAC, Bangalore (Letter of intent (LOI) on line),

1) Letter of intent will process by NAAC and the direction on its regards is usually completed within 15 days.
2) The NAAC after receiving a willingness letter from college, issue a letter giving details about self-study report (SSR) and blank floppy.
3) (A) **Self Study Report (SSR):**Part-I
   - (i) Information of college/college profile.
   - (ii) Seven criteria wise reports
   - (iii) Inputs of various departments

   (B) **Self Study Report (SSR):**Part-II
   - (i) Preface/Mission and vision of institution
   - (ii) Seven criteria wise self-study report

Criteria wise weightage (Marks)

Sr. No.	Criteria No.	Name of Criteria	Marks
1	I	Curricular Aspects	100
2	II	Teaching, Learning & Evaluation	350
3	III	Research Compounding & External	120
4	IV	Infrastructure & Learning Resources	150
5	V	Student Support & Progression	130
6	VI	Management/Organization, Healthy Practices inputs for departments	100
7	VII	Healthy Practices	100
		Total Marks	**1050**

Note: No grade if score is 550 or less than 550.

(iii) **Annexures:**Proofs and evidences of various events, activities Conducted and completed in the institution or college.

List of evidences and proof of the information given in the Self Study Report (SSR) are as follows:

I. University Act 1994, 2016.
II. University Direction, Ordinance, Statutes and Government Resolutions etc.

III. UGC Guidelines, Important directions, Strength of students working of college time table and annual calendar. Service condition and pay scales etc.
IV. Registration of educational institution, Registration No., Approval, Societies Bylaws etc.
V. Annual Report of the Institution.
VI. College Magazine.
VII. Prospectus of College.
VIII. College committees and Portfolio wise list.
IX. Feedback form and its analysis.
X. Two years audit reports.
XI. Master Plan of the Institution or College.
XII. Annual action plan, women cell, publication cell, cultural committee, various departmental reports, Quits/competitive exams, Earn and learn scheme, Redressal committees of Independence Day and Republic Day, NSS Day/NCC Report with files of properly numbered.

4) The institution should submit the fees by Demand Drafts DD to NAAC Bangalore so as to reach NAAC within 10 days of submission of LOI.

Fee Structure and Financial Expenses (To be paid by institution or college)

1) Institutional Information for Quality Assessment (IIQA). Total amount for A & A. Rs. 25,000/- + GST 18% (Nonrefundable)
2) For Govt. grant-in-ad and private colleges:Assessment and Accreditation Fee:College with multi faculties (Rs. 18,500 + GST 18%) (50% (Rs. 92,500 + GST 18%) of total along with online submission of SSR) (nonrefundable)
3) General College with mono: (50% (Rs. 62,500/-) of total fee along faculty) non-refundable with the online submission of SSR. (Rs.1, 25,000 + GST18%) Balance 50% of total fees along with 18% GST before 15 days from the date of on site visit.
4) Institutional Eligibility for Quality Assessment (IEQA) report online within one week after acceptance of LOI.
5) The Director, NAAC Bangalore will appoint expert team for Assessment and accreditation which is called Peer Team of three persons.
6) By the way of communication, a date is fixed before one month prior to the actual visit of Peer Team through the co-coordinating officer of NAAC, Bangalore.
7) Visit of Peer Team to institution is generally of two days.
8) Actual visit schedule i.e. minute to minutes is to be prepared for two days' visit in advance and should be notified to all staff for example time to arrival, well-come, meeting with Principal, visit to various departments one by one, meeting with non-teaching staff, meeting with Students and Parents. Documents verification, Laboratory visit, Library visit and Visit to Sports and Gym etc.
9) Final meeting on second day of Peer Team with Principal, Teaching and non-teaching staff for suggestion and for improvement which can called as strong and weak points of the college.
10) Departure of the Peer Team with proper protocol.

11) Final result of NAAC Peer Team visit can be obtained after about one month from actual date of visit.

On the basis of (GPA – Final Grade by NAAC can be done (Maximum Score 4.00)

Cumulative Grade point average (CGPA) (Max. Score 4.00)	Letter Grade	Status
3.51 to 4.00	A++	Accredited
3.26 to 3.50	A+	Accredited
3.01 to 3.25	A	Accredited
2.76 to 3.00	B++	Accredited
2.51 to 2.75	B+	Accredited
2.01 to 2.50	B	Accredited
1.51 to 2.00	C	Accredited
≤1.50	D	Not-Accredited

Note: Institution which score 1.5 or less CGPP will be informed and notified by NAAC as Assessed and found not qualified for Accreditation.

- After 1st cycle of NAAC, Preparation of Annual Quality Assurance Report (AQAR) to be submitted to NAAC every year based on quality parameters.

Conclusion & Suggestion:

Relevance of doing assessment and accreditation is must for any college but as far as self-finance higher education institute running in tribal and backward area were students of backward parent and financial weaker parent is concerned it becomes difficult. I hereby would like to suggest to Hon'ble Director NAAC to consider the demand of giving grant or financial help to such an institute which is in trial and rural area with wards of backward parents and finally weaker sections of people is studying. After completing 5 years of affiliations to concern university and the college who fulfills minimum requirements like college building teaching and non-teaching staff, and number of students taken admission and consistency in their efforts for the development of college and student should be help financially by UGC or Central Govt./State Govt. The help should be 30% on 6th year after affiliation, 60% on 7th year after affiliation and 100% on 8th year after affiliation towards the University.

Reference:

1) New Guidelines w.e.f. July 2017 made by National Assessment and Accreditation Council, Bangalore, (INDIA)

FEEDBACK AND PARTICIPATION OF STAKEHOLDERS: BOOST FOR STRENGTHENING HIGHER EDUCATION

Narendra L. Gadge
Asst. Prof. (Eng.) & IQAC Coordinator
Smt. Rajkamal BaburaoTidke College
Mouda,Dist.Nagpur (Mobile No.8087781317)
E-mail: narendra.l.gadge@gmail.com

Abstract: *Since our country has come on the track of rapid progress and development, the higher education has become the utmost importance. The central and the state government have given the responsibility to the NAAC to check the state and the quality of higher education. The UGC and the NAAC have asked the institutions to establish the IQAC Cell to control various activities towards the higher education. The UGC has also assisted to establish in every higher education institution. The IQAC in the college keeps an eye on the various activities under the vigilance of the principal which would take the institutions towards the goal of higher education. The IQAC can enhance the quality of higher education with the feedback and the participation of the various stakeholders. This research paper focuses on the feedback and the participation of the stakeholders and how do they assist for strengthening the higher education.*

Keywords: Educational Institutions, Feedback, Higher Education,IQAC, NAAC, Stakeholders, UGC.

Introduction: As we all know that NAAC is an autonomous institute established by the UGC in 1994. The main agenda of NAAC is to assess and accredit institutions of higher learning with all objective of helping them to work continuously to improve the quality of education. The purpose of NAAC is to make know the institutions to know the strengths, weaknesses, opportunities through an informed review. The institutions can identify the internal areas of planning and resource

Allocations. The NAAC also encourages taking the initiatives to institutions into innovative and modern methods of pedagogy. Thus the NAAC gives the institute a new sense of direction and identity and this reputed information reaches to the society that this institution has been giving the quality education.

The basic purpose of establishment of IQAC as post accreditation quality sustenance measure is to develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution and to assure all the stakeholders about the quality and capacity building. The Internal Quality Assurance Cell (IQAC) has a

significant and meaningful contribution in the functioning of the institution. IQAC is meant for planning guiding and monitoring quality assurance and quality enhancement activities of the higher education institutions. The IQAC also channelize and systematize the efforts and measures of an institution towards academic excellence by virtue of quality enhancement measures chartered towards the optimum operational effectiveness.

Feedback from the Stakeholders for Strengthening Higher Education:

Since the accreditation by NAAC and the IQAC unit has become an integral part to every higher educational institute; such institutions must explore the ways to sustain the quality in the education which they are imparting to their students. The best way of it the feedback from the various stakeholders. The students and their parents, the alumni, people in management, the teachers in college and non-teaching staff are all the stakeholders. The most important aim and objective of the feedback system is to evaluate the overall performance of the higher educational institute from all the aspects which have a direct or indirect impact on the students, society and the other stakeholders. In order to understand the role and the use of the feedback system in designing of the strategies of the educational institute, it is important to know the expectations of the stakeholders. In the economics language; there should be supply according to the demands of people. Among the important stakeholders which we have mentioned above are students, parents, alumni and society. Now we will see the impact of their feedback over the system of higher education.

Students:

We all know that students are an integral part of every educational institution. not only this but also students are the greatest assets of the nation. When a student takes the admission in any educational institute; he/she has some expectations. It is also important to understand the expectations of the student to develop the strategy about the teaching-learning environment and the whole functioning of the institute it is the fact that the reputation of the institute depends not only on its teachers but also on its students; say alumni, existing or outgoing students. Undoubtedly the students are stakeholders who possess motivational factors. When students understand the value of education, it serves as an intrinsic motivation and when students receive a positive feedback in the form of laurels after the successful completion of their course, it serves as extrinsic motivation. In the same, the institute should mould itself according to the needs of the students. They must try to retain the quality of the course which it has been teaching to its students; that the students must survive in any competitive world.

Parents:

Every human being is full of expectations. as a student enters in any college with expectations; in the same his/her parents too have the expectations. The parents send their children to the colleges with expectations that their children will be able to stand on their feet and be self-sufficient and also contribute towards the welfare of the society and eventually of the nation. Parents who are the educational stakeholders contribute towards improving the quality of the higher education by providing the valuable feedback to the educational institutes about their expectations from educational institutes. This feedback, when scrutinized carefully, can serve as a guide in the governance of the institute, framing new syllabus as well as in improving the teaching-learning process. This target can be achieved by the educational institutions by regular interactions with the parents in parents-students-teacher's meetings and also with the interaction with the alumni and with few important members of the society; in fact, with the genuine stakeholders.

Alumni:

As we know that Alumni means the students who have taken education from a particular educational institutions and are pursuing either jobs or they have been businessmen who have good experiences and also have a desire to make changes in the functioning of the institutes from where they took education. Feedback from the alumni helps in designing of the new educational strategy that is in accordance with the need of the changing scenario. Alumni associations exist to support the parent organization's goals, and to strengthen the ties between alumni, the community and the parents' organization. Alumni are an institution's most loyal supporters. Alumni are fund raising prospects and are often in the position to engage the expertise of the institution in their professional lives. Many alumni provide a variety of benefits and services that help alumni maintain connections to their educational institutions and fellow graduates. Additionally, such groups often support new alumni and provide a forum to form new friendships and business relationships with similar background. Today alumni associations involve graduates of all age groups and demographics.

Society:

Society has many factors and the educational institutes are important factors of the society. And the good society is a strong representative of the country. Each society of each country expects its educational institutes to develop such capability in its students that will eventually enrich the society, not only economically but also culturally. That's why a feedback from the various sections of the society also helps in planning the teaching-learning

process and making it a positive experience for the stakeholders. The educational institutes should establish a feedback system by keeping in the mind, the expectations of the various stakeholders which will help them to redesign the strategy of the institute, teaching-learning process, the course curriculum and smooth functioning of the institutions which ultimately is of great help in the development of the country.

Advantages of the Feedback:

When any educational institutes get involved with the various stakeholders; students, parents, alumni and society, the transparency comes into their affairs. With the participation of these stakeholders the institute prospers and develops. With the regular feedback from the stakeholders an institute can draw the outline of the works which it has to perform throughout the year. An institute may also know the needs and demands of the students and the society. The feedback from the stakeholders has the following advantages.

- Feedback from students, parents and society help in quality assessment and quality improvement.
- The institute can have the innovative ideas from the stakeholders which would help the institute to develop and progress.
- The feedback would be helpful in early identification of any unwanted situation.
- While taking the feedback from the society and the student, the institute attains the confidence of the society, students and the other stakeholders also.
- The big decision regarding teaching and learning process would become easy with the help of the feedback.
- By taking the feedback from society, students and the other stakeholders, the institute can win the confidence of these stakeholders which is helpful to the institute.
- Students' feedback would help the institute to understand the genuine problems of the students and can solve them easily.
- The institute can even understand the social problem with the participation and feedback from the society.

When the educational institution makes the stakeholders to get involved in the process of education the responsibilities are distributed with the stakeholders and the innovative ideas come forward by all the stakeholders. Through parents and students, the teachers get to know the problems of the students and the teachers counsel such students by understanding their psychological problems. In this way they establish the environment of responsibility.

The problems of the parents and the students can be familiar with their regular meetings. There should be at least three or four meetings of the parents and teachers in each educational institute. If this happens, there would be a regular watch on their wards and the punctuality and regularity of the students would automatically increase. Even the parents can assess the progress of their wards. They can also suggest some remedies in order to make some remedies and improvements in the curriculum and in other amenities in the college premises.

It may not possible for each time to the parents to come in the institute and not even the alumni. For this the institution must have strong internet facility, so that the alumni and the parents may remain connected with the college's teachers and the stakeholders. Thus they can convey their demands and needs and can also impart their suggestions for the welfare of the institute. Thus we can see and even experience the institution's progress and development with the help of the feedback and the participation of the various stakeholders.

Conclusion:

The regular feedback from the important stakeholders which include students, teachers, parents, alumni and the experienced members from the society, will not only help in designing the academic strategy and achieving the prominent objectives of the higher educational institutes but also help in raising the standard and the quality of higher education. Among all the stakeholders, the teacher is the most important and he or she has to play the most important role. The teacher can be a mentor to students and to other teachers also, a counselor to offer advice to students, staff members or institutional advisory committee. The main objective of every educational institution is to impart the society with responsible, literate and dutiful citizens who can give their best and full efforts to the welfare of the society and to the nation as well. Such a vital responsibility the teacher can perform with the cooperation of all the stakeholders. The higher educational institute must ensure to fulfill the expectations of the students and their parents. Such a institute must endeavor to provide the quality education so that its students must stand with the straight neck in the cutthroat competitive world. The education institute must bring out the studious students, responsible, dutiful and patriotic citizen who will assist to the development of the society and the country also.

In this way the participation and the feedback from the stakeholders would definitely assist to enhance the quality of the higher education.

Works Cited:

1. Carver, Charles S. & Scheier, Michael F. (2001). On the Self-Regulation of Behaviour Cmbridge University Press.
2. Ramprasad, Arkalgud (1983). "On The Definition of Feedback", Behavioral Science Volume 28, Issue 1.1983.
3. Wirtz, Jochen (2004). Students Feedback Collection Tools that can Help to Continuously improve Your Teaching.

Related Websites:

1. http://en.wikiepedia.org/wiki/Peer feedback
2. http://www.cdtl.nus.edu.sg/link/mar2004/cover.htm (accessed on 12 Nov.2018)
3. www.naac.gov.in

INTEGRATING ICT IN TACHING-LEARNING PROCESS

Dr. R. L. Nikose
(Asso. Prof. (Sr. Grade)
Punjabhai Patel College of Education, Gondia (M.S.)
E-mail: drrlnikose@rediffmail.com

ABSTRCT: *It is universally acknowledged that Information and Communication Technology (ICT) is an important catalyst for social transformation and national progress. The use of ICTs to help countries meet the education related millennium development goals. This paper analysis about the meaning of ICT, importance of ICT in education, tools of ICT, Integrating of ICT in teaching and learning, benefit of using ICT and barriers in the use of ICT by discussing their important issues. It is concluded that these is no denying that ICT is an important tool for the effective teaching learning process ICT contributes significantly to the classroom teaching-learning process as it helps the teacher to make the teaching –learning process more dynamic ICT also renews the learners' enthusiasm because it develops the ability of self-learning and individual interaction. ICT has tremendous potentialities to revolutionize the educational process.*

Keywords:ICT, Teaching-learning Process

Introduction: "Developing technology and developing nations, they go hand in hand." **- Richard Nash.**Education has been considered as an instrument of social change. This objective cannot be attained without having improved the classroom transaction. For improving the classroom transaction researchers are making efforts to develop different type and forms of instructional material, which can improve the teaching-learning process. The researchers by and large have compared instructional material with conventional methods and have found to be significantly superior to the conventional method. As education is the driving force of economic and social development of any country. Therefore, it is necessary to make the education as quality education, accessible and affordable to all using the latest technology availed. Education has grown exponentially in the last five decades to meet the demands of quality education for all. Therefore, it is need of hour to introduce the ICT in education.

ICT: Meaning and Concept

Information technology (IT)refers to the creation, gathering, processing, storage, presentation and dissemination of information and also the processes and devices

that enable all this to be done. Information Technology stands firmly on hardware and software of a computer and telecommunication infrastructure.

According to **Information Technology Association of America (ITAA),** the Information Technology is "The study, design development, implementation, support or management of computer based information system particularly software application and computer hardware".

Communication is basic to all human performance and interaction. It refers to the transmission of thoughts, information and commands by employing the sensory channels. It is a two-way process, including feedback and interaction.

Information and communication technology refers to the electronic and computerized devices and associated human interactive materials that enable to user to employ them for a wide range of teaching and learning process in addition to personal use. ICT includes computers, videos, televisions, connections with other computers globally together, telecommunications, satellite connection and all the software materials which enable us as teaches to use them to teach our pupils.

According to **UNESCO (1998),** "ICT defined as "Scientific, technological and engineering discipline and management techniques used in information handling and processing their applications, computers and their interactions with men and machines and associated social, economic and cultural matters".

According to **Sansanwal (2000),** "The use of hardware and software for efficient management of information, this is, storage, retrieval, processing communication, diffusion and sharing of information of social, economic and cultural upliftment".

According to **Information Technology Association of America (ITAA),** the Information Technology is "The study, design development, implementation, support or management of computer based information system particularly software application and computer hardware".

Importance of ICT in Education

Following are some important aspects of ICT:

1. To integrate productively tools in learning concepts.
2. To develop vocabulary of ICT in students.
3. To create general awareness among students about ICT and its use in teaching learning.
4. To enhance teaching and facilitate learning using multimedia content/courseware.

5. To integrate ICT for pedagogical in innovations to develop higher order thinking skills among students.
6. To acquaint students with the computer system and their functions.
7. To develop competencies among students in the use of online electronic resources (CD-ROM etc.) and online sources (www.etc.)
8. To integrate productivity tools in learning context ICT in higher education.

Tools of ICT

ICT has certain tools and which are instrumental to access, transmit and process large amount of data from and anywhere in the world. The following are the some tools of ICT.

- Internet and Intranet
- Computer
- Compressed Digital Technology
- Pen Drive
- Projectors
- Pagers
- Cable TV Network
- Twitter
- Printers
- Fax
- Scanner
- Teleconferencing
- Telephone
- Web Blog
- Wiki
- POP Casting

Integrating ICT in Teaching-Learning

Information and Communication technology (ICT) in teaching and learning is not new activity, it started out as computer assisted lesion (CAL) which become a significant minority activity in the 1960s. At that time the underlying educational philosophy was based on behaviorist models designed to generate programmed learning. This was the era of mainframe computer ring and the using was largely initiated by military training application, with some academic research backed central budgets. By the 1980s the application of ICT

wasbroadening out in range and variety, a change in technology away from centralized mainframe computer, 1981 was the year in which the personal computer was launched.

In view of ICT, teaching and learning can be classified into three categories:

1. **E-teaching learning**: It is also known an online education. It overcomes timing, attendance and travel difficulties-education can provide access to the best practices or knowledge available.
2. **Distance teaching-learning**:Here students work on their own at home or at the office and communicate with faculty via e-mail, electronic forums, video conferencing, chat room, instant messaging and other forms of computer based communication.
3. **Blending teaching-learning:**It is the combination of multiple approaches to learning to deliver particular content, it may include a mixture of face-to-face teaching learning, self-paced learning and web-based online classes.

The technology-driven learning has changed the dynamics of learning acquisition. It facilitates the learner at their own pace, space and time. Through ICT students can experience various stages of learning, such as critical thinking, problem solving, guided instruction, extra connect, cooperative learning and group monitoring.

1. **Cooperative Learning:** websites provides ready sites for discussions; cooperative groups are designed and assigned to do the activities.
2. **Acceleration**: children can be accelerated within their own class working independently.
3. **Simulation**: It provides an excellent opportunity for teachers to create a setting where students are led through critical thinking.
4. **Guided Instruction**: It allows students to submit pieces of projects step by step, allowing for a rich feedback interaction between students and the teacher.
5. **Enrichment**: Extending student understanding and applying them to other situations.
6. **Extension**: Moving outside the syllabus is normally not covered in the curriculum

Benefits of Using ICT in Classroom

1. It helps teacher to go deeper into the subject and investigate new areas.
2. It enhances student's motivation to learn. They stay on task for longer periods. Their persistence remains much greater than the traditional learning.

3. Better decisions are made as more information can be readily available for a timely way to support decision.
4. It reinforces self-learning.
5. It provides quality materials to the leaners irrespective of their geographical locations
6. It provides course materials in different languages simultaneously to the learners related to the different languages different groups.
7. Learners can get different information clearly and very quickly.
8. Learners can learn and work at their own pace just with little guidance for teachers.
9. ICT can help the teachers to evaluate the learners' progress and proficiency in certain skills.
10. The learners can interact with the teachers, peers and experts on various issues ot side the classroom.

Barriers in the use of ICT

1. More experience teacher prefers traditional teaching methods in the classroom. They lack acceptability to change due to the faith in old methods. They fear that technology might bring undesirable changes in classroom teaching.
2. Many of teachers feel that technology will replace them in classroom. There is insecurity in their minds when they are asked to use ICT equipment's in the classroom.
3. Technophobia acts a major barrier in using ICT in classrooms. Many of the teachers develop a fear that they might spoil the equipment by using it improperly.
4. There is problem of fund shortage to the schools and lack of infrastructure availability.
5. ICT usage demands lot of time and planning on part of the teacher. Modern teachers are already overburdened because of the evaluation system being examination oriented. They have to perform several duties apart from their regular duties. This reduces interest in using technology.
6. There is a lack of systematic training programmer regarding to use of ICT.
7. There is lack of awareness about the computer.
8. The students learn through interaction with the teacher. By using ICT in classroom, there is gap between students and teachers. Hence value of human resources gets reduced by extensive use of ICT in classroom.

Sum Up

ICT has the potential to 'bridge the knowledge gap' terms of improving quality of education increasing of quantity of quality of educational opportunities, making knowledge building possible through beardless, accessibility to resources the people and reaching population in remote areas to satisfy the basic right to education. ICT contributes significantly to the classroom teaching-learning process as it helps the teacher to make the teaching –learning process more dynamic ICT also renews the learner's enthusiasm because it develops the ability of self-learning and individual interaction. ICT has tremendous potentialities to revolutionize the educational process

References

1. Bhowmick Debashis, (Oct., 2014), ICT in Education in Education, Edutracks,Vol.14 (2)
2. Dash, Manoj Kumar, (Aug.,2007), Integration of ICT in Teaching Learning: A Challenge, Edutracks,Vol.6 (12)
3. Devi Pooja & Singh Ravindra (2015), ICT in Teaching & Learning, Nikose, R.L. (Ed.), Educational Technology, New Delhi: A.P.H. Publication.
4. Jaiswal Deepak (2011), "Role of ICT in Teacher Education", Edutrack, Vol. 10(11), pp.10
5. Khatoon Tahira, Role of ICT in the Professional Development of University / College Teachers, Anweshika : Indian Journal of Teacher Education, pp.56-59
6. Krishnamurthy S. & Lakshmi S., (20100, Training Teachers to Cope With Emerging ICT Based Skills, In Natesan et.al. (Eds.), Quality Concerns in Teacher Education New Delhi: A.P.H. Publication.
7. Kumar Shivaraj & Aggrawal Suresh, (2009), Applicability of ICT in Indian Classrooms- Lets Know the Barriers, In Saxena J. et.al., (Eds.), ICT in professional Education, New Delhi : A.P.H. Publication
8. Maheshwari, V.K. Surekha, Bansal, Rawat S.C. (Ed.), "Essentials of Educational Technology", Merrut: R. Lal Book, Near Govt. Inter College.
9. Naik, P.K.,(2015), Communication Skills & Teacher Education, In Nikose, R.L. (Ed.), Educational Technology, New Delhi : A.P.H. Publication.
10. Nirmat K.D. & Husain A, "Information & Communication Technology in Teacher Education", Anweshika : Indian Journal of Teacher Education, pp.30.

11. Ottesen,E. (2006), Learning to Teach with Technology: Authoring Practiced Identities, Technology, Pedagogy & Education, Vol.15(3): Trends, Problems & Prospectus, Paris: UNESCO
12. Pelgrum, W.J.& Law,N.(2003), ICT in Education Around the World
13. Phukan S.R.,(2015), Issues and Challenges in Integrating ICTs in Education, In Nikose, R.L. (Ed.), Educational Technology, New Delhi : A.P.H. Publication.
14. Rajpurohit P.S.& Saxena, A.K., (June,2016), Role of ICT in Modern Teacher Education, Edutracks, Vol.15(10)
15. Tulsidas, S., (Oct.,2017), Use of ICT in Teacher Education, Edutracks, Vol.17(2)
16. UNESCO,(2002), Information and Communication Technologies in Teacher Education: A Planning Guide,http://www.unesco.org.

Visited Website:

http://www.teachersn.com/general/ict-for-teacher education.html.

THE ROLE OF ICT IN ENGLISH LANGUAGE TEACHING INRURAL AREA

Dr. Nitin A. Mathankar
(Principal)
Vasantrao Kolhatkar Arts College, Rohana
Tah-Arvi, Dist- Wardha.442302

Abstract:*Boundaries of classroom have vanished and the term 'beyond textbooks' has been in vogue. Of course, going beyond textbooks opens up new horizons in the era of globalization because today even the learner's community is not content only with what teachers do write on black-board. Moreover, they expect the teacher with a new age feel at every step of learning and all these requirements can be fulfilled through integration of technology in teaching-learning.*

Technology has entered into this area and has helped tremendously to both the learners and teachers of English. The rural area has no exception to this change. You can see clearly the mobiles; smart phones are here and there in the hands of rural area students. They know perfectly how to handle the smart phones. These days the knowledge has arrived at your fingertips just because of technology.

Introduction: One of the distinctive features of human being is their ability to acquire knowledge, and what makes this knowledge an ever-thriving entity is man's ability to 'impact' this knowledge to orders- Transfer of knowledge, which is one of the foundations of learning is among the most fundamental social achievements of human beings is their ability to acquire knowledge to others. Transfer of knowledge, which is one of the foundations of learning, is among the most fundamental social achievements of human beings.

Building strong relationships with students is something that frequently explains why faculty takes pleasure in the challenge of working at a small university.

The concept of moving the traditional classroom of desks, notebooks, pencils and blackboard to an online forum of computers, software and the Internet intimidates many teachers who are accustomed to the face-to-face interaction of the traditional classroom. In the past 10 years, online instruction has become extremely popular as is evident in the rise of online universities, such as University of Phoenix Online and Athabasca University (Canada), and on-campus universities offering online courses and scalability of e-learning technologies. E-learning is fast becoming a major form of learning.

Advancements, standards, specifications and subsequent adoptions have led to major growth in the extensibility and scalability of e-learning technologies. E-learning is fast becoming a major form of learning.

Computer multimedia offers ideal opportunities for creating and presenting visually enriched learning environments. The latest technologies associated with virtual reality will also play an important role in not too distance future.

Management institutes and educators have attempted an increased incorporation of collaborative group work, problem-solving and decision-making through technology as an integral component of pedagogy. There is no doubt that technology-based tools can enhance student's cognitive performance and achievements if used appropriately, in accordance with knowledge learning and as part of coherent educational approach.

Computer-based systems have great potential for delivering teaching and learning material.

The rapid development of Information and Communication Technology (ICT), particularly the Internet, is one of the most fascinating phenomena characterizing the Information Age. ICT powers our access to information, enables new forms of communication, and servers many on-line service in the spheres of commerce, culture, entertainment and education

Over the last decade in the United Kingdom there has been growth in support for the use of technology within teaching within teaching and learning in Higher Education (HE). In particular, since 1993 the Teaching and Learning Technology Programme (TLTP) has promoted the creation of technology-based materials for use across the HE sector.

What is Information and Communication Technology (ICT):

Information and Communication Technologies (ICT) are referred to as the varied collection of technological fear and resources which are made use of to communicate. They are also made use of to generate, distribute, collect and administer information.

ICT is a force that has changed many aspects of the way we live.

Information and Communication Technologies consist of the hardware, software, networks and media for collection, storage, processing, transmission and presentation of information (voice, data, text, image), as well as related services. ICTs can be divided into two components, Information and Communication Infrastructure (ICI) which refers to physical telecommunications systems and networks (cellular, broadcast, cable, satellite, postal) and the services that utilize those (Internet, voice, mail, radio, and television), and Information Technology (IT) that refers to the hardware and software of information collection storage, processing and presentation.

The concept of s "Digital Divide" has been around almost as long as ICT has been publicly available. While traditionally it has come to mean a division in society, based on socio-economic factors, this does not 'paint the entire picture'

Introducing ICT as a tool to support the education sector has initiated substantial discussions since the late 1990s. A decade ago the emphasis was on Technical and Vocational Education and Training and training teachers. During the last few years an increasing number of international development agencies have embraced the potential of ICT to support the education sector. UNESCO has played a major role in spearheading the Education for All initiative to harness the potential of ICT. The widely subscribed Darker Framework for All recognizes that, 'these technologies (ICTs) have great potential for knowledge dissemination, effective learning and the development of more efficient education services.

When looking at the integration of ICT to support the achievement of educational objective, it can be found that after almost a decade of using ICY to stimulate development, it is not yet fully integrated in development activities and awareness raising is still required.

The main objectives of the paper are to evaluate the importance of ICT in higher education, especially in rural area.

The Role of ICT in English Language Teaching in Rural Area:

Computer Assisted Language Learning is an interactive method of instruction that help learners to achieve their goals of learning, at their own pace and ability. It helps in enriching English language skills and connects a learning place to the outside world. This technology serves as a 'Surrogate teacher', it also impartial feedback to the learners. So it is ideal for integrating skills such as reading, writing, speaking and listening.

With the reduction in the cost of computers, most educational institutions can afford to have computer systems. A computer lab, in now a days seen as an essential requirement in any educational institution because of the increased awareness among the students, teachers and managements. Computer Assisted Language Learning needs a computer laboratory with the teacher present of a computer with students working independently**.**

Use of computer Assisted Language Learning For Teachers:

It offers an ideal environment for the teacher to do things differently and use innovative methods of teaching. For instance, power point presentation using multimedia support can simulate conversation and discussion in the target language.

Computer Assisted Language Learning helps the teacher to:

- Plan the lessons/ materials
- Present the lessons/material setting offers an ideal learning environment for those who cannot benefit much from lecture method.
- It enable the students to :
- Learn the lesson and also access a variety of background information like vocabulary glossary. Pronunciation, grammatical explanations, etc.
- Practice not only to listen and comprehend, but also to speak by sing the material presented in the computer.
- Collaborate with other learners. The entire class may work on a single question or different questions in groups.
- Achieve swift development of communicative ability though frequent exchange of ideas and discussions with the teacher and among themselves.
- Enhance critical thinking skills through activities involving observation, prediction and conclusion, all of which contribute to language use.
- Have 'Virtual field trips' that enrich their experience of studying a specific theme or topic.

Language Lab Software:

Language lab software is of two types:

- Platform software
- Learning software

Platform Software:

It is essential for those who use CALL lab. To know about the mechanism of platform software. It offers different features and possibilities. The following are the prominent features of any good CALL platform software. It allows the teacher to:

- Monitor all the students without moving from the teacher's console
- Speak to all the student or a set of students at a time.
- Block the student's monitor and take control of the key board.
- Conduct on-line examinations
- Help students listen to and record their voice, and check and compare the recorded voice with the original voice
- Transfer video and audio files to the audio fills to the students
- Transfer teacher's monitor to students or a student's file to another student

- Observe student's monitors, listen to students to student's voice and respond.

Learning Software:

Learning Software is of two types:

- Online learning resources
- Networking software

Online learning resources

The following is a list of some online sites that can be use as learning resources.

http://www.lcomsoftpartners.co,uk/coegdd1.htm

http://www.languages-ict.org.uk/managing/digital_language_labs.pdf

http: / / www.asian-efl-journal.com/

December_05_hj.php

http://www.llt.msu.edu

http://www.ict4lt.org/en /en_mod2-4.htm

http://www.wide.co.uk

http://www.asian-efl-journal.com/

march03.sub2.php

http://www.camsoftpartners.com.uk/docs/

UCALL_keynote.doc

http://www.journal.cup.org

http://www.eurocalllanguale.org/recall/r_online.html

http://www.gse.uci.edu/faculty/markw/call.html

http://www.co-i-l.com/coil/knowledge-garden//cp[/lss/shtml

http://www.gse.uci.edu/faculty/markw/orverview.html

http://www.oup.com/elt/rbt.internet

http://www.wide.co.uk

http://www.1stbook.com

http://www.allwrds.com

Networking software:

A number of them are available in the market and some of the most prominent ones are given below.

Technology in context:

This material is designed especially for students who already have some knowledge of English. It serves in improving language skills in general and listening skills in particular. A variety of language items such as grammar, comprehension and speaking and writing tasks are included in this learning software. It contains science topics as well as topics of general interest. It caters to all sections of students who want to improve their skills in English.

Study skills success:

This language learning software is useful in improving all the language skills. It is helpful to students who wish to appear for competitive exams like IELTS and TOEFL. A wide variety of language activities are included in this software to expose students to different situations of language usage. The unique feature of Study Skills Success is the integrate authoring program, wherein the teacher can prepare his/her own material. The software makes use of various language learning strategies to enable the learners to develop effective communication. Learning strategies like interpretation, use signposts, filling in a form though listening etc. are use for developing listening skills. Speaking practice, short talks etc. are use for developing speaking skills. Skimming, scanning, summarizing etc. are use for developing reading skills. Using deferent sentence structures and exercises in linking sentences are provided for developing writing skills.

Sky Pronunciation Suite:

This software presents English thought dialogues, jokes, poems, rhymes, sayings etc. It includes The Phonemic Alphabet in English Similar Sounds, Word and Phrasal Stress, Stress and Rhythm etc. It Provide comprehensive training in all the important aspects of English pronunciation. In the Phonemic Alphabet in English, each and every sound is provided with an interactive voice to recognize the sounds and letters of the phonemic alphabets in English. The users can listen to vowel and consonant sounds. They can test their ability to recognize individual sounds and words transcribe and match words with their vowel components. They can practice sounds and the symbols and learn stress. Rhythm, intonation, syllable division etc. Similar Sounds program is designed to improve the learner's ability to differentiate between similar-sounding sets of words, both in isolation and in sentences.

Pronunciation Power:

This learning software on phonetics has a bright and attractive interface with well thought-out navigation. This software is designed to help students master the individual sounds of English. It also has a speech analysis function which is done acoustically to

compare each sound which the original sound. Learners can listen to the instructor's frequency wave form. They can record the sound themselves and compare their sound and frequency from with that of the instructor. This software also provides an animated skeletal view of the front and back side of the mouth, displaying the place and manner of articulation in producing that particular speech sound.

Report Writer:

Report Writer sets up a supportive writing environment for business reports and letters and engineering reports. It is an ideal tool for revision and self-access and includes many printable resources for classroom use. At each stage of writing, the writing proofs and writer's checklist. This program is indispensable to engineering to engineering graduates and engineers.

Tense Buster:

This software focuses on helping students improve their understanding of twenty-nine key grammar areas, ranging from the basics at elementary level to phrasal verbs at advanced level. Each unit begins with a presentation of a grammar topic based on a dialogue, a newspaper article, a radio broadcast or a story. Learners are encouraged to think about how grammar works. This is a pragmatic and empirical approach to grammar where students grapple with practical observations to evolve a generalized rule of grammar. This software also provides questions focused on key areas of difficulty, and a grammar rule which enables learners to correct their mistakes. Students can move on to practice and testing activities in which the language is contextualized and key aspects of form and function are highlighted.

DynEd:

DynEd software has different courses like New Dynamic English, First English etc. designed for different levels like Beginner-Basic, Intermediate and Upper Intermediate. These are skill-based courses that accelerate English language learning. DynEd courseware makes use of everyday language. The 'Show text feature helps the text to be displayed continuously. The control bar has features like voice record, voice-playback, play, rewind, and fast-forward. The software has 'student record keeping system' in which the performance of the learner is displayed by date or by lesson. The software also has placement tests which come on a separate disc.

Conclusion:

In the present scenario, a teacher works gets more fruitful by using ICT based teaching. The syllabus of universities allocates marks for using of ICT. In such cases ICT helps a lot to the teachers as well as students. Power Point Presentation makes the job of a teacher more effective but at the same time doubts of the students regarding the subjects gets cleared. The classroom also becomes lively because of the two-way process. Teachers play a significant role in shaping the personalities and sensitivities of their students. A teacher should ignite the minds of the young in such away, that throughout the life they should have a quest for knowledge and desire to make this world harmonious place to live in. I would like to quote the lines of Gandhiji, "What we need are educationists with originality, fired with true zeal, who will think from day to day what they are going to teach their people."

In this regard, in today's education, ICT will definitely help a lot in educational field.

Work Cited:

1. www.wikipedia.com
2. www.google.com

EXTENSION, BEST PRACTICES AND INSTITUTIONAL DISTINCTIVENESS COMMUNITY DEVELOPMENT PROGRAMMES: THIRD DIMENSION

Dr. Usha Sakure
Associate Professor
M. K. Mahavidyalaya, Nagpur.

Abstract: *Community services and extension activities have become a part and parcel of extracurricular activities. Educational institutions draw on the goodwill of the local community for survival and growth. NAAC has revived community involvement in the realm of higher education in India. There are many areas of community needs where the participation of students would develop leadership qualities among the youth. It should become more involved with the society and should take active part in the problems of development and emphasis must be laid on the social vision. Need based community development programmes can be framed through a dynamic process of communication between children, parent and woman organizations in the area. It needs a holistic approach that examines the main channels that binds the colleges to the rest of the society. Students need an opportunity to work with the underprivileged section of the society and upgrade their personality and experience through community service. Various programmes can be conducted to sensitize students to social issues. This means keen awareness and high motivation is required to bring about the necessary change. They can prioritise the needs and take sequential steps for the solution of their problems. Identifying these best practices for community development programmes by the institution, its implementation, sustainability and characteristics are discussed in the present paper which will go a long way in quality enhancement of the institute as well as the community. The aim appears crystal clear to form a bridge between the Institution of learning and the community to be served.*

Keywords: **Awareness, Community, Development, Implementation, Programmes**

Introduction: In today's globalized world the higher education system is witnessing a sea change and transformation. Today, the purpose of education has changed and it no more caters only the teaching and learning process but embarks on a journey to refine reshape and enable the individual to develop his own potential into a strong individual character. The Universities are now becoming recognized as key generators of cultural and social ethos. They have begun to pay more attention to divert the capabilities and activities of the institution of higher studies towards contributing to social and economic development. Community and extension services were directly and indirectly neglected when compared to teaching and research, but has received substantial attention during the last few decades, thanks to NAAC. It is a known fact that Community Development involvement in the realm

of higher education institutions is not new and since times immemorial it was complimentary to each other guided by mutual benefits. There always existed some form of exchange, resources and services between the higher education and the proximate communities.

Like any development programmes, community development programmes taken up by the institutes should be acceptable to the people who constitute the community, in which the programmes are to be implemented. While the goal of education is to bring a change in the pupil through imparting of new knowledge and ideas, achievement of this goal is possible only if people have free access to the source of knowledge and ideas as well as free interaction within and across communities. Identifying these best practices for community development programmes by the institution, its implementation, sustainability and characteristics are discussed in the present paper which will go a long way in quality enhancement of the institute as well as the community.

Community services and extension activities have become a part and parcel of extracurricular activities in institutes of higher education. The Educational institutions draw on the goodwill of the local community for survival and growth. Though NSS and NCC are actively engaged in these activities, there is a need to co-ordinate their activities with non-Government organizations to achieve optimal results in the field level. A criterion for the best practices is the innovation in the existing practices and identification of new thrust areas for reaching the unreached.

In order to meet the challenges of the 21st century and to acquire a competitive edge, the higher education system has the mission to accomplish its vision through socially relevant process and modern education technology which envisages the turning out of employable and socially sensitive graduates which can be achieved only by a missionary zeal of the institution of higher education as a whole. Henceforth, the value of team work is initiated and encouraged and the bond is created amongst themselves towards community development services.

Involving the students in the process of social upliftment of the downtrodden masses and thereby developing leadership qualities among students remains the significant purpose. There are many areas of community needs, where the participation of students would develop leadership qualities among the youths. Women education and awareness campaigning on health and sanitary conditions are a few to mention. These services are in conformity with the aims and objectives of the institution. There is a need to design these activities is such a way

as to foster all round development of students for empowerment and leadership, which will be beneficial to them in the long run.

It is the need of the hour to accept extension as third dimension of higher education. It should become more involved with the society and should take active part in the problems of development and emphasis must be laid on the social vision. One of the most important functions of the institution of higher studies is to organize extension services so that the students in various departments are closely involved in activities organized for the good of the community. It needs a holistic approach that examines the main channels that binds the colleges to the rest of the society. It includes concept such as creating knowledge society, continue education, community engagement and services, people's participation and rural management, social entrepreneurship, regional engagement. These activities had been taken and designed by various disciplines such as adult education, continuous education, and distance education. Extension education discipline has the ability to generate and document the social technologies which influence the human behavior in such a manner that brings the desirable changes in people's attitude, knowledge and skills resulting in the societal growth.

The institution of higher education in India have built ivory towers and they delve into its glory, these institutional resources knowledge, manpower and physical Resources have an obligation to develop sensitivities to involve in the development of the community, with particular reference to overall and diverse learning needs of all the segments of the society. The aim appears crystal clear to form a bridge between the Institution of learning and the community to be served.

Higher education Institutions have to discharge their responsibilities to the entire educational system and also the society as a whole. Any extension programme must be based on the expertise of the institution, utilization of local manpower resources to meet the requirements of the community demands. As such any extension activity by the college must concentrate on the disadvantaged population of the society such as women, unemployed youth, and people below poverty line. The objectives of such community development activities may be:

To generate knowledge, information and skills and passing on the same to the target population.

To understand community problems and find out appropriate solutions through research and innovations.

To provide better employment opportunities, by utilizing the government support agencies.

To develop a mutual understanding between the Government and the Public.

To bring about socio- economic progress through technical improvement.

To achieve comprehensive progress and spread it to all the sections of the society.

To make the benefits of development, available to people from all classes of the society.

To enable people to develop themselves through their own decisions and efforts.

To help people to develop resources from within the society as Development of resource is essential for sustainable development.

To help the community members to take greater control of their lives and their environment by developing their skills in problem solving and resource management.

To give special attention to the participation of the capacity of the marginalized groups.

To mobilize Participation of youths in awareness campaign and in monitoring retention and participation.

To give Special attention to gender sensitivity for girl student's for enrolment and retention. The rationale for giving importance to women's role in the programme is based on the proven fact that ensuring women's participation increases chances of sustainability.

To provide equal access for all sections of the society including the weaker sections and improvement in the standard of living of the deprived and the underprivileged.

To educate the masses in areas of health, nutrition and hygiene include mobilization of community groups to a better living and creating awareness of healthy living. Need based community development programmes can be framed through a dynamic process of communication between children, parent and woman organizations in the area and the staff and students of the Institute. The following activities can be a part of this practice:

There are many areas of community needs where the participation of the students would develop leadership qualities among the youth. Women education and awareness campaigning on health and sanitary conditions are a few to mention these services that can be in conformity with the aims and objectives of the institutes. This would foster an all round development of students for empowerment and leadership.

Organizing and conducting non formal classes in municipal schools and slum areas to promote value based education and raising awareness of environmental preservation by using healthy food, hygiene and bio degradable products.

Organizing and conducting non formal and adult education in rural areas. Women can be trained accordingly to take care of the family members with utmost care of nutritive diet and hygienic means to prevent diseases.

Promoting population education about importance of healthy reproductive practices, healthy diet, treating girl child with the same honour as male child in the family. Problems such as dowry exploitation, sex determination, sex exploitation, migration can be treated at micro and macro level.

Likewise, the faculty of Arts can play a dominant role in the extension activities of the college. They can impart knowledge and skills to the community about their living conditions, development, citizenship, training, gender sensitivity and so on. Students need an opportunity to work with the underprivileged section of the society and upgrade their personality and experience through community service. Various programmes can be conducted to sensitize the students to social issues like child sponsorship programme where students individually or collectively can sponsor a needy child to complete his or her education. Vocational training programmes can be undertaken to provide skill training for youth and women in villages, rural exposure programmes and camps to interact personally with villagers and to understand their problems

The faculty of commerce and management can improve the lifestyle of the village people by giving better management practices to the community people in their day today life. They can provide knowledge related to water management, bank awareness, consumer protection, legal awareness, computer literacy and so on. This basic knowledge imparted to them can certainly make a difference in their lives and will bring them to the mainstream.

The faculty in Physical education can give them information and training in yoga, rural sport, stress management, Physical and mental health awareness programmes can be conducted and organized to give them first hand training in these issues. Some villages can be adapted and certain clubs can be formed as potential centres for integrating the extension programmes and provide functional training to the people at large.

When students come out of colleges certain capabilities are required to be built in them for enabling them to face the challenges in the real world. So a good education model with extension and community service is the need of the hour to ensure that the students grow

to contribute towards the economic growth of the country. If this activity is conducted well, it will lead to functioning of the institution more qualitatively and effectively encompassing all the parameters leading to overall development of the students, with a firm conviction towards the society. Thus there are some Characteristic features of community development which ought to be followed to bring change in the society. The process of development is important. Change is essential but it has to be positive and progressive. The institute of higher education plays a leading role and lends certain characteristics to the community development because the basis of **community development is:**

To help them develop the ability for decision making. People have the capacity to take decisions for their own wellbeing. They should be helped to develop this capacity.

To make the people to enrich their lives

To make them understand that they have to make the efforts of solving their own problems

The college should take an initiative to develop or implement a planned programme to achieve this. Sudden change or too much of change is harmful, it should be slow and steady or else this change will be resented. People take time to unlearn old ideas and accept the new ones. This is true when we are dealing with the existing social structure or set practices or prejudices and superstition. The programmes should be graded and follow sequential steps. Foe example for a literary campaign to succeed, it is to be started with awareness building, motivational works, easy timings, special attentions to weaker sections with continuous cooperation and recognition of local leadership. The process of development should bring about maturity of thought among the participants. Attitude changes are possible only when people learn to think differently, bringing forth awareness and acceptance of issues of equality and social justice, respect for human rights.

Steps in community development:

Community participation or people's participation occupies a central place in development, thinking and practice. As we know there are certain steps to be followed by the institutions in all the community development programmes.

Selecting a community

Profiling a community

Identifying felt needs and problems

Problem solving/Finding alternatives

Decision making

Implementation

Monitoring for sustainability

Hence at the implementation stage, studying the community and knowing the people becomes necessary for modification of strategies to suit people's needs and overcoming problems. The key to this is involving the people in planning and decision making and eliciting their participation in the implementation of the programme.

The programmes to be undertaken should be diversified in nature. Implementation of the same programmes for years together loses its charm and appeal. It has to be implemented differently in rural and urban areas so that it has wider perspective with specific local needs. The college should recognize the need, prioritize them and participate from the beginning to the end, planning, Implementation, Operationalism and monitoring of the programme for sustainability. This means keen awareness and high motivation is required to bring about the necessary change. This way the members of the college will understand the scope and limitations of the program and work towards the best solution. They can priorities the needs and take sequential steps for the solution of their problems.

Higher education Institutions in India need to stream line the extension and community services as per their resources. Keeping in view its infrastructure, available expatriation, and regional and local needs they must bridge the gap between academics and society by designing a result oriented mechanism under the supervision of extension education professionals. On the other hand, it is time to reform the activities objectives and roles of extension education discipline by streamlining the functioning of concerned professional societies and national expert groups if we want to grab vast opportunities to generate lasting benefits to the society at large.

Work cited:

1. Agrawal, Usha. Indian Women: education and Development.
2. Dahama, O.P.. Extension and rural Welfare.
3. Harper, Ernest and Arthur Dunham. Community Development in action.
4. Saiyidain, K.G. Universities and social Responsibilities, University and Adult Education, New Delhi.

ISSUES AND CHALLENGES IN IMPROVING QUALITY CULTURE IN HIGHER EDUCATION

Dr. A. G. Pakhmode
Asst. Professor
Dr. A. K. Zingare
Principal
M. B. Patel College of Arts & Commerce, Deori. Dist.Gondia

Abstract: *Education plays an instrumental role in the development of a country. It needs to be reformed according to the needs of the changing times and modern scenario of the world. Education provides an opportunity to critically reflect upon the social, economic, cultural, moral and spiritual issues facing humanity. Efficient and educated Indians are the backbone of the country that drives our economy forward. There are many Indians across the world that has proved their capabilities and skills. To cultivate an education hub in India or to become a flourishing partner in global economy, India needs to develop quality culture in higher education, especially in research and development area. This paper aims to identify issues and growing challenges in the field of Higher Education in India. This paper concludes with the solutions and the Expectations from various stakeholders Students, Industry, Educational Institutions, Parents and Government.*

KEY WORDS: Challenges, Financing, Higher Education, Issues, Quality Culture

Introduction: Higher education is very important for a developing country like India and it is encouraging to increasing human development. Higher education in India has experienced phenomenal expansion since independence. India has produced scientists, engineers, technologists, doctors, teachers and managers who are in great demand all over the world. Now it is one of the top ten countries in our industrial and technological capacity, because of the significant contribution of manpower and tools provided by higher education, especially, technical education. India has already entered into the era of knowledge explosion. It has proved its tremendous potential by its performance in nuclear and space domains. Higher Education provides opportunities to the people to reflect on the critical social, cultural, moral, economic and spiritual issues facing humanity. The increasing youth population can be a great asset if potential employability is brought to fruition. Conversely, if we fail to provide education and employment then it will open a downside gate for Indian economy. Education is an essential tool for achieving sustainability.

Higher Education Scenario in India:

There has been appreciable growth of higher education since 1951. As a result, the number of teachers as well as students has also increased significantly. The growth of

students' enrolment is more than the growth of number of teachers over the period of time; still we need more than 1500 universities to cater the demand. Most of the universities have affiliated colleges where undergraduate courses are approved and taught. But still, if we compare this with increasing population, then we have to rethink.

Emerging Issues: There are many basic problems faced by higher education system in India. These include Lower level of teaching quality, Financing of higher education, More concentrated on theories and rather than practical knowledge, Traditional methods of teaching, Privatization, Inadequate facilities and infrastructure Quota system.

Teaching quality: Our education system is torture by issues of quality in many of its institutions and universities. Many of the issues like lack of faculty, poor quality teaching, Traditional teaching methods, outdated and rigid curricula and pedagogy, lack of accountability and quality assurance and separation of research and teaching are raise questions on Indian education system.

Financing of higher education: Expenditure on education on higher by the government, is one of the parameters to judge the quality in education for at all nation. In India, higher education has received less attention in terms of public spending than other levels. Indian education system is more focused on theoretical knowledge rather than practical knowledge. In many jobs there is also a minimum requirement of percentage which is high.

Traditional methods of teaching: There are some teachers who still stick to those older methods of teaching like board, marker. They don't like to make use of audio visual aids in teaching. Also they are not up to date with the information available and what global industry demands.

Privatization:privatization of higher education is a growing trend in present scenario. In India both public and private institutions operate simultaneously. Approximately 50 per cent of the higher education in India is imparted through private institutions, mainly unaided involving high cost. However, the situation is not so simple. Private providers, in the interest of maximizing profit, and to minimize expenditure costs by compromising on the quality of education provided in their institutions.

Inadequate facilities and infrastructure: In India, many of the universities don't have adequate infrastructure or facilities to teach students. Even many private universities are

running courses without classrooms. Internet and Wi-Fi facility is still out of reach of many students.

Emerging Challenges:

No doubt that India faces today a number of problems pertaining to poverty unemployment disappearance of moral and spiritual values. But in the last few decades a countrywide problem/challenges have emerged in Higher Education system in India they are discussed as under. Our heterogeneous education system which is based on geographical, rural-urban, rich-poor set up have posed in great challenge for the educational institutions. Varieties of colleges, universities, technical institutions have produced and different types and quality of Education. Some of them are really imparting qualitative education although a few others are doing only murky business.

Interference of political factors: Most of the Institutions, imparting education (Aided-non-aided) are owned by the dominant political leaders, now playing key role in governing bodies of the Universities. They have established their own youth cells and encourage students' organization on political basis.

Economic Difficulties: The numbers of students are coming from the ordinary classes; many of them are unable to provide the minimum necessities of life for themselves. Students hold part time jobs in order to pay for their educational expenses and they need to divide their attention between a job and College/University education. Near about seventy-five percent of the total student's community today, have been facing the financial problems. Earn while learn scheme cannot adequately support student to face economic challenges.

Lack of Moral values: Rapid growth of science and technology and subsequent industrialization has caused a great and danger to our old moral and values. The younger generation's dissatisfaction and revolt is the outcome of a decaying system of values.

Improving quality of higher education:

There are some suggestions and Expectations from Government, Industry, Educational Institutions, Parents and Students for improving quality of higher education.

Student-Centered Education and Dynamic Methods:-

Student-centered education and employment of dynamic methods of education will require from teacher's new attitudes and new skills. Dynamic Methods would lay stress on self-study, personal consultation between teachers and pupils, and dynamic sessions of

seminars and workshops. Methods of distance education will have to be employed on a vast scale.

Examination Reforms: -Examination reforms, gradually shifting from the terminal, annual and semester examinations to regular and continuous assessment of student's performance in learning must be implemented.

To increase Quantity of Universities: -We need more universities because we are more in number and present number of universities is too less. National Knowledge Commission (NKC), in November 2007, has recommended setting up of 1500 universities. It has also called for establishing an Independent Regulatory Authority for Higher Education (IRAHE) to monitor the quality of overall higher education in India.

Action Plan for Improving Quality: - Academic and administrative audit must be conducted once in three years in colleges by external experts for ensuring quality in all aspects of academic activities. The self-finance colleges must come forward for accreditation and fulfill the requirements of accreditation. Universities and colleges should realize the need for quality education and come forward with action plan for improving quality in higher educational institutions.

High-tech Libraries: - A library must be online and conducive for serious study. Indian universities should concentrate more on providing quality education which is comparable to that of international standards.

Conclusion:

Over the period of time, growth have been take place in higher education in terms of institutions, enrolments etc. but it is not sufficient. Indian economy is facing various challenges regarding higher education, which need to overcome through appropriate policy formation and their effective implementation.

To conclude, Higher education in India is an extraordinarily important part of modern Indian society and it is knotted the political and social systems of the society. In order to effectively plan for reforms and improvement, it is necessary to have in realistic perceptions of possible advancement.

References:

1. Agarwal R. Higher Education and Quality Improvement: A challenge for India. Indian Journal of Applied Research 2014; 4(10).

2. Mishra Sharda, (2006). UGC and Higher Education System in India. Book Enclare, Jaipur.302006.
3. Arunachalam P. Higher Education Sector in India: Issues and Imperatives. Journal of Global Economy 2010; 6(4)
4. Padhi, S.K. (2011), 'Issues, Challenges and Reforms in Higher Education for a Knowledge Society,'
5. Higher Education in India: Issues, Concerns and New Directions http://www.ugc.ac.in/pub/heindia.pdf
6. Chronicle of Higher Education, various issues (cited as CHE) (http://chronicle.com/)
7. British council report. Understanding India: The future of higher education and opportunities for international cooperation, 2014
8. Bhatia K, Dash MK. National Knowledge Commission-A Step towards India's higher Education Reforms on India's Higher Education. International Research Journal of Finance and Economic 2010; 53: 46 9.
9. Sudhanshu Bhushan, economic & Political Weekly EPW January 26, 2013 vol xlviII no 4
10. University Grants Commission (UGC) released a report "Higher education in India at a glance.

ICT AND E-LANGUAGE LEARNING

Dr. Mangala Tomar
G.S. College of Commerce,
Wardha, Maharashtra, India

ABSTRACT: *This article considers the active collaborative and cooperative learning environment facilitated by ICT and its gadgets in learning English language and literature. ICT has initiated new possibilities into the classroom. The role of the teacher, the nature and context of learning, as well as the function and relative importance of course content have all been challenged and redefined, not only teaching learning system but also administrative system can be improved by the use of ICT. Here we shall explore some of the key characteristic, of ICT which makes language learning effective.*

KEYWORDS:ELL, English Challenges, Explicit,ICT, Immediacy Collaborative, Paradigm, Stimulus, Teacher and Remedies

INTRODUCTION

ICT Based Learning Methods: Language is the mirror of human life which delineates the life of human. Language speaks man's personality. It is the medium for imparting information to society. The advent of computer and the Internet-based educational methods offer exciting new learning medium that can literally transform our concept of school and classroom from physical into virtual realities.

Even in education sector, we witness that technological advancement and innovations have made a visible impact and have changed a scenario. The word 'ICT' includes any communication device such as computer, mobile phones, radio, television, satellite system etc. Now the role and use of technology as a tool for teaching of English language is increasing as educators have understood its ability to create both independent and collaborative learning environment in which students can learn English with much ease. Traditional methods of imparting higher education have become less motivating.

These methods can lead to much faster rates and higher quality of learning and are also more inter-active and motivating for students at all levels of education from pre-school to post-graduation. English is playing a major role in every field such as medicine, engineering, education, art and law, music etc. As the world is changing, there must be changes in language learning. IT is extremely effective for enhancing reading and language skills and general knowledge among the learners. In the light of India's outstanding expertise

in the IT industry, the country needs to embark on e media, web-based format. But on the contrary, technology has not been considered as a priority in school reform efforts. The available technology in Indian schools is being used only for 'typing' and preparing 'data files'. The time has come now, after a great exposure of technology in the educational setting, for Indian schools to move beyond the shallow and trivial practice. Technology should be used with more conscious educational purpose, as a cognitive tool, and as a means to facilitate more meaningful learning rather than an end in itself - to support the constructive teaching practices. Such positive approach will be beneficial and meaningful to the learning environment, the learning process and the learner.

The advantages of online learning: With the help of the modern technologies they have time and freedom to understand, reflect and analyze what have been exposed to. Moreover, the ICTs put forward an influential base for efficient education. Now, we need the modern technologies for a better blended method of delivery to create apt teaching techniques to enhance the process of learning English language. ICTs are very motivating, because they help the learners to learn the language which is carefully designed to meet the prescribed goals. The internet saves our time and energy. We can learn English lessons through internet without the need of travelling and without the need of leaving home or bedroom. With internet students can learn English anywhere at any time and whenever they want. The internet offers instant feedback to the learners which enhance the learning experience of the students.

What is ICT? ICT is an acronym that stands for

- Information
- Communication
- Technology

Importance of ICT in learning:

No doubt, motivation is the important in the process of acquiring or learning a foreign language; therefore, learners usually have a positive attitude toward computers.A. ICT education provides lots of opportunities to teacher to transform their practices by providing the learners with improved educational content and more effective teaching and learning methods. ICT improves the learning process through the provision of more interactive educational material that increase learner's motivation and facilitate the easy acquisition of basic skills. It (ICT) thus acts as a catalyst agent. The combination of education and Internet technology has made a deep impact on perspectives about teaching and learning. Technology,

today, has revolutionized in such a way that the methodology use by educators to teach a foreign or secondary language has changed. In fact, the relationships between teachers and students have undergone a phenomenal change. Various multimedia devices such as computer application, OHP, SMSs, emails, socializing portals, e-dictionaries, e-encyclopedia, power point presentations, webcasting, and audio-video, as teaching tools etc offer more challenging and engaging learning environment for students.

Enhancing teacher training

Teachers play a key role in the development of students. So the teachers have to shoulder the responsibility to come out with the students from the world of BLACK (board) and WHITE (chalk). The use of ICT's for teacher training has become recognized by the government of India. Microsoft Shiksha in India, is focused on using ICT's for training teachers. This includes training in applying ICTs in their teaching practices as well as using ICTs as a mode of delivery for these trainings.

ICT Tools in Language Context

- **Google images search aids to the presentation:**Some material of language learning such as text-based materials, audio-video needs to present to the learners. Presentation helps learners in understanding the learning material well. So including attractive Google image makes the presentation effective.
- **Sketches:**Sketches that depicted various scenes of the novel should be shown while teaching literature which makes them learning easy/Audio devices: Audio devices can be used with other media to form an interactive multimedia for teaching various topics of English language. However, it can also be utilized separately as independent tool. Audio devices include speaker, earphone, CD, and etc.
- **Free Voluntary Surfing:**The students should be allowed to do free surfacing related to their language content. This will encourage students to wander through the Internet and read what interests them. It will also result in higher levels of literacy. Computer assisted language learning provides new opportunities for learners to engage in active communication that facilitates the development of second language competence
- **Mobile gadget:**Mobile gadgets such as cell phone and smart phone which are equipped with programs like computer, which enable it to perform as mini personal

computer. By using this gadget the students can download certain thing related to their text

- **LCD Projectors:**Use of LCD Projector in a classroom is beneficial for both teachers and students. Chalk boards have become a thing of the past with the advent of Projectors in the classroom. It enables teachers to create bulleted PPT's notes for the class. It is also helpful in teaching language through images.
- **EBooks:**An e Book is an electronic version of a traditional print book that can be read by using a personal or by using an eBook reader like iPods and kindle. EBooks also used to improve the teaching and learning skills in the classroom. In eBooks teachers and students can add images, info graphics posters, video, and text, audio and so on. Learners can share eBooks with their friends. EBooks strengthen students' note making skills, the knowledge of English grammar and application skills.
- **The World Wide Web:**World Wide Web has become inevitable in the modern era of technology. There are a number of websites on English language teaching and learning which may be used in a class room. They help in improving one's speaking and listening skills at the click of a mouse. Articles, Journals and newsletters are available on these websites.
- **Reading skills:**A very conventional method but at the same time reading is the most important skill in English language. A good reading session should be very comprehensive, full of clarity, voice modulation, balanced tone, pausing at the appropriate punctuation etc. All these factors stimulate the student to think creatively. Technology can help students enhance their reading skills.
- **Listening Skills:**Listening is the ability to accurately receive and interpret messages in the Communication process. It is a key to effective communication. Listening is a natural way to learn a language. With the advent of technology, it is necessary to use audio-visual resources to the maximum to acquire efficiency in English language.
- **Speaking Skills**" Students should be encouraged to speak in the classroom. They can make use of the multimedia software which has, Role plays, Interview skills and group discussions, debates, etc, which enable students to participate actively. This helps students to acquire confidence in speaking.
- Language Lab and Its Role in Enhancing Communication Skills

- The best way to learn English is through listening, though considered a conventional method. A language lab helps students develop proficiency in learning by using audio visual aids. They are also exposed to different accents of spoken language. They can also answer questions based on Grammar and Vocabulary. Language labs also help students worthy of employment.
- Clarity English Language Lab is a network based teaching software designed to improve teaching environment in the computer labs. Clarity English Language Lab enables a teacher to remotely control, monitor, broadcast, and assist students in teacher PC directly. With powerful functions and friendly user interface, Clarity English Language Lab not only facilitates the teaching process but also brings fun and efficiency to learning. It has been greatly used in Schools, Colleges and Universities.
- **Interactive whiteboard:** An interactive whiteboard is a large interactive display (such as a touch screen monitor) which is connected to a computer and projector. A projector projects the computers' desktop onto the board's surface, where users control the computer using a pen, finger or other devices.
- **Computer-Aided Assessment (CAA):** Computer-Aided Assessment (CAA) is playing an increasingly important role in language teaching and learning. It is used for testing and assessing students understanding after learning some courses.
- **Communications:** Technology can help learners and teachers to communicate with another. Some ICT tools which can use as the medium of information are: 1) Email, which allows language learners to communicate with 'web pals' in other countries; 2) Tandem learning; 3) computer mediated discussion; 4) web-based learning environment; 5) audio conferencing; 6) Video Conferencing.
- **Simulations:** The computer can act as a stimulus which generates analysis, critical thinking, discussion and writing. Program which include simulations are especially effective as stimuli. Examples of language learning tasks which 'simulate' real world tasks are : 1) Web Quest; 2) Action Mazes; 3) Adventure games; 4) Sun power; 5) "Real-life" simulations; 6) video conference.

Conclusion:

Thus this advanced science technology must be optimized function while learning and teaching the language. Learning a language through ICT and its awareness among stakeholders will have positive impact on the society.

BIBLIOGRAPHY

1. Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). How people learn: Brain, mind, experience, and school. Available online: http://www.nap.edu/openbook/0309065577/html/index.html
2. Bude Su et.al.(2005) 'The Importance of Interaction in Web-Based Education: Volume 4, Number 1 Available online:www.ncolr.org
3. Chang S. (2007) 'Web-Based Learning Environment: A Theory-Based Design Process for Development and Evaluation' Journal of Information Technology Education Volume
4. DAVIES G.(2002) ICT and Modern Foreign Languages: Learning Opportunities and Training Needs 3 vol. 2 (1), , pp. 1-18
5. Davi U.K. Ltd.es, B. Dan Ellison, L. (1992).*School Development Planning*.Essex: Longman Group
6. Gupta Renu, (2010) 'Using Technology in the English Language Classroom' Volume 10, Available online: www.languageinindia.com
7. Grover Shuchi, (2005) Constructivist Classroom in India 'A Position Paper on National Policy on ICT in Education in India E
8. Hartoyo (2008). Individual Differences in Computer-Assisted Language Learning. Semarang: PelitaInsani Semarang
9. Victoria L. Tinio, (1999). *Modificating teaching through ICT. The American journal. 12, 56-63*

GREEN LIBRARY: AN OVERVIEW

Dr.Shraddha Anilkumar
Head, Learning Resource Centre
Dayanand Arya Kanya Mahavidyalaya
Jariptka, Nagpur 440014
Email:sanilkumar1966@gmail.com

Abstract: *It is difficult to turn on the television or read a news story today without learning about how green and sustainable practices are being implemented throughout society. Libraries are not exempt from these broader trends. In some cases, libraries and librarians have been at the forefront of these efforts. Greening Libraries provides library professionals with a collection of articles and papers that serve as a portal to understanding a wide range of green and sustainable practices within libraries and the library profession.*

Keywords:FSC (Forest Stewardship Council),Green Library, Green Library Movement, Library renovation, LEED (Leadership in Energy and Environmental Design) certification, Sustainable Library, USGBC (U.S.Green Building Council).

Introduction: A green library is designed to minimize negative impact on the natural environment and maximize indoor environmental quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources (water, energy, paper), and responsible waste disposal (recycling, etc.). In new construction and library renovation, sustainability is increasingly achieved through Leadership in Energy and Environmental Design (LEED) certification, a rating system developed and administered by the U.S. Green Building Council. (USGBC).

Green libraries are a part of the larger green building movement. Also known as sustainable libraries, green libraries are being built all over the world, with many high-profile projects bringing the concept into the mainstream. Along with library 2.0, green is an emerging trend, defining the library of the 21st century. Many view the library as having a unique role in the green building movement due to its mission, public and pedagogical nature, and the fact that new libraries are usually high profile, community driven projects.

Green Library:

There are many ways to define a green library, but there are a number of central themes that run through all of them, including, minimizing the negative impact the building will have on the local environment, and if possible having a positive impact. Reducing the use of water and energy by designing in a way that maximizes the use of natural and

renewable resources. Integrating actual greenery and vegetation into the building and site design; preferably, using drought resistant and/or native vegetation. And, maintaining high standards of indoor air quality to help ensure the health of the people who inhabit the building.

LEED:

Despite the fact that there are many paths to sustainable design, the emergence of the trend has created a demand for quantifiability. In the United States, the nonprofit organization, the United States Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED) rating system in the year 2000. Their point based rating has a total of 100 base points possible, and buildings can be categorized as certified (40 points), silver (50), gold (60), or platinum (80+). LEED uses five different categories to judge a building's sustainability; 1) site location, 2) water conservation, 3) energy efficiency, 4) materials, 5) indoor air quality, and a bonus category for innovation and design. As of 2003 libraries accounted for 16% of all LEED.

Requirements of Green Libraries:

Sustainable library design is strongly tied to the overall green building movement, but libraries have specific needs that present some extra challenges for green builders. The biggest challenge is balancing the sometimes conflicting needs of the patrons and the materials. One of the central themes of the library's mission is to preserve knowledge, so that it can be passed on to future generations. For over a thousand years' books have been the dominant way to do that.

While the internet has become the information medium of choice for many, books still play a very important role in the preservation of knowledge. In order to be preserved, books must be kept away from extreme temperatures, moisture, and sunlight. In contrast, many individuals find sunlight to be the most enjoyable light for reading. Sunlight also plays a major role in green design, because it can be used to reduce the reliance on artificial lighting. For a long time, libraries needed to protect the collection from the damaging ultra-violet rays of the sun. New developments in glass technology over the past ten years have given designers more flexibility in their ability to place collections.

Green Designs:

Green design is an integrated process. No one aspect of a building's architecture makes its green architecture. Without proper integration from the earliest

moments of the planning phase, redundancies can occur, eliminating many of the potential benefits of sustainable design. Good sustainable design capitalizes on the synergistic relationships that occur between the various design elements. LEED groups these elements into five categories. Buildings can be designed in a way in which, good design in one category helps another category fulfill its goal.

Green Designs for Libraries:

Green libraries combine the needs of a library, sustainable design, and real cost savings in energy consumption. The main goal of green buildings is to develop and use sustainable energy-efficient resources in construction, maintenance, and overall life of the structure. Libraries considering green design will often look at the Leadership in Energy and Environmental Design (LEED) rating system. The following green design elements are identified, which can be incorporated into libraries:

- **Community collaboration** –makes sure that community assets are efficiently used and helps to maintain public support
- **Area-** before planning for a constructional setup must think about all sides benefit and drawback
- **Water-**Library should plan in proper way for good sanitation system which helps library clean, green and healthy.
- **Light-** Library should have sufficient ventilation, windows and skylight for natural light flows in to it for Natural ventilation. Use of low energy consuming bulbs and tube lights so can save electricity as a whole.
- **Daylight** –Pair daylight with artificial lighting to reduce energy costs
- **Green materials** –Use renewable materials like wood, linoleum, bamboo, and cork
- **Green roofs-** Roof top planting is good idea for fresh air. Solar tiles or panel can be used for roof.
- **Raised floor systems:** Raise the floor for fresh air,use paper insulation it is also a good trick to make eco-friendly building. It also protects wall from insects and fire.
- **Air-**Freshair is a very important factor.Air should be pure and breathable for it proper plantation is needed in the surroundings so it helps to make library cool. Planned for more ventilation which reduces the electricity consumption.

- **Indoor environmental quality:** Indoor environmental quality should maintain so that our mission should fulfill.

Need for Green Libraries:

First, libraries have been expanding the scope of their mission statements, to include working for the betterment of mankind. Second, technology is no longer a barrier. Third, it is great for the image of the library. Finally, sustainability offers the library a degree of independence, because cost of maintenance goes down, as doe's reliance on the volatile fossil fuels market.

Mission:

All libraries have a mission statement, and spoken or unspoken. An institution can no longer, in good faith aim to improve the human condition while contributing to the destruction of the future: Buildings produce about 40% of the dangerous greenhouse gasses emitted into the atmosphere. The environmental debate has evolved. The fact that humans are having a negative impact on the environment is no longer seriously questioned. Now, two questions shape the debate: What is our responsibility to fix it, and what can we do to fix it? Individuals and private organizations have a right to find their personal answers to those questions, but libraries are an investment in the future of our society.

Libraries have a responsibility to not contribute to the destruction of the environment, to educate the people regarding our current situation, and empower them to make a difference. Libraries are discovering that their green building gives them a great opportunity to educate the citizenry. As libraries continue to take a more progressive stance on improving the human condition, sustainability will have to be a central theme.

Technology:

The availability of the technology and knowledge to build green buildings has passed a tipping point. Green buildings are constructed all over the world in every sector of the economy; residential, commercial, non-profit, government, etc. Another breakthrough is the diversity of green technology. There is an abundance of options, so any green builder has the ability to capitalize on the local natural resources available, and customize the building to most efficiently operate in the local environment. Along with the advancement of technology, the increasing awareness of environmental issues decrease the burden on the green builder. With the development of organizations like the USGBC and the FSC, green builders have

information resources available to them. These organizations offer measurable levels of achievement to strive for, along with acting as watchdogs to help prevent the exaggeration of green credentials or green washing." With these advances, sustainable construction is no longer a utopian fantasy, but is simply becoming the way good buildings are being built.

Image:

The library is undergoing an identity transformation. It is struggling to stay relevant, as a vocal minority predicts its demise. While its image as an outdated institution is not entirely deserved, it is trying to assert itself as an irreplaceable part of the community, that plans on being an assertive force for good in the 21st century. Green design helps it do that three different ways. 1) A sustainable building makes a statement that the library is investing in the future of the community. 2) Sustainable buildings are smartly designed, aesthetically pleasing, and are powered by state-of-the-art technology. When people see these emerald marvels they will no longer be able to maintain false stereotypes regarding libraries as anachronistic relics from an analog age. 3) More and more people take environmentalism seriously, so a green image is a good image. The public awareness on this issue is only going to increase. Libraries want the public to believe that they are still relevant, and that their mission is to better humankind. Many have decided that a green library is a physical manifestation of their mission statement, and it provides an image of how libraries want to be seen in the 21st century.

Independence:

As publicly funded institutions, libraries are constantly battling with budget issues. Swings in the economy can affect the tax dollars coming into the library, as well as new legislation. Sustainable design offers libraries a way to reduce maintenance and energy costs, providing them with a degree of independence. Thanks to computer modeling software, building planning can be done more efficiently than in the past. Precise estimations on quantity of building materials can prevent waste and save money. Simulations can also be done to predict how big of an HVAC system the library needs. Solar 5.5 is a computer program that builds a 3-D model of the library's energy performance, and then plugs in various passive and active design strategies to see what kind of effect they would have on each other to maximize the energy savings and cost of the building; it has saved some California libraries up to 46% of the energy cost compared to meeting minimum state requirements.

One of the most important features of green design is a shift from the reliance on depleting fossil fuels to renewable energy resources. The independence from fossil fuels will save the library large sums of money, and it will relish its independence if prices continue to rise.

Money will also be saved by having higher morale, health, and productivity from employees. The architectural firm Heschong Mahone conducted a study that indicated students perform 25% better on standardized tests when in classrooms lit naturally. High levels of CO_2 can decreases performance as well.[4] Savings can also be increased, because there are governmental incentives to capitalize on, and some utility companies offer incentives too.

Some Green Libraries:

In the 2000s (decade) a number of high-profile green libraries have been built in the U.S. and in the rest of the world.

Fayetteville (AR) Public Library:

The Fayetteville (AR) Public Library opened in October 2004. The library, *Library Journal's* 2005 Library of the Year, was the first building in Arkansas to register with the U.S. Green Building Council and achieved the silver LEED designation in 2006. To earn this designation the library employed many green-design techniques. The library was built on an empty lot a few blocks away from the city's bustling square, making it a textbook infill project. During construction, any trees removed were harvested and used for furniture or donated to local parks. Throughout the project, almost 99% of the construction waste was recycled or reused. More than 65% of the materials used to build the library were made within 500 miles (800 km) of the city. By incorporating a green roof and using alternative roofing materials, the design team reduced air temperature as much as 20 degrees. Water collected on the roof is reused for landscape irrigation. The building's reading spaces and circulation desks were situated to take advantage of the natural sunlight without over-working the building's air conditioners, reducing energy costs by 25% and the overall building's energy consumption by 30%. Sunlight streams through 75% of the building's public spaces.

Seattle Central Library:

It was opened in May 2004. It is located in a dense urban area, accessible by public transportation. Rainwater runoff is stored in a 40,000 gallon tank, and used to irrigate the

landscape. It has triple glazed glass, used to reduce heat buildup. Seventy-five percent of the demolition and construction waste was recycled.

National Library, Singapore:

The Singapore National Library has been called the greenest building on the planet. It is designed using light shelves that allow the light to filter into the library, without having any harsh effects. During the moments that the sun is either to bright or not bright enough, sensors are programmed to dim or brighten the lights, and raise and lower the shades to maximize comfort and reduce costs.

Minneapolis Public Library:

It has a 18,560-square-foot (1,724 m^2) green roof. The green roof is planted with vegetation that does well in Minnesota's harsh climate, and it reduces rainwater runoff, reduces the building's heating and cooling load, reduces the buildings heat island effect, and adds green space to the downtown cityscape.

University of California, Merced Kolligian Library:

Opened in August 2005, UC Merced's Kolligian Library was awarded Gold Leeds Certification in 2007. The 180,000-square-foot (17,000 m^2) glass-and-concrete building uses 42% less water and 50% less energy than comparable buildings. The building's carpet contains 37% recycled content, while its acoustical ceiling tiles contain 66% recycled content that includes telephone books and newspapers. Nearly 30% of the materials used to construct the building were manufactured locally, resulting in significant transportation and energy savings.

Conclusion:

Libraries are prone to many problems like space, expenditure, air pollutants, microbial infections, fungus etc. which needs special care. The concept of Green Library also know as sustainable library is a modern Library which minimize electricity consumption and maximize use of renewable & natural sources like air , water, sunlight ,woods etc.For Library Today's demand is should take initiative in greening the library environment. Librarian should think, promote and take decisions to develop Green Library. Many national and International governing bodies are funding for making Green Library. All Library professionals must take initiatives and participate in green library movement for achieving our mission sustainability.

References:

1. *Anisko, E. & Willoughby, M. (Producers) (2006). Deeper shades of green [Television mini-series episode]. [Directed by Tad Fettig, narrated by Brad Pitt, & with Ken Yeang]. Arlington, VA: Public Broadcasting Station.*
2. *Boyden L. & Weiner J. (2000) Sustainable libraries: Teaching environmental responsibility to communities [Electronic version]. The Bottom Line, 13(2), 74-82.*
3. *Boyden L. & Weiner J. (2001) for the public good: Sustainability demonstration in public library building projects [Electronic version]. Public Libraries, 40(6), 44-6.*
4. *Brown, B. (2003) The new green standard: With the LEED rating system in place it is easier to make sure your new library saves money as it treads lightly on natural resources [Electron Version]. Library Journal, 128(20), 61-4.*
5. *Fox, H. (2004) Seattle central library: Water conservation [Web Video]. Retrieved November 20, 2007, from http://www.seattlechannel.org/videos/video.asp?ID=2205*
6. *FSC (1996) Forest Stewardship Council. Retrieved November 23, 2007, from http://www.fscus.org/standards_criteria/*
7. *LEED. (2005) Reference Guide, Version 2.2. US Green Building Council. Retrieved from http://www.usgbc.org/DisplayPage.aspx?CategoryID=19*
8. *McCabe, G.B. (2003). New Concepts for Technology in Library Design. In G.B. McCabe & J.R. Kennedy (Ed.) Planning the Modern Public Building (pp. 31-45). Westport, CN: Libraries Unlimited.*
9. *MPL (2006)New Minneapolis Central Library. From mplib greenroof*
10. *Tseng, S.H. (2007) an eco-building, a healthy life, and good service: A new Century in public library architecture [Electronic version]. Public Libraries 46(4), 50-5.*

THE USE OF ICT: A REAL BOON FOR HIGHER EDUCATION SYSTEM IN INDIA

Dr. Prashant M. Puranik
Assistant Professor (Commerce)
Gurukul Arts. Commerce & Science College, Nanda
Tal : Korpana, Distt : Chandrapur (M. S.)
9860461574(M)
Prashantpuranik1970@gmail.com

ABSTRACT: *Today we are living in the digital world. The use of Information and communication technology is now opened its wings in all the eras. As far as the Indian higher education in India is concern, ICT has made the revolutionary changes in this field. But till the students from backward and interior and rural areas cannot adjust themselves to take this education as they are not computer savvy. Indian government is making its best initiatives to make them computer literate. But till one should not forget the great and dynamic changes made by ICT in the field of education. The use of ICT in higher education has given the first preference to student oriented learning. No doubt the use of ICT has changed the scenario in education field. Till there should be more initiatives so that, Indian education system should reduce its lacunas.*

KEYWORDS:Acquainted, Campaign, Existence, Savvy.

INTRODUCTION: India is a country having historical background in the field of higher education. There were many renowned ancient universities established viz; Nalanda, Takshashila, Vikramshala, Valabhi, Somapura, Jagaddala, Odatantapuri, Pushpagiri etc. By the old references there were many Indian universities in which the students from other countries came here to take education.

Today as per changing time there are tremendous changes have come into existence. One of the important changes among them is the use of ICT in the higher education. The major aims of this campaign is to make use of audio video tools of computer in such a way so that, the doubts of the students will easily rectified, the communication skill of the teacher will develop and make the students ready to accept the new educational technology instead of old ones.

Today there are many faculties of higher education in which the use of ICT become compulsory i.e. engineering, medical, management, distance learning etc. No doubt there are number of advantages of the use of ICT in higher education, but there should be more initiatives should be invented to make the education system at the pick of advance technology.

RESEARCH DESIGN:

The secondary sources are used for collection of the data.

HYPOTHESIS:

"The use of ICT is real boon for higher education in India."

OBJECTIVES OF THE STUDY:

The main Objective of this research paper is to get well acquainted with the changing scenario of the Indian higher education due to use of ICT.

The ICT has brought enormous changes in the field of higher education. Today it is become tremendous benefits.

Since the constitution of the education commission (1964 To 1966) Indian government has recognized the need of ICT in higher education. As it is the only tool of taking the world wide educational its importance is continuously increasing. The percentage of computer savvy students in India is rising. The rate of computer literacy in India is almost 21%. *1

ADVANTAGES OF ICT USE IN THE HIGHER EDUCATION:

There is lot of advantages of use of ICT in higher education. Some of them are as under;

Improves Concentration:

The main benefit of the use of ICT in higher education is it improves the concentration of the students and teachers.

"Concentration is needed by learner to focus on the lesson for a period of time without allowing one's thoughts to be distracted." *2

Improves teacher's skill of teaching:

Teaching is a job spreading the syllabus related, community related and more other important global information to the students which important for their educational as well as ethical development.

"The use of ICT in education is more profitable access to teachers' knowledge and skills." *3

Helps to maintain efficient administrative task:

Administration is the major part of every sector, in the field of higher education, it is so easy to fulfill the administrative tasks by taking the help of ICT, maintain the important

records, chalk out the yearly planning, controlling procedures to maintain disciplines, creation of various committees etc.

"In 21st century, it is needed to make use of ICT in education sector for students' administration to various resource administrations in an education institution." *4

To enhance the quality education:

Higher education is not only a teaching and learning process but, it's a qualitative task of clearing the doubts of the students, improvement of the teaching skills through new ICT technologies and student centered education.

"In an age determined to generate new paths to quality education, ICT brings forward countless of benefits, enabling students with the right skill and outlook to stay ahead in the increasingly aggressive rat race." *5

Dynamic source of global information and communication:

The source of global information and communication:

The use of ICT in higher education helps students as well as teachers to enhance their knowledge by getting global information.

"With the appearance of the information society and its expansion through the development of computer networks, which allow citizens to access enormous sources of Information and knowledge."

The use of ICT has made the modern changes in higher education. That's why now India is the third largest country in the world, well known for its excellent infrastructure, computer aids and new technologies. *6

TESTING OF THE HYPOTHESIS:

In this research paper the following Hypothesis is taken;

"The use of ICT is real boon for higher education in India."

The use of ICT has made the renowned changes in the higher education. As far as the Indian higher education system is concerned there are many institutions which are well known for its quality education through ICT. Some of those are IIT Kharagpur, IIm Ahmadabad, and Calcutta, IGNOU from distance education, University of Mumbai and Jawaharlal Nehru University etc. These all the Institutions and universities have made their Identity of excellence due to modern use of ICT in their education system.

By this information it is clear that, the above hypothesis is proved true.

CONCLUSION:

Indian education system has historical background. There were number of renowned Ashrams, Vedshalas and Universities famous for their excellent education. Today India is world's third country known for its excellence and modern education due to extreme tools of ICT. But, to sustain in the global scenario Indian government must take initiatives for the invention of new educational software which will enhance the quality of the education in different fields. Successfully implementation of these initiatives will definitely help India to boost the quality of higher education.

REFERENCES

1. www.quora.com/what-is-the-rate-of-computer-literacy-in-india-in-2018
2. www.scielo.org.za/scielo.php?script=sci-attext&pid=S0256-01002013000200001
3. www.reseearchgate.net/publication/233490541-How-can-ICT-Help-us-to-improve-Education
4. www.riemysore.ac.in/ict/unit-10-ict-for-educational-management.html
5. www.yourstory.com/mystory/8b5663d9bf-benefits-of-ict-learning-and-education
6. https://www.usc.edu/dt/20137/index.html

Human Values and Professional Ethics

Dr. Meena N. Balpande
Asst. Prof. Physical Education
Dayanand Arya Kanya Mahavidyalaya Jaripatka, Nagpur

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Introduction: Basic human values which are at the core of being human. The values which are considered basic inherent values in human include truth, honesty, love, peace etc because they bring out the fundamental goodness of human beings and society.

Human values are the virtues that guide us to take in to account human element when one interacts with one human beings. They are our feelings for the human essence of others. It is both what we expect other to do to us and what we aim to give to other human beings. Values are standards or ideals with which we evaluate actions, people things, or situations, beauty, honesty, justice, peace, generosity are all examples of values that many people endorse.

Professional ethics are principles that govern the behavior of person or group in business environment, like values, professional ethics provide rules on how a person should act towards other people and institution in such an environment.

A professional ethics also need to be integrity in their work. Integrityis a concepts of consistency of actions, values, methods, principles, ethics,integrity is regarded as the honesty and truthfulness or accuracy of one`s actions.

People always think that professional is a person who has good career. The title for this paper is “Professional Ethics” this term paper will focus on the topic that relate with the professional which is specialist in ethic.In general ethic can be defind as rule or standard governing to conduct peoples or community. Everyone needs to apply ethic in their life as a guideline to be respectable person such as ethic with family at home.

Objective of Values:

- Our vision
- Our values
- Our goals

The trust has a vision and objectives that help guide its priorities and work it also has a range of values which all trust employees are aware of and help to guide the way we work and what we strive to achieve.

Our Values: Improving lives: Make things happen to improve people`s lives in our communities.

Everyone Counts: We make sure no one fees excluded or left behind patient's staff and the whole community.

Personal Values: Fulfillment,Inspiration,Contribution,Health,Family,Love, Creativity,Success Truth, Integrity.

Moral Values: Values that help determine what is morally right or wrong, eg.freedom,fairness, equality, etc.well-being.Those which are used to evaluate social institution are sometimes also known as political values.

Aesthetic Values: Values associated with the evaluation of artwork or beauty.

Our Goals:

- To deliver high quality care
- To support people to live independently at home.
- To deliver integrated care.

It is useful to distinguish values in to three kinds, personal values: Values endorsed by an individual. For example, some values and structure their lives so that they can spend more time with their family. Other people might value success instead,and give less time to their families and in order to achieve.

Importance of Values: Our values inform our thoughts, words and actions. Our values are important because they help us to grow and develop. The decisions we make are a reflection of our values and benefits and they are always directed towards, a specific purpose. Following values are most important for me to live by and the ones.

Appreciation, Belief in others, Caring, Commitment, Compassion, Courtesy, Dedication.

Benefits of Value:

1. Values help you find you purpose.
2. Values help you react in difficult situation.
3. Values help you make decision.
4. Values help clear out clutter.
5. Values help you choose the right career.

Types of Ethics:

Environmental Ethics: Environmental ethics is the study of the values and moral status of human environment interactions. Environmental ethics is important because its study forces people to consider how their actions affect others and the environment. Many individuals affect a person's ethical behavior at work, such as knowledge, values, personal goals, morals and personality values are an individual's judgment or standard of behavior. They are another individual factor that affects ethical behavior.

Culture Ethics: Ethics are the set of moral principles that guide a person's behavior. These moral are shaped by social norms, cultural practices, and religious influences. They serve as a compass to direct how people should behave toward each other, understand and fulfill their obligations to society, and live their lives.

Professional Ethics: Professionals and those working in acknowledge profession exercise specialist knowledge and skill. How the use of this knowledge should be governed when providing a service to the public can be considered a moral issue and is termed professional ethics.

Business Ethics: Morality, trust, reliability, principle, behavior, responsibility relationship. A certification that your business meets up with all required and accepted practices, legislation, prescribed rules and regulation, specified standards, or terms of a contract is necessary to make your company business complaint. Anyone employed by a company makes sure that you need to be in compliance with all policies and procedures, at all times.

Conclusion:

- Teacher has professional and moral tasks which facilities development of responsible attitude among students.
- Human values and professional ethics God has made humans as a combination of vices and virtues.
- Compromising personal principles in any way impacts your ability to conduct life in a moral fashion. A person core values reflect.

References:

1. https://www.gktoday.in
2. https://www.iia.gov.nz
3. https://www.businessdictionary.com

BEST PRACTICE
MISS L.A.D PERSONALITY CONTEST A POSITIVE APPROACH TOWARDS COMPLETE TRANSFORMATION OF STUDENT'S PERSONALITY

Dr. Meenakshi Kulkarni
Asst. Prof. Dept. of English
L. A. D & Smt. R.P College for Women, Nagpur,
dr_meenakshik@gmail.com

Abstract:*The Ms. L.A.D Personality Contest trains the students of LAD College in skills that focus on overall transformation of student's personality. Two and a half month prior to the contest various soft skills training are given to the short listed girls like - Positive Attitude, being assertive, stage presence, enhancing communication skills, so that they are ready to face the real world. Students Progression according to Criterion Vof NAAC, enables Students to be well equipped by knowing the skills required for the challenges in life and work place.*

Miss LAD contest – a platform given to final year LAD students to showcase their talents – is a quintessential example of a personality contest that focuses on brains over beauty in a true sense. "Miss LAD has never been about looks. It's a personality contest, where the students are judged on the basis of their intelligence, smartness and grit. Unlike the conventional beauty pageants, height and weight are never the criteria for Miss LADs. This is how all the other beauty pageants should also be judged. I'm glad that we, at LAD College, focus on the all-round development of the students and try to bring the best out of them." I personally am looking at and focusing through this research paper, Confidence building and Effective Communication for student's progression and overall development of personality. The Question answer round prepares them for interviews and to think out of the box. The introduction round also prepares them for the facing an interview. A well-groomed personality helps the contestants in having an edge over others in the job market.

Key Words:Extempore Speech, General Knowledge, Hidden talent, Physical Fitness, Soft Skills Development, Student Progression.

The Context: Beauty contests aregrowing globally and also at college level, wherein students look forward to be a part of it but who are not blessed with beauty feel inferior for not able to participate in contest so to bridge the gap it was decided to hold the personality contest for the final year students of all the faculty where there is no criteria for beauty, height & weight and everystudent stands equal chance to be a part of contest. This practice was started since last two decades which has led to complete transformation in student's personality, it has helped them to get jobs, as professionals in industry require people to

interact with customers and requires strong, confident, positive, interpersonal skills and friendly, outgoing personalities.

The much happening event of the Orange City Personality Contest Ms. L.A.D is held every year at Shankar Nagar Campus. The contest started off on a low key affair, a platform to showcase that beauty is also with brains but from 2007 the Platinum Jubilee Year, it has gained popularity and is now witnessed by thousands in its present grandeur. The parameters for judgment are not just based on height, weight and looks. The sole idea behind this contest is to appreciate girls' talent in every field and help enhance their personality. Noticeably there is an amazing transformation of the contestants over the period of two and a half months. The platform and training gives an impetus to their confidence a boost to their morale and prepare them to face the challenges of life.

During the arduous training period of two and a half months the participants underwent many sessions of training by prominent trainers take various sessions on 'Confidence Building, Go get it, Stage Presence, Emotional Stability, Adaptability, Self Esteem, SWOT Analysis, How to manage time, Change Management, Health and Hygiene, Positive Attitude, Etiquettes and Manners, Wardrobe maintenance and many more relevant topics to groom the participants.

In the Cyber age, developing and nurturing soft skills are need of the hour. Soft skills revolve around personal relationships, character building, and a positive attitude. By nurturing these skills, one can increase one's performance at work place and build stronger relationships.

The auditions are conducted in the first week of September then after a formal interview, the final year girls from various faculties are selected.

The girls are trained for the ramp walk, answering out of the box questions, novel way of introducing themselves, All round Personality Development and dancing elegantly to the foot tapping Zumba, which helps them to stay fit and healthy, as healthy mind resides in a healthy body. As part of the Competition talent round was conducted where the girls showcased their hidden talents.

Objectives:

- To select 30 final year students from arts, science ,commerce ,home science & home science technology
- To identify the personality of students through interview and questionnaire
- To trainthem for the Introduction round

- To train them for confidence building, to overcome stage fear,
- To improve their communication skill & soft skill
- To train students in professional manners and etiquettes
- To improve their general knowledge bytraining them for question &answer round
- To groom them with training sessions on makeup, hair style, sense of dressing & styling
- To create a strong bond between the students belonging to different faculty during their two months training session
- To give opportunity to P.G students of fashion design to design the dresses for the participants of personality contest according to theme of different sequences

Practice:

- The Dept. of Textile & fashion design took initiative to convert the beauty contest into Personality Contest so the positive change in the personality of the final year students from different courses could be brought,this will help them to face job interviews with confidence and also will help them to get jobs.
- The final year students of all the courses are informed about the personality contest well in advance 3 months before the contest the interested students are asked to fill up the questionnaire related to their personality, then they are interviewed by panel of experts for their final selection,this also helps the trainers to decide in which area the students' needs to be trained.After the equal representation of selection of students from different courses,the two months training programmer begins. The timing of training session is chosen from 3 to 5 pm so the students don't miss their classes of their regular course, other than participants some students are trained in compeering,managing music and student photographers are given opportunity to carry out photo shoots of the participants.
- The experts from different area such as Psychotherapist,Communication skill trainer, fashion designers, beauty experts, Zumba –dance fitness trainers' beauty pageant winners and also dept. faculty members are involved in training the students.The P.G. students of fashion design are given opportunity to design dresses as per the theme and contour of the participants The personality contest is held in the second week of January during the cultural fest it has become the most awaited event of the

college and Nagpur city with huge media coverage by city ‘s leading newspapers after the contest

Training Programmers

Developing Communication Skills through training

The skill to communicate effectively with friends, teachers, superiors, colleagues, and staff is essential, no matter what industry you work in. Workers in the digital age must know how to effectively convey and receive messages in person as well as via phone, email, and social media. Good communication skills will help you get employed, get promotions, and be successful throughout your career.One should be able to communicate clearly, be it speaking or writing. Many a times to flaunt grandiose language can make the point you're trying to make confusing. Some ideas to improve your clarity in communication include:

i) Focusing on the topic. Emphasis on the point of your communication.

ii) Be specific when communicating. You may have difficulty getting to the point. To improve your clarity, use specific terms instead of general pronouns.

Make Eye Contact. Acknowledge that you are paying attention to someone by meeting their gaze eye to eye. Eye contact will make your conversation partner feel like you're more engaged. If you have difficulty doing this, turn your body to face the person you're speaking with.

By turning your body to face your conversation partner directly, you'll naturally be more likely to look them in the eye.

If you're uncomfortable looking someone directly in the eyes, choose a point just above or below the eyes, like the bridge of the nose, and look there instead.

Monitor Your Body Language. Show interest by sitting up and leaning forward slightly. Resist the urge to tap your fingers or foot, as this can indicate impatience. You can also connect with conversation partners by imitating their posture.

Try to curb unconscious motions that could be taken the wrong way, like playing with your hair or bouncing your leg up and down.

PracticeSpeaking. This includes both public speaking and casual conversation. Even if you're uncomfortable speaking in front of others, practice will make speaking come more easily and improve your ability. Be conscious of your pace and volume while practicing.

If you are uneasy in personal relationships, try practicing with a close friend or family member you are comfortable with.

If you are nervous about speaking in public, volunteer to give presentations within a smaller group and work your way up to a larger one.

Practice Active Listening Skills. Listening requires focus and self-discipline. We listen for many different reasons: to understand instructions, to empathize with another individual, or to judge whether a plan is good or not. You can show your conversation partner you're paying attention by: Paraphrasing and asking questions about what was said. This demonstrates interest and focus. It also helps you understand the situation.

Taking notes when appropriate. This shows that the subject matter is important to you. Practice taking notes in team meetings or staff training sessions.

Refraining from interrupting others. Show respect to your speaking partner by letting them finish saying what they are saying.

Practice Leading. Leadership can be defined as your ability to influence other people, oftentimes with regard to making decisions. As such, leadership skills can be used by any employee at any level in an organization. To improve your leadership skills:

Observe your supervisor and note how that individual leads your team. Find positive things that person does and emulate them in your own work.

Practice leading in small group discussions by asking your teammates questions and bringing quieter members into the conversation. Discipline yourself to display a positive attitude in difficult situations. Remain calm in moments of crisis.

Importance of Soft Skills

Soft skills are sometimes referred to as **transferable skills** or **professional skills.** Soft skills relate to your attitudes and your perception to a situation. Soft Skills will help you stand out in a crowd

As soft skills are more personality-driven, it is important to consider what your soft skills are and how well equipped one is for the job and to face the real world. The important soft skills that are dealt during the course of the training are SWOT Analysis helps them to identify their strengths and weakness and convert the threats in the environment into opportunities. Self Esteem, which raises their own standard in their eyes and make them more confident. Positive Attitude, gives them an edge over other contestants and doing everything meticulously. Change Management helps the girls to face all adversities and unforeseen situations in College, workplace and life ahead. Assertiveness

Time Managementis the process of planning and exercising conscious control of time spent on specific activities, especially to increase effectiveness, efficiency,productivity. Using time effectively gives the person "choice" on managing activities at their own time and feasibility.

Confidence Building Self-confidence is an essential part of civilization. A person with self-confidence generally likes themselves, is willing to take risks to achieve their personal and professional goals, and thinks positively about the future.

Intrinsic Motivationis a key issue that is faced every day and no matter which angle you come from, if it's not the right angle, your courses may take a dive. In order to motivate the students to learn English and develop communication skills the teacher has to conduct various reading sessions and provide them with related topics of role playing to help the students develop their communication skills, which will help them towards self-assertion and positive attitude.

When in the regular class, teachers tend to lay stress on course completion and in due course ignore the importance of such factors as positive self-concept, high self-esteem, positive attitude, clear understanding of the goals for language learning, continuous active participation in the language learning process, and the relevance of a conducive environment that could contribute to the success of language learning and building confidence. The training session at the Ms. L.A.D creates an atmosphere which is positive and open, help student find personal meaning and value in the course of the journey.

About the Grandiloquent Event:

The event has four rounds. The first round was introduction round where the lovely ladies introduced themselves in a unique fashion. The next round was top fifteen, where the contestants gave witty and out of the box answers. On the basis of the answers given they will move on to the next round the top ten round. The participants in between the rounds perform Zumba on the tune of any latest Bollywood blockbuster. In the top ten round the judges ask them questions, they gave sharp answers and after performing the umbrella dance and evening gown round. The top five contestants were selected,the common question asked was '*What according to you does woman value the most*?

The Program Director Cum Choreographer is Dr. Harsha Jharia, Coordinator P.G Textile and Fashion Lady Amritbai Daga and Smt. R.P College of Home Science and H.Sc

Technology. She is the brain behind the contest worked tirelessly 24 X 7 for the success of theevent.

Obstacles:

Deciding the time schedule for the training session according to the convenience of all the trainers and participants becomes difficult at times.

Impact of the Practice:

- It has improved the confidence in the student
- It has helped the students to convert their weakness into strengths
- It has helped them to overcome stage fear
- It has helped them to improve their accent & communication skill
- It has helped them to improve leadership quality
- It has helped them to face the job interviews confidently in turn getting job has become easier

Resources Required:

- A pool of experts willing to come to the college is the main resource required to hold the Training session.
- Auditorium with music system for daily practice

Conclusion:

Ms. L.A.D is not just a beauty pageant which focuses on judging and ranking the physical attributes of the contestants, although most contests have evolved to also incorporate personality traits, intelligence, talent, and answers to judges' questions as judged criteria. Beauty pageant isn't just about beauty; it is also about how well you express yourself.

"Can beauty be defined by age, gender, color, body shape or size? Who gets to decide? Multibillion-dollar beauty and fashion industries both shape and depend on the cult-like worship of what physical attributes the public sees as beautiful. And most women feel the effects of those decisions. It is aptly said by Kahlil Gibran that 'Beauty is not in the face; beauty is a light in the heart'

In this cut throat competitive world, it is essential that you stand out for which, challenge yourself to do one thing each day, even if it is small. Perfection and being happy is the mantra of an all-rounder which can be achieved by Soft skills.

References:

I. https://en.wikipedia.org/wiki/Beauty_pageant

II. https://esl-voices.com/tag/beauty/

III. https://www.nagpurtoday.in/ms-lad-contest-grows-big-in-grandeur-turns-out-to-be-glitzy-affair/01221806

IV. naac.gov.in/index.php/info-for-institutions#functions

V. naac.gov.in/index.php/assessment-accreditation#criteria

VI. https://www.dictionary.com/browse/soft-skills

VII. https://www.wikihow.com/Improve-Soft-Skills

VIII. https://cashmoneylife.com/sharpen-your-soft-skills/

IX. https://www.techrepublic.com/article/five-tips-for-developing-the-soft-skills-it-pros-need/

X. https://www.wikijob.co.uk/content/interview-advice/competencies/soft-skills

XI. *Stella Cottrell (2013). The Study Skills Handbook. Palgrave Macmillan. pp. 123+. ISBN 978-1-137-28926-1*

XII. https://www.wikihow.com/Build-Self-Confidence

XIII. http://www.mindtools.com/selfconf.html

USE OF ICT IN EXPLORING COMMUNICATING COMPETENCE TO LANGUAGE LEARNERS

Meenakshi V. Wasnik,
Assistant Professor, Dept. of English,
Mahoharrao Kamdi Mahavidyalaya,
Nagpur

Today's age is the information age or Digital age representing a different information and communication technology network; The Cable, The Telephone Exchange, Broadcast, Cell and the Web. The use of Information Communication Technology in language teaching and learning is an effective and interesting issue for all teachers and learners. The importance of this issue is reflected in the large amount of the literature concerned with new technology in language classrooms. This paper, we are going to present the use and advantages discussed with respect to ICT in language learning and teaching.

The increase in the demand of Information and communication Technology (ICT) has brought a lot of evolutionary shift in learning and teaching. Learning is the ability to use ICT to offer courses in both synchronous and asynchronous environments. Specifically, ICT is considered an important tool for learning because it facilitates interaction and active learning. This paper presents a review of key literature in adaptation of ICT to teaching a language learning. The features of synchronous and asynchronous ICT were analyzed in the context of language learning.

Information and Communication Technology:

Evolution of Communication: Communication has improved and evolved to facilitate our daily activities. In the 21st century, everything related to communication utilizes technology to `sent out' or disseminate information to wider audience. Information can be conveyed in many ways. The inventions of cellular phones, television and other electronic devices are important in enhancing communication.

What is ICT?

ICT stand for information and communication technologies and is defined, as a "diverse set of technological tools and resources used to communicate, and to crate, disseminate, store, and manage information". ICT implies the technology which consists of electronic devices and associated human interactive materials that enable the user to employ them for a wide range of teaching – learning processes in addition to personal use.

ICT is the technology required for information processing, in particular, the use of electronic computers, communication devices and software applications to convert, store, protect, process, transmit and retrieve information from anywhere, anytime.

Information:

Information refers to the knowledge obtained from reading, investigation, study or research. The tools to transmit information are the telephone, television and radio. We need information to make decisions and to predict the future. For example, scientist can detect the formation of a tsunami using the latest technology and warn the public to avoid disasters in the affected areas. Information is knowledge and helps us to fulfill our daily tasks. For example, forecasting the stock exchange market.

Communication:

Communication is an act of transmitting messages. It is a process whereby information is exchanged between individuals using symbols, signs, or verbal interactions. Previously, people communicated through sign or symbols, performing drama and poetry. With the advent of technology, these `older' forms of communication are less utilized as compared to the use of the Internet, e-mail or video conferencing. Communication is important in order to gain knowledge. With knowledge, we are more confident in expressing our thoughts and ideas.

Technology :

Technology is the use of scientific knowledge, experience and resources to create processes and products that fulfill human needs. Technology is vital in communication.

Language Learning:

Language learning is characterized by students or individual motivation to learn a language or through academic, job, and career choice obligations. For the most part global and multinational corporations (MNCs) operate using English or in some cases home language of the parent organization. The majority of the learning is taken place via World-wide Web and the Internet along with structured Information Communication Technology dedicated toward such language learning. The need to learn additional language is also increasing due to migration that accompanies globalization. As people migrate from one society to another, there is an increasing need to learn the language and the culture of the host societies. The increased availability of computer enhanced or enabled language and the

culture of the host societies. The increased availability of computer enhanced or enabled language learning, there exist some challenges either language learning and ICTs.

Communicative Competence:

The concept of communicative competence has become important due to the recent shift of focus from teaching to learning. Discrepancies had been discovered between how the learners communicate in a language they study on the one hand, and the rules they are taught and the exercises they are asked to undertake on the other. Therefore, the teacher should concentrate on shaping the working mechanism which governs the use of language. This mechanism has been termed competence. Many language teachers and curriculum researchers have implemented communication-oriented teaching syllabi to seek for more effective ways for improving student's communication skills to replace the traditional, grammar-oriented approach of the past. There has been much confusion regarding what communicative language teaching (CLT) actually requires teachers to do in their communicatively functional syllabus (Brown, 1994b). The conception of communicative competence came about in reaction to the following assertion made by generative grammarian **Norm Chomsky.**

Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance. (Chomsky 1965: 3)

Brown (1994b) lists six key words of CLT "to better understand what it aims at: learner-centered, cooperative (collaborative), interactive, integrated, content-centered, and task based. They indicate supposedly ways in which language teaching is conducted communicatively, and so reflect the characteristics of CLT."

Areas of Communicative Competence :

In their often cited article on communicative competence in relation to second language pedagogy, Canale and Swain (1980) proposed three areas of communicative competence: *grammatical, sociolinguistic, and strategic competence.* Sociolinguistic competence was further divided by Canale (1983) into two separate components: sociolinguistic and discourse competence.

Grammatical competence:

The mastery of L2 phonological and lexicogrammatical rules and rules of sentence formation; that is, to be able to express and interpret literal meaning of utterances (e.g., acquisition of pronunciation, vocabulary, word and sentence meaning, construction of grammatical sentences, correct spelling, etc.)

Sociolinguistic competence:

The mastery of socio cultural rules of appropriate use of L2; that is, how utterances are produced and understood in different sociolinguistic contexts (e.g., understanding of speech act conventions, awareness of norms of stylistic appropriateness, the use of a language to signal social relationships, etc.)

Discourse competence:

The mastery of rules concerning cohesion and coherence of various kinds of discourse in L2 (e.g., use of appropriate pronouns, synonyms, conjunctions, substitution, repetition, marking of congruity and continuity, topic-comment sequence, etc.)

Strategic competence:

The mastery of verbal and non-verbal communication strategies in L2 used when attempting to compensate for deficiencies in the grammatical and sociolinguistic competence or to enhance the effectiveness of communication (e.g., paraphrasing, how to address others when uncertain of their relative social status, slow speech for rhetorical effect, etc.)

Enhancing communicative competence through ICT

Use of Audiovisual recording

L2 learners can benefit from viewing and reviewing audiovisual recordings such as videotapes and visual hypermedia software of their own communicative interactions and model interactions by native speakers. In learning how to make requests, for example, the students can not only participate in, say, pair work as part of their function building exercise, but also film their actual performance to collect data for analysis. The data ideally cover a wide range of situations in which they make or receive requests, in terms of social status and role of interlocutors, degree of imposition internal to the act of the request being made, and so on. Through close examination of their recordings and introspection, the students will have a chance to reflect on what they said to make requests (grammatical competence). Moreover, the very nature of the audiovisual material enables the students to see and analyze their own and native speaker's nonverbal communication as well. It is, thus, advisable that the students study their own communicative experience and the nature and characteristics of social

interaction in their target language so as to develop their L2 sociolinguistic competence (Erickson, 1996).

Use of Flash Cards:

Flash cards are used for preparatory reading. Such cards are shown before the class and the students read what is written on them. They recognize the words and interpret them. these flashcards are helpful in mastering the correct word and intonation pattern. These flashcards may be used for sentence building, fr matching words with objects, for giving words orders, etc.

Smart Classrooms:

In a Smart Classroom, each student has a situation-aware PDA. Students' PDAs dynamically form mobile ad hoc networks for group meetings. Each PDA monitors its situation (locations of PDAs, noise, light, and mobility) and uses situation to trigger communication activity among the students and the instructor for group discussion and automatic distribution of presentation materials. Middleware can effectively address the situation-awareness and ad hoc group communication for pervasive computing by providing development and runtime support to the application software. This new middleware is called a Reconfigurable Context-Sensitive Middleware (RCSM) which is suited for such or develop a group project. The application module will synchronize the lecture notes between a student's PDA and desktop computer before and after class.

Conclusion

Communicative competence has been defined and discussed in many different ways by language scholars of different fields. There is, however, one thing in common that is seen in the writings of all these scholars: linguistic, or grammatical competence, should be considered just one aspect of overall competence an individual has with language. Moreover, the use of ICT cannot be underestimated in the process of communicating language teaching because emerging technologies make it pertinent and practical to approach learning in ways that have been advocated by educationalist. It is imperative for modern day teachers and learners to keep abreast of the modern trend at improving teaching and learning English language through the use of information and communication technology.

Works cited :

1. Brown, H. D. (1994b). *Teaching by Principles. An Interactive Approach to Language Pedagogy*. New Jersey: Prentice Hall Regents.
2. Chomsky, N. (1965). *Aspects of the Theory of Syntax* . Cambridge, MA: MIT Press.

3. Canale, M., & Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. Applied Linguistics , 1 (1): 1-47.
4. Erickson, F. (1996). *Ethnographic microanalysis*. In S. L. McKay and N. H. Hornberger, eds. *Sociolinguistics and Language Teaching* . Cambridge: Cambridge University Press.

NAAC BASED BEST PRACTICES IN THE COLLEGE LIBRARY

Dr. Mohini T. Bherwani
Librarian
Shri Binzani City College, Nagpur
Email: mohinibherwani@gmail.com
Mob. No. 9765525472

Abstract: *The article throws light on the various best practices to be followed in College Libraries. It covers its definition & meaning, Book exhibition, Orientation plan, Book display programme, Library hours, Staff-user meet, Library information brochure, Training to use E-resources, Review of book, Book talk programme, Readers club, Granthdan Yojana, Best library user award, counseling center regarding competitive examinations, Interaction with author etc. The present paper also highlight NAAC best practices. Paper also mention IT based best practices like Web page, Blogs, Wikis Virtual library tour, E-alert services, etc. Paper also throw light on other best practices like book bank, reading room facility, special facility scheme etc. Paper also mentions General Library practices & Library extension services. This paper will be useful guide to other libraries to get an idea about various ways & practices can be adopted in their libraries for creating an effective library management.*

Key words: Best Practices, College Libraries, E-resources, Library services

Introduction: College form the integral part of Higher Education and libraries in colleges are the primary source for learning process. The college library is a connecting link between teaching and learning as well as place which supplements its resources what is beyond scope of class room. College libraries play an important role in the educational history of both the students as well as faculty members. It serves the users by providing specific information to the user. But how far the college libraries are successful in implementing their goals into its reality is a big question. There must be some agency to have a proper vigilance to rectify the emerging needs, and for this kind of purpose. NAAC was established for maintaining quality education of the institutions.

Definition of Best Practices

According to webopedia. "Best practices are guidelines which are used to obtain the most efficient & effective way of completing a task using repeatable & proven procedures." According to National Board of Accreditation and Assessment (NAAC). "Best practice may be innovative and be a philosophy, policy, strategy, program, process or practice that solve a problem or create new opportunities and positively impact on organizations. Institutional

excellence is the aggregate of the best practices followed in different areas of institutional activities."

From above definition, best practice means, it is a method or technique used to improve the current workflow of an organization to obtain its objectives effectively & with predetermined standards.

Best Practices in Library

The best practices suggested by the NAAC in its quality indicators in Library and Information services are as listed below.

1. Computerization of Library with standard Software.
2. Inclusion of Sufficient information about the library in the college prospectus.
3. Compiling user statistics.
4. Displaying newspaper clipping on the notice board periodically.
5. Career/ Employment information services.
6. Internet facilities to different user groups.
7. Information Literacy programs.
8. Suggestion box and timely response.
9. Displaying new arrivals and circulating a list of those to academic departments.
10. Conducting book exhibitions on different occasions.
11. Organizing book talks.
12. Instituting Annual Best User Award for students.
13. Organizing competitions annually.
14. Conducting user surveys periodically.

Need for best practices in Library

Best practices are developed in the library for following purpose.

- To execute the five laws of library science.
- To magnetize & meet the user demand.
- To maximize the utilization of library.
- To identify the needs of the users.
- To market library services and products.

General Best Practices:-

Following are additional practices to be conducted in library as a routine practice.

1) Regular Library Advisory Committee Meeting.

2) Binding of books & periodical Volumes.

3) Inclusive of Library Information in prospects & College Websites.

4) Intercom facility for easy communication among various departments.

5) Pasting of barcode, spine label and stamping in a definite place on the books.

6) Question sets of previous examinations.

7) Library Calendar of Activity & Events.

8) Use of pesticides for keeping away book worm & damage of books.

Benefits of Internet Facility in the Library:

- The readers are provided with available up-to-date knowledge with Internet facility. Their educational needs have fulfilled.
- The readers are benefitted with online resources by Internet.
- Students make use of Internet facility for filling up e-scholarship forms, to use NLIST journals, e-books, to check emails, to get information from govt. websites, to fill online job application forms, to check results online, etc.
- The students make use of Internet to fill up UPSC, MPSC, SET, NET, Enrolment, E-Scholarship forms, Banking Recruitment applications, Railway Recruitment applications, other online forms, etc.
- The teachers get information about the research made in their concerned subjects.
- Teachers to take help from internet sources in their teaching learning methods and reading materials.
- The users of the library are making use of internet on the large scale.

A few Examples of Experience of Best Practices in Academic and Research Libraries

1) Dr. S. R. Ranganathan writes that he brought to the notice of Sir C.V. Raman about Raman Effect which was published in a foreign journal. This incident happened in Madras University Library in early thirties. Sir C.V. Raman received the Nobel Prize for his work on the scattering of light which is called Raman scattering or Raman Effect.

2) Mr. T.N. Chaturvedi, former Governor of Karnataka narrated the experience about when he approached Prof. D.N. Marshall, Librarian Bombay University for a book from his Library. Prof. Marshall sent him the book immediately without waiting whether his library rules permitted him or not. Mr. T.N. Chaturvedi wrote to many

university libraries. He received negative reply from them saying that they have the book in the library but their rules do not permit them to send the book

3) Prof. P.K. Mehta, former Pro Vice-chancellor of IGNOU narrates the incident in 1970 when he wrote to Dr. B. Anderson, Librarian of Bombay University Library that he would like to make use of the library and mentioning his area of research work. Prompt reply came from Dr. B. Anderson. Prof. Mehta went to the library and met the librarian immediately. Dr .B Anderson gave him three typed papers and told, " This is the list of books available in our library which, I think are relevant to the area of your work " and told him please feel free to contact me if you have any difficulty or need of any assistance. Prof. P.K. Mehta spent few weeks in the library. Prof. P.K. Mehta comments"A library is provision and every provision in judged on the basis of three parameters: Availability, Accessibility and Utilization.
4) In 1980s when the author was working as Deputy Librarian at American Studies Research Centre Library, Hyderabad Director, Prof. William Mulder used to ask him for making checklists on different authors of American literature for the outstation scholars. When the Director we told that making a bibliography of books and journal articles is the part of literary research and a job of research scholar himself, he would say, "No, this checklist will motivate him to start research on his topic. So let us send him the checklist immediately".

Quality Indicators for the Library

The details relate to the library users, services offered, facilities, collection, rules, budget, usage of services, extension activities etc. and at every step students and teachers are the party in complying with it. In other words, we can say that involvement and support of these elements play a crucial role in the self-study report writing exercise. Hence maintenance of daily record needs serious attention. Library rules and the awareness among the users combined with alertness on the part of the library staff becomes the major requirements. It is true that libraries largely support learning, teaching and research processes in institutions. The set of questions framed for the library focuses on library infrastructure, collection, management and services. Extension activities and best practices are also covered. This can be explained in more details by dividing these questions into different headings.

Utilization of the library services

To check the utilization of the available services, various details about the working hours of the library (including Sundays and holidays, and after and before the class hours,

during examination) are noted. Facilities like computers and internet connectivity, reprographic service, status of library automation, open access system, number of books issued daily, fine etc. are the key questions. Various services are listed in the guidelines like circulation, clippings, bibliographic services etc. Inter library loan service, user orientation and information literacy programs are to be explained. Services used are evaluated through different data like average no. of books circulated, no. of reference queries received, no. of students visiting library, no. of teachers visiting library, display of new arrivals, awareness services etc.

Best Practices to Enhance Academic Activities

In the library context, the best practice may be those services through which the users are able to explore more resources and facilities from the library. This includes steps taken by the library to attract more users by creating suitable academic information environment. Here library is expected to focus on users' needs while introducing new services and facilities to them. Guidelines speak about the best practices in relation to new developments in the field. Service introduced as a best practice today may turn in to an essential one. Previously internet access in the library was considered as the best practice but today it has become an essential service. Best practices questions includes computerization of library with standard digital software, inclusion of sufficient information about the library in the college prospectus, compiling student/teacher attendance statistics and locating the same on the notice board, displaying newspaper clippings on the notice board periodically, career employment information services, internet facilities, information literacy programs, suggestion box, displaying new arrivals, circulating a list of those to academic departments, conducting book exhibitions on different occasions, organizing book talks, instituting annual best user award for students, best intellectual library award, organizing competitions annually and conducting user surveys periodically.

Conclusion

NAAC policy helps in developing the college libraries to make modernize and to provide good standard service to users. This is the best methodology for measuring themselves to find deficiency to enhance the library services, which support get maximum score based on certain criteria's, this paper clearly explains importance in maintaining the library to full fill the quality for the NAAC policy.

References

1. Barnard S.B : Implementing total quality management: a model for research libraries "a model for research libraries "journal of library administration, vol.18, (1/2) pp.57-70. (1993)
2. Kulkarni, S.A.: Best Practices in College Libraries. National Seminar on Library and Information Services in Changing Era, 22-23, p. 273-281. January 2009.
3. Mokashi, R.M. Best Practices in Librarianship Services to the readers : Compilations of Who's Who. National Seminar on Library and Information Services in Changing Era. 22-23, January 2009. p. 285-294. 4. NAAC: A Profile. Bangalore, National Assessment and Accreditation Council, 2006.
4. NAAC. Best Practices in Library and Information Services. (Website) Library and Information Services: Case Presentations. NAAC, 2006.
5. Brophy, Peter and Hate coulling : Quality Management and library science : for information and library managers., Mumbai: Jaico.,p 196. (1997)

USE OF ICT AND TEACHING –LEARNING PROCESS

Dr.Archana Thakre
Assistant professor
Post graduate department of education

Abstract: *Most countries of the world have spent more on education .The product of our educational system are so creative that they are making the quantum of knowledge greater in scientific and technological fields. The use of any new educational technique in fact the concept means more than the sum total of all the media and methods, materials and techniques, used for better teaching and learning. ICT learning encourages the development of innovative teaching learning methods. Use of information and communication technology favors several teaching and learning process. This article focuses on the technological tools, emerging learning technology in teaching and learning process.*

Keywords- ICT, Teaching learning, Education, Virtual classroom, e-learning, web

Introduction: Technological materials and methods useful in the teaching learning process ranges from chalkboard to television set. Technology comprises both hardware and software. It is also include decision about the educational objective to be achieved and decision about the size of the learning group, the learning sequence, teaching method and selection of media. With the advance of science and technology .There are new learning aids which have revolutionized the learning process in particular and education as a whole. A nation can successful if its education can be made effective. Education can be made efficient .if it is properly planned and organized on psychological and pedagogical principles.

'The transition from technology of education involves a thorough appraisal of the existing educational system, of its objectives and of the means used to attain them, before any decision is reached to employ these new techniques for specific teaching purposes. The teacher turned technologist can than gradually assume the function of an 'educational engineer 'whose job is to increase the output of the entire scholastic machine'.-Henri Dieuzeide.

Teaching is a means whereby society trains the young in a selected environment as quickly as possible to adjust themselves to the world in which they live. In primitive societies this adjustment means conformity with things as they are. In more advanced civilization, such as ours, effort is made not only to adjust to things as they are. But also to make advance in the improving in the conditions of life by training the younger in modes of thinking and acting

which will help to improve the condition of living that surround them.'---Yoakam and simpson

ICT helpful for self-learning, ICT continues a live contact between the teacher and the student through e-mail, chalk session, e-learning, web based learning including internet, intranet, extranet, CD-ROM, TV audio-videotape, EDUSAT, and technology has become very powerful media for interactive participation of experts and learner. And it reaches the unreachable. Emerging learning technology like web-blog, integrated learning modules, a Podcast, wikis, enhancement of browser, e-learning, have started making rapid strict in teaching learning processes.

Use of Emerging trends in teaching and learning

ICT is a vital tool in education and practical use to improve the teaching and learning process. After use of these tools improved the content and pedagogic knowledge of the teacher as they can deliver their lessons without many difficulties as before. Some teachers actively collaborate and project based teaching with the help of ICT. Teachers are also benefitted from the use of the tools in doing research and improving their knowledge in their subject area. Content knowledge is not limited up to textbooks. Teachers use their tools in the teaching and learning process for saving time and covering their lessons quicker than before.

Problem based learning, project based learning and enquiry based learning are active learning educational technologies used to facilitate learning. ICT incorporated into project, problems, enquiry based on student centered learning. In which students are actively engaged in original thinking activities.

ICT is helpful to instructor as well as students. Instructor can post the course material or important information on a course website, so the students can study at a time and location as they prefer. The study material is also available quickly.

ICT use in teaching and learning Process can give instant feedback. ICT resources which combine video, audio, graphics, text and have a potential of providing rich learning experiences. World Wide Web is said to be of negligible value, but if harnessed effectively by education could become a useful resource.

It's a range of communication strategies between teacher and learner. Such communication is synchronous and asynchronous. It shows that technology supports and creates efficient management and administration system within the education system. The rapid growth in satellite and wireless technology, and particular the growth, mobile phone technology. It also provides a continue motivation to student learning. learning material can

be used for long distance learning like open learning to wider audience. Open educational resources. Edmodo, blended learning are some educational resources available on internet become easier to monitor and maintain student work while also quickly giving modification to the instruction necessary to enhanced student learning.

ICT provides the means to focus on active student participation and to present differential questioning strategies. It broadens individualized instruction and promotes a development of personalized learning plans.Edmodo as easy way to display your students work is to create a web page designed for your class. Teachers can post theoretical notes, homework, assignment, student work, famous quotes, and much more. Edmodo is meaningful Centre for online tracking. It has opportunity of grouping. Edmodo is used for teachers in any subject. It's a permanent library.ait assign and explain online just one time. It helpful for create polls and quizzes, we can prepare discussion for online learning and parent are also access. Edmodo is a face book for school; it is easy to use and related face book. It is used at school, home, friend house, and library. It has facility to get advice on our work. There are varieties of web 2.0 tools that are being implemented in a classroom. Blogs allow for student to maintain a running dialogue, such as a journal, thoughts, ideas, assignment and also provide for student comments and reflection.

Mobile learning can be used to enhance the experience in the classroom as well as outside the classroom by providing possibility for professors to get feedback.

Interactive Whiteboard provides touch control of computer applications. These enhance the experiences in the classroom by showing anything that can be on a computer screen. This not only aid in visual learning, but it is interactive for students. They can draw, write or manipulate the images. Videos available in online media can be utilised to enhance a classroom lessons. LAMS are also a tool in learning process. It provides teachers a visual authoring environment crating, storing and re-using sequence of learning activities. It is tools to provide learning sequences of activities with a high level of interaction.

Evaluation report on LAMS motivate students.It fosters a greater student engagement. Discussion, debate and voting are some facilities which activate and motivate the participants.

Podcast is a tool allows anybody to publish files to the internet where individuals can subscribe and receive new files from people by the subscription.Podcasting has the capacity of advancing a student's education beyond the classroom. This is a tool for learning and

developing literacy inside and outside the classroom. It sharpens student vocabulary, writing, editing, public speaking and presentation skill.

ICT can help student not only to learn difficult concepts, but also to master the learning. E-learning is a commonly used term. Now e-learning is used as an internet technology to deliver a broad array of solutions that enhance knowledge and performance-learning is networked, which makes it capable of instantly updating the information's-learning is networked which makes it capable of instantly updating the information-learning is a wide set of application and process involving web based learning computer based learning, virtual classroom and digital collaboration in addition to the delivery of content via internet. E-learning is one of the promising ways of teaching, learning and thinking.

The increasing importance of the new information and communication technology in all aspects leads to the need for a fundamental rethinking of the education process, the role of individualized and interactive learning. Comprehensive electronic resources are now recognized as valuable educational tools by research and academic institutions. It is chief benefit of online learning is the ability of students to access course material as their convenience.ICT resources support higher education research and instruction for current access to information.

Effective use of ICT can increase academic productivity and enhance educational quality in higher learning institutions.Educational equality can be also increased through educational technology

Globalization of information access and opportunities for knowledge has changed the parameters in all phases of our lives. And has provided opportunities for more independent learning.Evolving standard for ICT competency level will demand more sophisticated performance from all comers of higher education.

Institutions using ICT as the delivery platform for learning can be defined as virtual classroom. In the developing countries education needs an innovative approaches through which the economic and social development takes place. New technologies a thorough extension area for the learner to explore sources of information outside his institutions, or even outside the country.ICT also increases new area for research.

Recent development in the field of communication and information technology is indeed revolutionary in nature. According to the need of current education.ICT learning encourage the development of innovative teaching learning methods. Videoconferencing is a tool for discuss the pedagogical strategies gives workshop and conference presentation and

co-author articles. Earning based on ICT customized and individually paced to serve a variety of learners need can be less of a listener and more of a collaborator in the learning experiences. Learners gain more experience and confidence in ICT based learning environment. The increasing importance the new web information and day by day in all aspects of educational environment i.e. teaching, learning, research leads to a need of fundamental rethinking of the educational process, and there is a new challenge to provide a rich range of opportunities that facilitate open ended learning and thinking process.

Innovative learning Development-There are many terms used to describe the learning sites

Community learning center: - Is a site where education programme works for student's skill up gradation, and pursuing personal educational interest. Students can work individually, in group activities, independently and with teacher also. Students are engaged in a wide variety of educational activities.

Quest learning Centre-(QLC) Quest learning online programme develops skill in math's and reading. Its daily guidance will build confidence, focus and ability and to motivate and train the student to become independent learner.

Multipurpose community Centre (MPCC)-

MPCC focused on education and training services. In this centre various virtual learning opportunities are available for formal and non-formal education. Multipurpose centres allow learner to work on their course at a time and place convenient to them.It gives flexibility to learner to engage with tutor as well as peer engagement.

Telecentres- Telecentres are communal facilities consisting of a physical space that provide public access to ICT 's for educational, persona, social and economic uses. In telecentres different types are developed. Basic telecentres are privately owned or non-governmental organization. Basic telecentres include telephony, fax, computing, internet, photocopying and related technologies. Telecentre franchises are telecentre which refer to number of interconnected telecentres that are independently owned. Civic telecentres have traditionally offered services to a single group within the community cyber cafe helpful for offering support to the students

In urban areas it gets rapid growth and popularity. It supports virtual education opportunities' S. Swaminathans research foundation has partnered with the international development research centre implement the information. Village reach project in Pondicherry

has established in rural areas, a value added centre. These all are become a useful resource to educator. It supplies a range of communication strategies between learner and teacher. Technology creates efficient management and administration. These centres encourage learners to access virtual education including learning in the home, workplace and anywhere.

Use of technology in education

Education system rapidly apply the web in education. For e-learning a predominant technology being used in World wide web at the end of 2020 more than million people globally were using the internet. The web can be transmitted both through infrastructure as well as through high speed digital network, giving at a wide range of technical flexibility. The web is a low cost technology for education. Web ability gives a wide range of application in education i.e. tom combine text, graphics and a limited amount of multimedia. The web enables a free and global access to a very wide range of high quality learning resources located on website.Through web number of opportunities available for international cross cultural and collaborative learning. Learners have freedom of learning at any time at any place. The web allows asynchronous interpersonal communication between learners and instructor as well as between learner and other learned. It gives a chance to be able to question,discuss and analyse their learning in a social context.web technology exploits the educational advantage that teachers will change their teaching methods without adequate support and instruction teachers will merely add cost to the current system by bolting on the technology to traditional classroom method. The interactive, participatory and communicated for the learning has developed around the use of the web is culturally unsuited to the predominant mode of teaching and learning in traditional societies, which give great respect to the teacher and where student are not expected to question the wisdom of elder.

Satellite broadcasting –

Satellite broadcasting is being used extensively for educational purposes. India was one of the first countries to use satellite television through the INSAT project. Indira Gandhi National Open University is a major satellite user in India. Satellite TV is now mainly used for educational purposes. Now-a -days we are seen that expert professors from universities around the globe deliver classes in a studio classroom (MOOC, MOODLE through SWAYAM project).During the class,Students have an opportunity for real time interaction with the instructor using phone lines or e-mail satellite broadcasting is most effective as many students can receive a single programme. It provides a common standard of lecture or

teaching to all students, where ever they may be located. Satellite broadcasting transmit a information to large number of students at relatively low cost per student.

Video conferencing –

Video conferencing means availability of some classes in sites away from the main campus. There is not a need of adaptation for normal teaching method of classroom. But efforts need to encourage or motivate student to participate in discussion. Video conferencing allows student for active participation. Video conferencing can also be transmitted through the internet. Videoconferencing can be useful as additional resources for virtual education when used in support of the web. It can be particularly used in language teaching, technical or interpersonal processes.

Compact disc technology-

Virtual education includes another tool is a compact disc technology.It in the form of CD-Rumour digital videodisk. Compact disc technology used for application requiring large quantity of data, such as multimedia application.CD-ROM used in a variety of different courses like slides, photographs or computer generated images, each one digitally coded and catalogued.

Virtual education is a more interactive education which encourages critical thinking, communication skill and flexibility for both students and teachers. Student can access learning from anywhere in the world. In short we can say that the use of any new educational technique in fact the concept means more than the sum total of all the media and methods, materials and techniques, used for better teaching and learning.

Referances:

1. Astron, G .The learner's contribution to self access learning ,ELT journal,1993
2. Agarwal, J. P. Modern educational technology. New Delhi :Black prints,2013.English
3. Rajput, Poornima. Communication andmotivation in education. New Delhi:Global Publication, 2016.English
4. Paneer, N. K. Digital development in education. New Delhi: ALP Books,2013.English
5. www.accu.or.jp
6. www.scides.com>programs>co
7. www.education.gouv.qc.ca

ROLE OF EMERGING TECHNOLOGY IN HIGHER EDUCATION – WITH REFERENCE TO ARTIFICIAL INTELLIGENCE

Vijay Ramesh Joshi,
Faculty, DoBA (UG),
DNC, Nagpur
(E-mail: vrjoshi18@gmail.com Mobile: +91 84840 41947)

Abstract: *This paper basically deals with the role of emerging technology in higher education. It also indicates references to how the different emerging technology like artificial intelligence (AI), Machine Learning (ML), Big Data, Block Chain etc. but, the prime focus of this paper is on use of artificial intelligence in the field of higher education. This report begins by summarizing current applications of ideas from artificial intelligence to education. It then uses that summary to project various future applications of Al and advanced technology in general education. The paper also highlights problems which will confront the wide scale implementation of these technologies in the classroom.*

Keywords:Artificial Intelligence, Colleges, Digital Technology, Edutech, Higher Education, Institution, Technology,

I. Introduction: Looking at the current state of higher education in India, one can see that it is not just the quality of the system which needs to be improved. Much can to be done in terms of the number of students enrolled in the institutes of higher learning. The Gross Enrolment Ratio in tertiary education in India is 26.9 per cent, which is lower than that of China (48.4 per cent), Indonesia (27.9 per cent) and the Philippines (35.3 per cent), among others. Further, India's GER for the male population is 26.3 per cent and 25.4 per cent for females. The GER also varies across different social groups; 21.8 per cent for the Scheduled Castes and 15.9 per cent for the Scheduled Tribes.

There are also wide variations in the number of colleges for higher education across different states in India. The top eight states in terms of highest number of colleges are UP, Maharashtra, Karnataka, Rajasthan, AP, TN, Gujarat, and MP, which have 28 or more colleges per 0.1 million of the population. The difference in the distribution of the colleges is also seen across different districts in these states, with the top 50 districts having about 32.6 % of the colleges.

II. Emerging Technology

Emerging technologies are the technologies which are apparent as adept of changing the status-quo. They include a variety of technologies such as educational technology, ICT, information technology, robotics, and artificial intelligence. Artificial intelligence is field of computer-science which focuses the creation of intelligent machines that work and reacts like humans. Some of the activities computers with artificial intelligence feature are designed for include:

- Speech recognition
- Educational learning
- Content planning and
- Problem solving

When AI and ML will be widespread, it will be underestimating its power if they are not thought for the educational advancement. In fact, it is making quite an improvement in this sector at present. Till recently, the world was only known to one method of leaning and that is interactive and mostly instructive between the teachers and students. But this method includes some faults and ML and AI can deal with them professionally, to create a positive impact on the students. The education sector is also likely to continue being impacted as educational institutions make greater use of connected devices and ubiquitous computing.

III. Digital Technology in Higher Education

Online courses will reduce costs and create unprecedented access to higher education, so the argument goes. Adaptive learning will improve the art of teaching as the right digital content is delivered at the right time to right learner. While e-learning is commonplace, higher-ed remains firmly in the crossroad of detractors targeting high tuition fees, student debt, poor course-completion rates and unemployed and underemployed students demonstrating a growing skills gap.

Today, technology is changing the relationship between teaching and workforce in different ways. Competency data is becoming increasingly available. Online evaluation and assessments, e-portfolios and micro-credentials are surfacing student competencies beneath the level of the academic degree. In addition, many higher educational institutions are in the process of migrating to competency-based models. There is a clear path for employers to interact with this new data, information and tools. Further, applicant tracking systems are incorporating analytics. It will soon begin gathering new competency data as inputs for hiring practices all over.

Lastly, this data is being extracted into competency transcripts by algorithms originally developed for purposes of search and e-commerce. The same algorithms are extracting credentials from job descriptions and then matching the two. Together, these technological developments will close the gap between higher education and employment and usher in a new era in human capital.

IV. Artificial intelligence in Higher Education

AI education investigates learning wherever it occurs, in traditional classrooms or in workplaces, in order to support formal education as well as lifelong learning. It brings together AI, which in itself is inter-disciplinary, and the learning-sciences to promote the development of adaptive learning culture.

At the heart of AI education is the scientific goal to make computationally precise and explicit forms of educational, emotional and community knowledge. In the last decade, AI and adaptive technologies have begun to mature, making learning easier and a closely placed resources. It is now more scalable than imagined. However, these technologies have yet to coalesce into widely adopted systems to facilitate teaching. To a large extent, this is because our existing educational models and systems are still stuck in their traditional forms, hindering the true adoption of AI systems.

However, there have been major strides in technologies to help teachers currently teaching in traditional mode, particularly in utilizing their time so that they can tend to tasks for which human intelligence is still required. The institutes of higher learning should shun outdated teaching methodologies and tools and redesign the curriculum and syllabus by understanding key market transitions amidst the technological advancements. This would enable the country to create a workforce which could be placed in the positions demanded by the companies in this technological era.

Conclusion

Higher education has never mattered so much and to so many as a means of social mobility, an engine of economic growth. For the higher education to fulfil its promise as a great equalizer; one need continued innovation that can move us toward increased access, affordability and equity. This innovation will develop an ecosystem that will include a range of opportunities for a variety of educational experiences and credentials for differing needs of students.

Just as rapidly changing technology has created new and constantly evolving competencies requiring new skills, it has facilitated significant progress in accommodating

the needs of a broader range of students. Use of emerging technologies can also revolutionize the delivery of education, allowing access to higher education for greater numbers of students at lower cost and with more flexibility. Artificial Intelligence in this regard can fulfil various promises in the realms of higher education.

References

1. American Council on Education. (n.d.). *Credit for prior learning.* Retrieved from http://www.acenet.edu/highereducation/topics/Pages/Credit-for-Prior-Learning.aspx
2. Carnevale, A. P., Jayasundera, T., & Gulish, A. (2016). *America's divided recovery: College haves and have nots.* Retrieved from https://cew.georgetown.edu/cew-reports/americas-divided-recovery/.
3. https://www.therahnuma.com/indias-higher-education-system-needs-drastic-changes-to-address-tech-induced-challenges/
4. Joshi, Vijay, Study of Dimensions of 'Curricular Aspects Criteria' of the Accreditation of Higher Education Institution by NAAC (January 24, 2018). Available at SSRN: https://ssrn.com/ abstract= 3108433or http://dx.doi.org/10.2139/ssrn.3108433
5. National Center for Education Statistics. (2015). *Demographic and enrollment characteristics of non-traditional undergraduates: 2011–12.* Retrieved from http://nces.ed.gov/pubs2015/2015025.pdf.
6. National Center for Education Statistics. (2016). *Characteristics of degree-granting postsecondary institutions.*Retrieved fromhttp://nces.ed.gov/programs/coe/indicator_csa.asp.
7. National Center for Education Statistics. (2016). *Fast facts: Enrollment.* Retrieved from http://nces.ed.gov/ fastfacts/display.asp?id=98.
8. Pew Research Center. (2014). *The rising cost of not going to college.* Retrieved from http://www.pewsocialtrends.org/fies/2014/02/SDT-higher-ed-FINAL-02-11-2014.pdf.
9. Symonds, W. C., Schwartz, R., & Ferguson, R. F. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century.* Retrieved from http://www.gse.harvard.edu/sites/default/fies//documents/Pathways_to_Prosperity_Feb2011-1.pdf.

STUDENT SATISFACTION SURVEY: A CASE FROM UNDERGRADUATE MANAGEMENT STUDENTS OF DHANWATE NATIONAL COLLEGE, NAGPUR

DR. RAJESH TIMANE
ASST. PROF. PDIMTR,
DNC, NAGPUR
(E-Mail: Timane.Rajesh@Gmail.Com, Mobile: +91 98609 31040)

ABSTRACT: *This paper is based on a survey conducted about the institutional performance from various stakeholders in higher education. This paper is specific to case of students as prime stakeholder in assessing the overall performance of the institution. The seven criteria on which the students rated this performance being; quality of lectures, teaching-learning and evaluation, research through survey and field work, institutional infrastructure, mentoring and career guidance, management and leadership and lastly, innovative practices. The paper further analyses the rating by the students on these parameters measured on a five point scale. No secondary data is used in this research and the study is solely based on primary data as collected through an online survey from the students of the undergraduate management department.*

KEYWORDS:Career-Guidance, Evaluation, Higher-Education, Infrastructure, Innovative-Practices, Leadership, Lecture-Quality, Mentoring, Management, Research, Teaching-Learning,

I. OVERVIEW:

This paper is based on a student satisfaction survey conducted on the undergraduate management students pursuing BBA course from Dhanwate National College under Shri Shivaji Education Society. The seven criteria on which the students rated this performance are:

1. Quality of lectures
2. Teaching-learning and evaluation
3. Research through survey and field work
4. Institutional infrastructure
5. Mentoring and career guidance
6. Management and leadership
7. Innovative practices

Being one of the prime stakeholders in the ecosystem, student's opinion is of carry vital importance among the various other stakeholders. The purpose of this research is to

gauge the understanding and assessment of our students about the department through their feedback so the department can improve upon the parameters of which the students of the department are not satisfied. The responses so collected are compiled step-by-step in this research study. Although the results so obtained are relevant to the department, other educational units can get insights from the same and replicate the survey with their students to get meaningful results.

II. METHODOLOGY

The research is solely based on primary data. The query was posed online through a link created with the help of Google Forms. The questions were asked on a five-point scale labelled as well below-average, below-average, average, above-average and well above-average.

The link was shared with 80 students of which 77 students have viewed the link and 52 students have started and successfully completed the survey. This resulted into a 100 % completion rate i.e. zero drop-out rate. Overview of the survey conducted can be seen summarised as shown in the following tabulation.

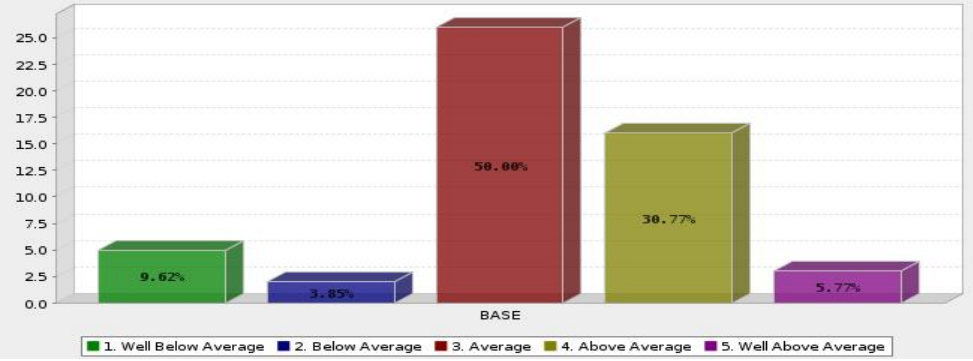
Viewed	Started	Completed	Completion Rate	Drop Outs	Average Time to Complete Survey
77	**52**	**52**	**100%**	**0**	**5 minutes**

After receiving the responses, the same were included in this study through Google-Forms. The bar-diagrams were also sourced from the same.

III. RESULTS

From the data obtained from Google Forms platform, it can be inferred that of the total 52 respondents 56 % were male while 44% were female student respondents. Further, about 78 % students surveyed were from the age group of 18-24 years while 18 % below 18 and about 4 % above the age of 24 years. Below are compiled the results for the seven parameters identified for this research on which the students expressed their opinion.

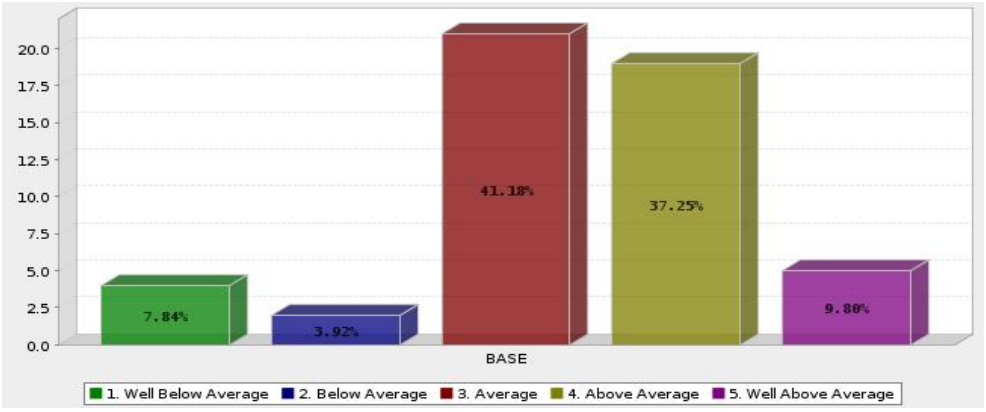
3.1 STAFF AND LECTURE QUALITY



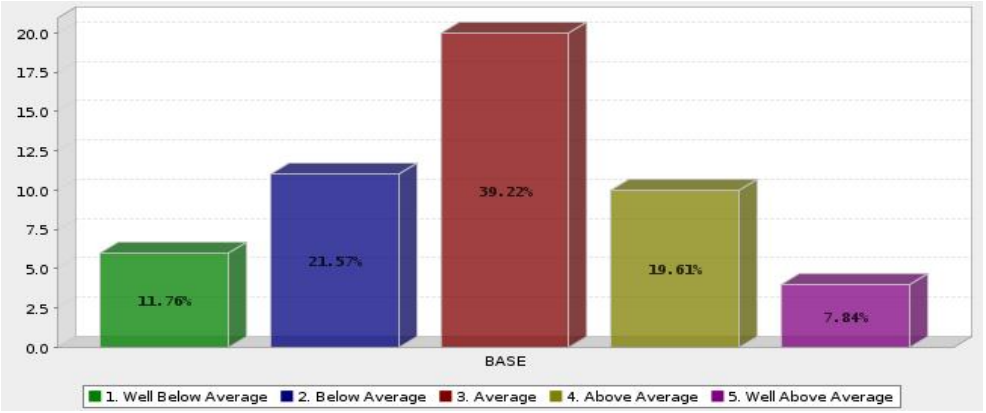
Almost half of the students rate the quality of staff and lectures being average, more than 30 % rate it above average and about 6 % rate it well above-average.

3.2Teaching-learningand evaluation

On the teaching-learning process in the department as well as the overall evaluation, more than 88 % students rated the department as average, above-average and well above-average.



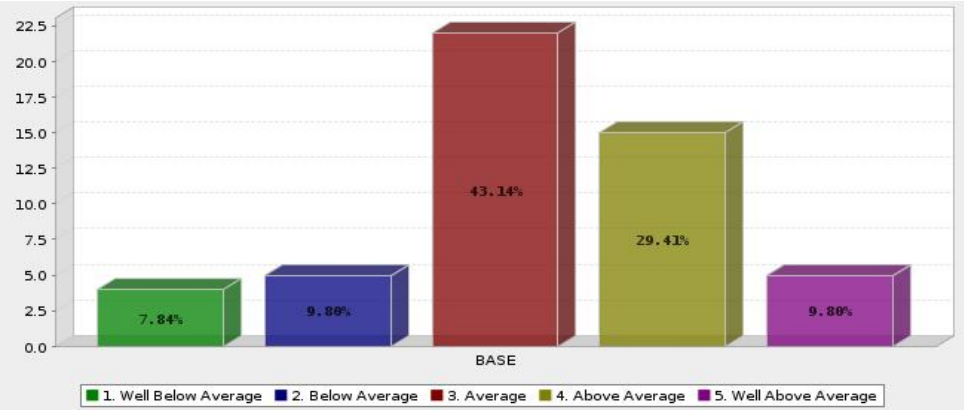
3.3 Research through survey and or field-visits



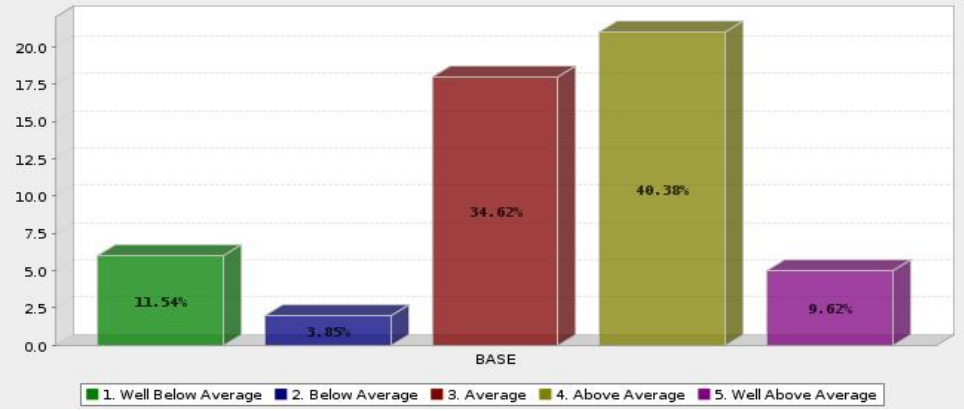
More than 66 % of the students responded, rated the department as average, above-average and well above-average on the criteria of research specifically through surveys conducted by and in the department and field visits.

3.4 Institute infrastructure

When asked about the institutional infrastructure in terms of physical facilities they avail, the students looked satisfactory overall. More than 88 % of the students responded; rated the department as average, above-average and well above-average.

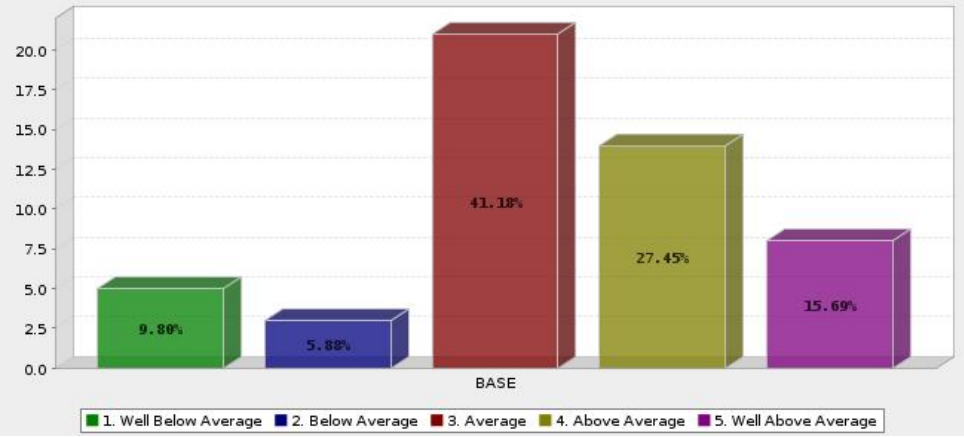


3.5 Mentoring and career guidance



More than 84 % of the students responded, rated the department as average, above-average and well above-average on the criteria of mentoring in the department coupled with career guidance provided to them by the department.

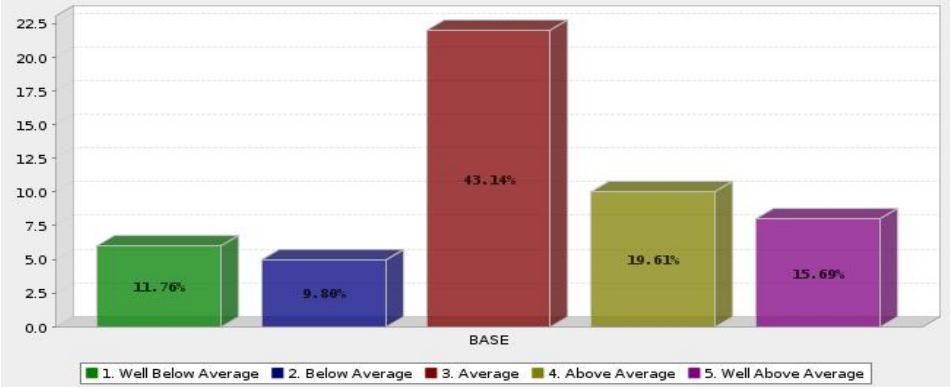
3.6 Management and leadership



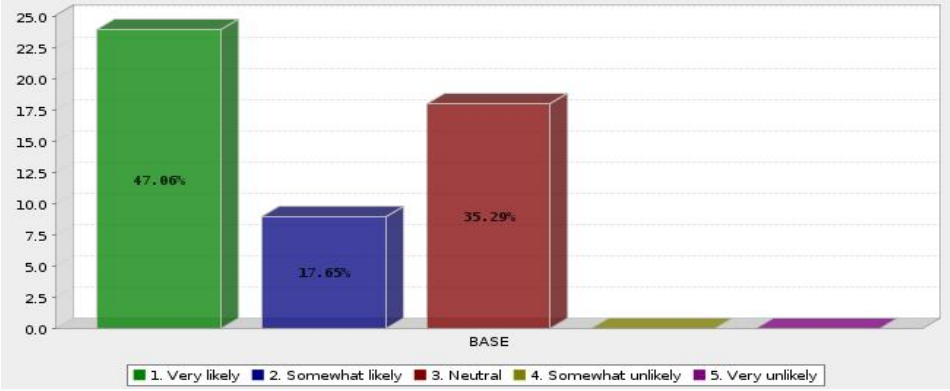
When asked about the management and leadership provided by the department; more than 84 % of the students rated the department as average, above-average and well above-average.

3.7 Innovative practices

More than 78 % of the students responded, rated the department as average, above-average and well above-average on the criteria of innovative practices followed by the department.



Lastly, when the students were asked about how likely is it that they would recommend the department to a friend or colleague.



A whopping 47 % responded with a response of very likely, followed by about 18 % saying it likely making it to a total of 65 % students having a positive outlook about the department as shown in the following bar diagram.

REFERENCES

Google Forms

Institutional project report on 'Stakeholder Engagement in Higher Education Ecosystem', 2017-18, submitted to Dhanwate National College through Internal Quality Assurance Cell (IQAC).

TEACHING POLITICAL SCIENCE IN ENGLISH MEDIUM: EFFECTING TRANSFORMATION IN LEARNER'S PERSONALITY

Mr. Siddharth R. Wani
Librarian
Dr. Sushant Chimankar
Asst. Prof. Dept. Pol-Science,
PWS College, Nagpur.

The aim of every educational system is to bring desirable change in students by making them skillfully, socially, culturally, and technically more competent. These changes are the developments which a pupil is expected to undergo during the course. Every course has its own destination. In order to calculate the quantum of success the institutions apply learning experience which assists in determining the success of teaching learning in the institute. In the Institutions conducting teaching learning in Social Sciences, the teaching of Political Science has a vital role in molding the students. Immediately after Independence, Political Science as a subject became an inseparable part of different syllabi planned throughout India. Because of the changing scenario in the age of globalization the nation has again realized the necessity of knowledge which has its influence in the world beyond the regional boundaries. The influence of Political Science can be traced in every field here, such as Education, Region, Religion and Community. In order to facilitate education system achieves its goal, an effective teaching learning process is necessary. In a country like India, where circumstances and situations change in every state there are many factors that affect the teaching learning process. The basic categorization of Indian students is on the basis of medium of instruction applied at pre-schooling level. There is a class of students having the regional language as medium of study at primary level and other group having English as the medium of learning. However, though recently the unabated mushrooming of English medium schools at every corner is providing opportunities to students to obtain education in English language, the fact remains that we lack trained teachers who can impart quality education through this most sought medium. Thus the problem of teaching Political Science in foreign language to the Indian students starts.

Another aspect that affects the learning of the student is the environment and family background. It is a harsh reality that even after 65 years of Independence we are yet to fulfill the requirements of basic infrastructure needed for bringing equality in education. The

facilities in our school building, class rooms and labs for science subjects are not adequate; leave aside the creation of a language lab. We still have the educational institutes where teaching learning process is carried out under the trees even after several five year plans. As per the census of 2001, 69% of India's population has a rural background and are directly or indirectly involved in agriculture. Agriculture in India is completely at the mercy of nature. If nature fails, the survival of farmers is at stake. Hence the students of this background are mentally discouraged. Further as the income of the majority of these families is below poverty line the parents are unable to provide good education to their wards. These economic constrains compel the parents to engage their children in some work to earn money during the period of life when these children should be acquiring basic education. The result a shaky foundation in education. In Indian context these are the basic factors affecting teaching learning process.

On the other side we also have another group of students who receive a strong foundation in basic education as their parents are educated and do not depend much on nature. These families dwelling in towns and cities have access to quality education. With few exceptions the students from this category join quality English medium schools and so do not find much difficulty in getting on with their higher education.

The students of these two categories are seriously tested at Secondary School Certificate Examination conducted by several State and Central Educational Board in India. The results reveal that even the performance of the first category of students is not that bad when compared to that of the students of second category. This shows that they somehow manage to acquire good writing skill in English but undoubtedly lack training in oral English communication. It is this that affects their confidence and plays hurdle in growth and development of their personality and ultimately affecting their ability to learn any social science in English Medium.

As mentioned, English is no longer the language of English speaking countries like the United Kingdom and the United States of America. Even the countries like China, Russia and Japan that resisted the invasion of English on their mother tongue have accepted the necessity to acquire proficiency in English language. We in India have never doubted the role that English language can play in our economic, social and educational development. In the present scenario, with exception of few countries, in most of the places in the world English has the unchallengeable status of second language, the language next to mother tongue. In the world we have more than 7000 spoken languages and about 200 languages that also have

written form. In India itself 28 languages have been granted the status of official language. Each language has a different structure and offer different suggestions to meaning. We acquire our first language through our physical, emotional, cultural and natural surroundings. During the process of acquisition of mother tongue, we pay attention to particular cues to meaning of the sound produced that are most helpful. When the process of learning of foreign language starts our mind automatically tries to apply the acquisition of mother tongue by looking for familiar cues. The learning of foreign language is new understanding of the particular cues to meaning that the new language offers and that differ from those of our mother tongue. The transferability of knowledge, skills and strategies across languages depends on how closely the two languages, the first language and the second language work. In Indian situation we find that the speakers of few languages, particularly the languages of South India are more at home in grasping English language whereas their compatriots in other parts of nation struggle to learn it.

It takes two to tango. Without two pair of legs we cannot dance tango. Similarly Teaching Learning process is carried out between the students and right teachers. Teaching should be worthy of learning a concept deeply and broadly. It should train students to understand and face the practical realities which are political, social, cultural, international and even personal with confidence. The effective teaching should prepare students to make right choices, judgments and decisions individually. In the terms of teaching of language, a student should be able to communicate and keep forth his views in the world outside in an effective lucid and clear way. In this process the teacher first of all must be aware of the background of the students. The teacher may be good but the physical problem of students may lead them to ignore the teaching. Sometimes the family background of the students may make them non receptive. All these things should be considered in the process of teaching learning.

Here I would like to illustrate the few policy changes that Peoples Welfare Society, Kamptee Road, Nagpur has undertaken to make teaching learning more convenient and helpful for students. This has not only improved the overall result of the Institute but also that of the Department of English, the department which perhaps has the most adverse impact on the results of Institutes of Arts and Social Sciences.

Till academic session 2007-08 the Institute had a timetable that sprawled from 10.27 A.M. to 5.15 P.M. The students had seven groups of subject out of which they had to choose any four with English being a compulsory subject. The classes of post graduate department

were also held during the same span. The students had to remain in the institute for the period of about 7 hours and due to liberal choice of groups it was not possible to arrange the classes of an individual in continuity. This resulted in fatigue and had an adverse effect on the students grasping of lessons. In the academic session 2008-09 it was decided to curtail division of subjects into five instead of seven resulting into compact time table, five hours for undergraduate students and three hours for postgraduate students. This reduction in the duration of stay for students in the institute has certainly improved the result of Political Department thus resulting in overall improved results of the Institute.

With regard to tests and examinations we at People's Welfare Society, Kamptee Road, Nagpur are regularly conducting class or surprise tests after the end of each topic or two. Tests examination, at the end of first academic session and at the end of second academic session are conducted strictly in accordance to the university pattern. This too has brought the desired change in the performance of students along with the change in their attitude towards learning of Political Science in English Language.

Traditionally the teaching learning process at school level is carried on through regular class tests and examinations. Recently most of the colleges have also applied the same traditional method which has really helped teacher to estimate the understanding of the topic by the students. Based on the results different methods are adopted to improve teaching in case of negative result. Theory with practice on some of the teaching topics may enable the students to understand the concept easily. Success of a teacher in his/her attempt in enabling the students to understand what is the concept taught by the teacher depends on the methods that the teacher applies.

In our country, as already said 69% of the students are from rural areas and they are coming through regional language medium school, hence based on their background, we have to design the syllabus and adopt methods to test their English language proficiency and ability to understand other subjects in English language. The syllabus should be designed such that through it students will be able to enhance their ability of speaking effectively in English in real life situations, inculcate reading habit and develop effective reading skills, enrich their active and passive vocabulary and enable students write letters reports effectively in formal and business situations. This change in acquiring skills to understand the foreign language will certainly help them to understand not only Political Science but other subjects as well in a better way. This will train students not only to excel at placement interviews, Group Discussions and other recruitment exercises but also help them develop a skill which

will make the transition from college to workplace smoother and help them excel in their jobs.

Works Cited:

1. Cummings,.J. (1996). Negotiating Identities: Education for Empowerment in a Diverse Society. Ontario, C.A: California Association for Bilingual Education.
2. Murali. M., (2009) The Modern Journal of Applied Linguistics; Teaching English as Second Language in India. MJAL.
3. Sharma R.A. (2004). Fundamentals of Teaching English, Merrut, R. Lal Publishers.
4. Teachers of English to Speakers of Other Languages. (1997). ESL standards for Students of Different Mother Tongue. Alexendria, VA: Author.

A REVISED ANNUAL QUALITY ASSURANCE REPORT (AQAR)A CRITICAL ANALYSIS.

Asst.Prof.Abdul Shamim
(Dept of English) & IQAC Coordinator
Renuka College, Besa, Nagpur.
Email:abdulshamim3@gmail.com
Mobile No: 9371132260

Abstract-*The progress and prosperity of any nation is measured in term of its quality of higher education. Therefore, the University Grants Commission came into being in 1956 under Ministry of Human Resource Development to develop the higher educational institutions to avail quality education to the masses. But it has been overburdened with so many responsibilities and to check the quality of higher education was missing. In order to fill this gap, the National Assessment and Accreditation Council (NAAC) was established in 1994 by UGC as an autonomous body with its headquarter at Bangalore. The prime role of NAAC is to evaluate, promote and sustenance quality initiatives in higher educational institutions. The NAAC forms its policies of assessment and accreditation keeping its eye on quality. Therefore, it brings amendment and revision in its processes time and again to make the institution globally competitive.The outcome of this vision is the revised Assessment and Accreditation (AA) which came into existence since July 2017.The revision in Annual Quality Assurance Report (AQAR) was made since July 2018 in order to synchronize it with revised NAAC framework.Although, the revised AQAR will be submitted to NAAC by Higher Educational Institution (HEIs) from 2019, The HEIs need to discuss and deliberate the revised AQAR.This paper is an endeavour and effort to make an analytical study of revised AQAR by NAAC.*

Keywords-AA, AQAR, Education,Format,Institution, NAAC,Process and Quality.

Introduction-The National Assessment and Accreditation Council has revised the Annual Quality Assurance Report since 1st July 2018 in order to tune it with revised Assessment and Accreditation Process.Although the revised procedures and processes for A&A have been adopted since July 2017 keeping in mind the changing scenario of education around the globe, the old AQAR format will be accepted till 31st December 2018.It has become quite obligatory for the Higher Educational Institutions to understand the changes that have been made in the format of the AQAR.In a nutshell the AQAR can be called a booklet of Self Study Report of the Institution. It is a post accreditation initiative and is submitted annually to NAAC by Internal Quality Assurance Cell of the Institution. The subsequent cycle of A&A of the Institution falls after the lapse of five years. The IQAC of the Institution is bound to work annually keeping an eye on the recommendations rendered by the NAAC Peer Team

during the first visit. The NAAC doesn't let the Institution to remain free but to involve it actively in a structured mechanism of conscious efforts to enhance the quality of the Institution.

While making the comparative study of old format of AQAR with that of the revised AQAR, there are some issues that are conspicuous and they need to be discussed. They are as follows.

Quality Assurance initiatives:The revised AQAR focuses on Quality Assurance initiatives in order to bring quality culture mechanism in the modus operandi of the institutions. While the indicative list of some of the quality assurance initiatives are mentioned in the revised format of AQAR.They are as follows

- ***Academic and Administrative Audit (AAA)-***The format of AQAR is broadly divided into two parts. The first part consists of preliminary information of the Institution and the second part contains the information related to all the seven criteria along with the key indicators. The old format of AQAR also had the question of AAA but in the revised AQAR special attention has been given to it. The NAAC has sponsored a good number of seminars on AAA in order to disseminate the exercise of quality culture in academics and administration of the institution. The NAAC has not suggested any format of AAA but most of the institutions have followed the NAAC format while some have made slight changes and others have taken the NAAC Departmental Evaluative report format. It can be done internally as well as externally, internally by IQAC of the institution on annual basis and externally by the faculty members who have sound credentials or being the members of professional bodies. Externally, it can be evaluated after the lapse of three or four years. The Revised format of AQAR underscores that the institution needs to conduct the AAA internally annually by IQAC and externally by Expert members and the recommendation are taken into consideration in order to bring efficiency and efficacy in academic and administrative work of the institution as they both are the pillars of any institution. Now some of the universities have decided to incorporate AAA with other Enquiry Committees of the Universities which regulate and monitor the affiliated colleges.
- ***Participation in National Institutional Ranking Framework (NIRF)-*** The revised format of AQAR encourages the institutions to go for NIRF for developing quality culture in the institutions. TheMinistry of Human Resource Development, Govt of India, launched National Institutional Ranking Framework

(NIRF) on 29 Sep 2015.The rankings are based on parameters broadly: "Teaching, Learning and Resources", "Research and Professional Practices", "Graduation Outcomes", Outreach and Inclusivity" and "Perception".

- ***ISO International Organisation for Standardization Certification*** – Therevised AQAR appreciates the efforts of the institution for ISO Certification .It is also one of the quality assurance indicators that have been incorporated recently.ISO is the abbreviation of International Organisation for Standardization. Its headquarter is situated in Geneva, Switzerland as a worldwide federation of national standards .More than 107 countries are its members which represent National Standardization Bodies .ISO was came into being in 1946 with the motto of developing industrial standards for facilitating international trade.
- ***NBA- National Board of Accreditation (NBA)***is provisional Member of Washington Accord (6,7) National Board of Accreditation (NBA) was constituted by the All India Council for Technical Education (AICTE), as an Autonomous Body, under Section 10(u) of the AICTE Act,1987. NBA conducts evaluation of technical institution or programme on the basis of norms.
- ***Regular Meeting of Internal Quality Assurance Cell (IQAC)*** – The IQAC is the lifeblood of the institution. In the revised AQAR significant emphasis is given on the regular meetings of IQAC on various issues related to bring quality culture in academic and administrative activities of the institution .The minutes of the IQAC meetings need to be uploaded on the institutional website apart from preparing AQAR in a timeline provided by NAAC as per the revision i.e. 31st December every year commencing from 2019.

Descriptiveness-The old format of AQAR was quite compact and condensed .The response was required to be given in figures and bullets while the revised one is quite descriptive .In the revised AQAR, there are 13 to14 questions that are tend to answer in 100 to 500 words. The questionnaire elicits the mechanism of policy making, deployment and its outcome. The AQAR is designed in such a way to know the rationale behind the course of action. When any qualitative initiatives are taken and put into practice the institutions can gauge whether the initiatives that have started by the institution are achieving their objectives are getting they are being deviated from the aims and objectives .This exercise also gives the crystal clear understanding not only to

IQAC of the institution but also assessors of putting any initiatives into practice and they will be in the position to evaluate judiciously.

E-Contents-In the revised AQAR more emphases are given on E- Contents such as E-PG Pathshala, SWAYAM other MOOCs platform and the facility for developing the E-content. The faculty members are encouraged to develop the E-content for the courses. With the call of digital India, the Ministry of Human Resource Development of India took the initiative called 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM),to provide an integrated platform and portal for online courses, covering all higher education, High School and skill sector courses. SWAYAM is an indigenous (Made in India) IT Platform for hosting the Massive Open Online Courses (MOOCs).The sole motto of incorporating MOOCs in Higher educational Institutions is to provide a platform to the academicians to use their expertise and knowledge for the benefits of the learners consequently the disparity between the learning system in the metropolis and the remotest place of the country will be diminished. The budding faculty members are motivated to develop e-contents therefore in the revised Annual Performance Indicator (API) it has been included in third category of Research, Publication and Academic Contribution. The teachers who are going to develop the e-content will earn points in API and get benefits in CAS.

Students Satisfaction Survey (SSS) -The revised AQAR is incorporated with SSS,the choice has been given to the institution to design the questionnaire in order to measure the satisfaction level of the students regarding the conducive environment provided to the students for the overall progress of the students. The details of the process designed by the institution need to be rendered by the institution on the institutional website and the web link is to be mentioned in the revised AQAR.This exercise has been initiated by NAAC in the revised process of AA .However the SSS designed by NAAC highlights Key Indicator - 2.7.1 Under Criterion II of Teaching – Learning and Evaluation of Self Study Report (SSR).There are twenty one questions that revolves around the pedagogy and the methodology employed by the teachers for successful transaction of syllabi. The measuring scale used by NAAC is based on 4 to 0,with the most positive response rated as 4 and most negative response rated as 0. The mean score for each question will be calculated and the overall mean will be arrived at. This figure will range from 4 to 0 and will give the mean satisfaction level of the students for the particular institute.The survey analysis score will be used by NAAC as a key component of accreditation. A predetermined weightage is also assigned to this key indicator in this accreditation framework.

Innovation Ecosystem-This key indicator has been newly introduced in the revised AQAR in the third criterion namely Research Innovation and Extension in the old AQAR it was Research Consultancy and Extension. Its sole motto is to encourage the institutions to create congenial and conducive environment for research and publication. It is also expected from the institutions to organize workshops, seminars, conferences and symposia on Intellectual Property Rights to disseminate the vital information regarding research and publication and how to get rid of the problem of plagiarism. Innovation is also highlighted in this criterion for the institutions to design and develop innovative practices related to initiate employable skills courses and entrepreneur development courses for making the students employable. The term Incubation is used particularly to develop the Incubation center in the institution to give exposure to the students to tap their skills for starts up and entrepreneurships.

Institutional Values and Best Practices –The Revised AQAR changed the seventh criterion in the old AQAR it was Innovations and Best Practices and the questions were also limited. Most of the questions were related to environmental consciousness and best practices. But in the revised AQAR some new key indicators have been introduced taking the cognizance of the present scenario which is quite valid and relevant in any organizations or institutions. Gender Equality has been focused and the institutions are motivated to conduct gender sensitization programmes in the institutions to create healthy atmosphere in the institutions as well as out of the four walls of the institutions. The boys and girls are inculcated the values and culture to respect each other so that the healthy and safety society can be created.

- ***Differently abled (Divyangjan) friendliness*** -At the Elementary Education level, the Sarva Shiksha Abhiyan (SSA) proved instrumental in ensuring a high level of enrolment up to 68% for children with different sets of abilities. Of the 15.93 lakhs students with disabilities in the elementary school-going age group as identified in 2004-05.The strength is likely to augment in the ensuing years therefore the NAAC has decided to attract the attention of the HEIs to provide facilities to make their life wholesome. In the old AQAR, this question was missing. But in the revised AQAR, the HEIs are encouraged to render the facilities of ramp and lift for the accessibility of the differently abled students' The students who are visually challenged are provided the facilities of Braille and Audio Book Reader and

Recorder. Those who are physically challenged should be provided the facility of the scribe. Rest room should also be made at their disposal. Specific skills development programme should also be designed and run in the HEIs to make their life fulfilling.

- ***Inclusion and Situatedness*** -Anyinstitution or organization cannot be developed in isolation it has to be firmly rooted with the community living in the vicinity .The place may have problems .The NAAC encourages the HEIs to get actively involved with the community to get rid of its problems. It is expected from the HEIs to analyze the problem of the particular place and try to make a road to help the community to mitigate the problem if not nip it from the bud. Sometimes the local has few advantages so it is the responsibility of the institution which is situated in that place to design and develop the programme for the benefits and advantageous of the local community .The HEIs is expected to discharge the social responsibility and this exercise is one of them .In this way the students and staff are also engaged with the community and make them socially committed citizens .In the Revised AQAR ,the question regarding the numbers of programmes and the participation of the staff and students are posed.
- ***Human Values and Professional Ethics***–The NAAC has underscored values and ethics in the revised AQAR in order to imbibe these traits among the staff and students alike. The rationale behind incorporating these key indicators is to spread virtues to make the institution a better place to work. Institution doesn't mean the physical infrastructure but it encompasses human beings who are the fulcrum of any institution. Values are the foundation of human thoughts, behaviour and action. They help to develop integrity, scrupulousness, compassion, tolerance and forbearance in the people working in the institution. These qualities assist to give human touch and maintain the equilibrium between man and machine. Both these entities are the vital organs of the institution but each has different needs. Values fulfil the need of human beings. It is expected from the institution to plan and organize programme on Values and Ethics for staff and students.
- Professional ethics encompass the personal and corporate standards of behaviour expected by professionals. It has been highlighted by NAAC in the revised AQAR. Because as far teaching is considered, it is considered the noblest profession in the society. The NAAC expects from the institution to make a book of conduct for each of the stakeholders to bring professionalism in the working of the institution.

- ***Institutional Distinctiveness***-It has been observed in the revised AQAR, the institution has been encouraged to develop its own distinctiveness keeping in mind the vision, priority and thrust of the institution. It will help the institution to analyse its attribute and evolve to mark its own identity which will differentiate it from other intuitions. In the revised AQAR, the performance of the institution in its distinctiveness needs to be provided on the website of the institution.

Conclusion-

The researcher has made the analytical study of revised AQAR and has drawn the conclusion that the revised AQAR is the need of the hour. It keeps the HEIs always on their toes to develop and deploy policies to abreast with advancement in the field of higher education around the globe. The watchword is Quality Culture. The revised AQAR is quite descriptive, it should be accessible to the various stakeholders in order to know the steps taken by the HEIs to bring quality in their various exercises. The revised AQAR will certainly involve all the stakeholders of HEIs and it will also bring fruition to the community development at large.

Works cited.

1. http://www.naac.gov.in
2. https://www.shiksha.com
3. https://www.myexamplan.com
4. http://oasis.col.org
5. https://www.ugc.ac.in
6. https://en.wikipedia.org/wiki/University_Grants_Commission_(India)
7. https://en.wikipedia.org/wiki/Professional_ethics

REVISED NAAC FRAMEWORK: A STUDY OF INFRASTRUCTURE AND LEARNING RESOURCES CRITERIA IV

Dr. Vaishali. D. Malode (Wadnerkar)
Librarian
Dhanwate National College, Nagpur

Abstract: *In this article the researcher has highlighted the revised framework of NAAC and also the importance of criteria IV in every college of NAAC process. Criteria iv is related to physical facilities, library as a learning resource, IT Infrastructure and maintenance of campus infrastructure.*

Keywords: NAAC, ICT, HEI

Introduction: NAAC is an organization that assesses and accreditation all institutions in higher education in India. It is an autonomous body funded by the UGC of Govt. of India headquartered in Bangalore. Accreditation is basically providing recognition to any university or institute and is an appealing factor. The main aim of NAAC is to make a quality defining elements of higher education in India by combination of self and external promotion and substance initiatives. There is periodic assessment and accreditation of institutions to higher education or units, or specific academic programme or project.

Revised Accreditation Framework

NAAC has launched Revised Accreditation Framework since July, 2017 and hence AQAR format also modified, in cognizance with the new methodology. The tools and parameters are designed in the new AQAR format are in such a way that the preparation of AQAR would facilitate the HEI's for upcoming cycles of Accreditation. Data collected/prepared infuses quality enhancement measures undertaken during the years. Further, it also adds quality enhancement and quality sustenance measures undertaken in teaching, learning, research, extension and support activities of the Institution. It is hoped that new AQAR would facilitate Educational Institutions for creating a good database at Institutional level for enhancing the quality culture.

Quality Indicator Framework (QIF)

The criteria based assessment forms the backbone of A&A process of NAAC. The seven criteriarepresent the core functions and activities of a HEI. In the revised framework not only theAcademic and administrative aspects of institutional functioning but also the

emerging issues have been included. The Seven Criteria to serve as basis for assessment of HEIs are:

1. Curricular Aspects
2. Teaching-Learning and Evaluation
3. Research, Innovations and Extension
4. Infrastructure and Learning Resources
5. Student Support and Progression
6. Governance, Leadership and Management
7. Institutional Values and Best Practices

Under each Criterion a few Key Indicators are identified. These Key Indicators (KIs) are furtherdelineated as Metrics which actually elicit responses from the HEIs. These seven criteria alongwith their KIs are given below explicating the aspects they represent.

INFRASTRUCTURE AND LEARNING RESOURCES CRITERIA IV

To using technology as a learning resource, managing the activities of theinstitution in a technology-enabled way will ensure effective institutional functioning. Forexample, documentation and data management in the HEIs are areas where the process ofassessment by NAAC has made a significant impact. Moving towards electronic datamanagement and having institutional website to provide ready and relevant information tostakeholders are desirable steps in this direction. In other words, effective use of ICT in HEIs willbe able to provide ICT literacy to the campus community, using ICT for resource sharing andnetworking, as well as adopting ICT-enabled administrative processes. Therefore, NAACaccreditation would look at how the HEIs have put in place their electronic data managementsystems and electronic resources and their access to internal and external stakeholdersparticularly the student communityMost important tools of NAAC are Weightages, Criteria, key aspects and grade points. Criteria IV

Criteria and key aspects	Weightage	Key aspects Grade points4/3/2/1/0	Key aspect Wise Weightage Grade Points
Infrastructure and Learning Resources (100)			
Physical Facility	30	2	60
Library as Learning Resource	20	4	80
IT Infrastructure	30	2	60
Maintenance of Campus Infrastructure	20	2	60
Total	100		240

Criteria IV covers Infrastructure and Learning resources and under it section

4.1 is Physical facilities its weightages are 30 points its include the institution has adequate facilities for teaching –learning as per the minimum specified requirements of statutory bodies, like. Administrative block Classrooms, Multilanguage laboratory, Audio visual media centre, as per UGC and University norms. For the enhancement of ICT Institute have ICT teaching aids like OHP, Slide projector, video camera, CCTV Cameras.

4.1.1 The institution has adequate facilities for sports, games (indoor outdoor) gymnasium, yoga centre etc. and cultural activities like

4.1.2 The institution has adequate facilities for sports, games (indoor, outdoor) gymnasium, yoga centre etc. and cultural activities like Gymkhana, Auditorium, Red Cross and NSS, the Open Air Theatre, Grievance Redressal unit, Women Empowerment and Anti Sexual Harassment Cell, Counselling and Career Guidance Placement Unit, Canteen, Safe drinking water facility, inverter backup facilities and bank facilities.

4.2 Library as a Learning Resource

It can be found that in the overall criteria wise AQAR marking format learning resource centre holds only 20 marks under the criteria IV. 4.2 holds the complete mandate about the importance of libraries or it goes beyond. There opportunities for the LIS professionals to make their presence and contributing role in all the seven criteria by their resourcefulness and essential role and contribution due to their practical exposure to the new ICT developments in their working pattern and learning resources.IT includes, Library is automated using Integrated Library Management System (ILMS), Collection of rare books, manuscripts, special reports or any other knowledge resource for library enrichment. The institution has the INFLIBNET or any other databases, Average annual expenditure for purchase of books during the last five years, Expenditure on the purchase of journals during the last five years and make their audited statements. Availability of remote access to e-resources of the library, Percentage per day usage of library by teachers and students.

4.3 IT Infrastructure

It can include college and library websites provide necessary information. The institution implemented IT component for smooth conduct of administration in and academic activities. The admission process has been computerized, All the departments connected with internet, Wi-Fi facilities, teaching learning process have ICT based.

4.3.1 IT Facilities including WI-FI

Smart Class rooms with LCD Facilities, Digital Databases, CD. VIDEO, Computer Labs, Seminar Halls with ICT Facilities.

4.3.2 Student Computer Ratio

No. of Computers, No. of Computers in working condition, Total no of students, Available Internet Bandwidth, Facilities for e-content development, Recording Facility, Lecture Capturing System

4.4 Maintenance of Campus Infrastructure

In this maintenance of campus infrastructure in Physical Facilities, required Sports, Gymnasium, Yoga Centre, Class rooms expenditure and maintenance of IT infrastructure and their audited statements, Academic support Facilities like xerox machine, library and others software, computers, Books/Journals and required their maintenance policy documents and audited statements, and expenditure on maintenance of physical facilities and academic facilities.

Conclusion

NAAC has been regularly updating and revising its assessment process to fine tune its grading pattern and assessment process in terms of the local, regional and global scenario as well as standardization of the practices which ultimately will lead to quality sustenance in the educational field. Criteria IV is a learning resource centre which is important for library and librarian also. So in this paper explain all process of criteria IV with intellectual manner and attempt to suggest opportunities for learning resource center to showcase their unending importance in higher educational institution framework.

Reference

1. Institutional Accreditation Manual for Affiliated /Constituent Colleges (Effective from July 2017)

2. Guidelines for the creation of the Internet Assurance Cell (IQAC) and submission of Annual Quality Assurance Report (AQAR) BY Accredited Institutions (For Affiliated/ Constituent Colleges) Revised Accreditation Framework in November, 2017

3 Ramanik .S. Lengure Manju .N. Dubey. (2018). Revised NAAC Framework : Opportunities for Libraries in Higher Education. *Revamping of Academic Libraries for Next Generation* (pp. 50-54). Jalgoan: Atharva Publications.

THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN IMPROVING TEACHING AND LEARNING PROCESS

Dr. Raheel K. Quraishi
Department of English
Bhiwapur Mahavidyalaya, Bhiwapur
Dist: Nagpur (M.S.)

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Abstract:*ICTs are rolling out powerful improvements in the society. They are impacting each part of human life. Use of ICT instruments in Teaching-Learning Process has changed the aggregate scenario of Teaching-learning process. Teaching– Learning Process isn't currently restricted inside the limits of classrooms. ICTs are making significant distinctions in the encouraging methodologies and ways students are learning. This article examines the significance and meaning of ICT, different segments of ICT, ICT in education, advantages of ICT in Education, advantages of ICT in teaching– learning process. The primary purpose of this article is how ICT devices are useful in classroom transaction.*

Keywords: ICT, Education, Knowledge, Environment, System, Technology, Computer, Students, India, Opportunity, Classroom.

Introduction: The present period is the era of Information Communication Technology (ICT). Due to the appearance of ICT and IT, life has turned out to be easier. Amid the most recent couple of decades, there has been a colossal development in the utilization of ICT in all fields, such as, industries, businesses, societies, lives of people and education.Presently the educational institutions everywhere throughout the world are incorporating ICT with the teaching– learning process so as to give knowledge and skills to the students to address the difficulties of educational environment. It is only through education and the integration of ICT in education that one can teach students to be participants in the growth process in this era of rapid change.

Since ICTs give more prominent opportunity to the both teachers and students to alter learning and teaching to individual needs, so it is important to incorporate ICT application in Teaching-Learning Process.Yet, introduction and assimilation of ICTs at various dimensions and different kinds of education in a developing nation like India is the most difficult endeavour.Failure to address the difficulties would mean a further extending of the knowledge gap and developing of existing financial and social disparities among the developed and developing nations.

Meaning and Definition of ICT: ICT means Information Communication Technology. It hasthree parts Information, Communication and Technology.Information is the summarization of data. Technically data are raw facts and figures that are processed in to information**.** Communication is a process which disseminates information and Knowledge. And Technology is a mode or media through which information can be disseminated.So ICT is the technology required for information processing and spreading.ICTs are technologies such as radio and the newer digital technologies like computers, satellites, mobile phones and the internet.ICTs are electronic collection, editing, storage, distribution and presentation of information. ICT is the means in which individuals connect with their associates the world over, exchange their thoughts, information, messages and co-ordinate each other through assortment of technical means.

Role of ICT in Education:

ICT make education framework increasingly gainful, fascinating, give more powerful instruction and furthermore ready to extent the educational opportunities to masses and making information – rich learning environment.

ICT has made the classroom exchange all the more engaging. It has broadened the teaching-learning process beyond the limits of classroom. Students are presently ready to use laptop, computers and wireless networks anywhere in campus. A computer permits high speed information exchanges to happen with people inside the institution and also around the globe. ICT gets the outside world to the classroom teaching-learning process, makes the things increasingly realistic and thus helps the students to comprehend the abstract idea distinctly.

ICT can enhance the nature of advanced education by encouraging experimentations, researches and innovations, receiving the new strategies in the teaching – learning process and assimilating the new information with the best practices. In 1998 UNESCO world Education Report focused on the significance of ICT in higher education to craft quality education. Recently, ICT has turned out to be fruitful tool in the field of education. ICT invigorates the students to procure quality research through team work, time management, analytical reasoning, worldwide awareness, fundamental communication,problem solving and guided instruction.

ICT has also played a pivotal role in providing distance education very effectively. IT provides online provision of courses, online evaluation and online design courses to large number of students at a time. The IT –based framework like digital libraries; online courses,

audio and video conferencing, contribute meaningfully to the domain of E- Learning and have opened new vistas in the zone of E-Learning.

Benefits of ICT application in Education:

The benefits of ICT application in education can be summarized as below:

- ICT increases the access to education.
- It improves the quality of education by evolving new means of interaction and also makes teaching –learning process more stimulating.
- It provides equal opportunities to the large number of learners to gain education and information.
- It provides specialized tools for learners with visual, hearing or mental deficiency, so that they learn and acquire knowledge as per their convenience.
- It provides support to each and every school in sharing educational / learning experiences with the different schools throughout the country.
- It facilitates the distance education system to be more fruitful.
- It helps in promoting technology literacy to every citizen and especially to youngsters.
- It provides prospects for lifelong education.
- It enhances the teacher's quality both in terms of teaching and research.

ICT in Classroom Instruction: The precise utilization of ICT devices in classroom instruction makes the teaching-learning process increasingly fruitful and profoundly interactive. It has switched the teaching-learning process from teacher-centred learning to student-centred learning.Research has shown that high level of student and instructor satisfaction can be produced in ICT empowered learning process. But, the viable and proficient utilization of ICT relies upon on technically competent educators /teachers. They ought to have the capacity to welcome the potentiality of ICT and have positive demeanour towards ICT.

The effective and efficient use of ICT in classroom instruction depends on:

a) ICT literacy of Teachers
b) Effective use of ICT hardware and software for teaching –learning activities
c) ICT – based pedagogy, online support, networking and management.
d) Embracing best path-breaking practices in the use of ICT.

Various ICT tools used in Classroom Instruction: The following are some of thetechnological tools used in teaching –learning process. These are, Computer-Aided

Instruction (CAI), Computer –Assisted Learning (CAL), LCD projector, PowerPoint Presentation, Smart board, E-mail, YouTube, CCTV, Video conferencing, Teleconferencing, Google earth, Google Maps, etc.

Problem faced in grafting of ICT in Teaching –Learning process in Indian Milieu:

- Inadequate infrastructural development in rural areas.
- Inadequacy of Skilled and trained teacher in primary and secondary schools in remote areas where most of the primary schools are run by single teacher.
- Lack of proper funding is another problem, mostly found in developing country. ICT implementation in teaching learning process needs widespread investment which is not possible for developing country, though India is trying their level best to reach the advancement but still it is on the process.
- Frequent power cut problem. Most of the village schools are still short of proper electrification.
- Lower bandwidth capacity than developed country.
- Language barriers: An estimated 80% online is in English Language. A large fraction of educational software designed in world market is in English. Where as in developing country like India where English expertise is not high especially outside the cities.
- Lack of ICT awareness among the mass. Now it is high time for the people to change the mind-set and embrace the new technology for their future academic growth.

Conclusion: Application of ICT in education and teaching learning process has changed the traditional system of learning to modern ICT based learning. Teaching- learning process is not now limited within the boundaries of classroom. The modern technologies including new web 2.0 has changed the total scenario of teaching learning process.

Utilization of ICT in education and teaching-learning process has changed the conventional arrangement of learning to the modern ICT based learning. Teaching-learning process isn't currently constrained inside the limits of classroom. The advanced innovations including new web 2.0 has changed the overall set-up of teaching-learning process. ICTs are making key alteration in the teaching approaches and the ways students are learning. ICT welcoming innovative pedagogies in to the classroom, creating network

among educational institution, improving overall standard of education by reducing the gap between the quality of education in urban area and rural area, commencement of smart school with objectives to nurture self-paced, self-assessed and self-directed through the application of ICTs, and developing ICT policy for education and training.

There is an accord that the improvement of any nation relies on the nature of education program offered to natives. ICTs, in spite of their known limitations, are accepted to be helpful in such manner. The computer and the internet are particularly helpful to upgrade students' commitment in learning and emphatically affect students' performance and achievement.

Role of teacher is very much vital in teaching learning process. Teacher is the primary mainstay of teaching-learning process. Teacher is the facilitator of learning. ICT can't supplant the teacher; it can help the teacher in the process of teaching and make the teaching– learning process more interactive. The viable utilization of ICTs in teaching-learning process likewise relies upon teacher's ICT competency and expertise. So the teacher needs to understand that if the students are to accomplish high level of competency and competitiveness, they have no other options but to embrace technology as an integrated tool in the field of education.

Works Cited:

1. Arulsamy. S & Sivakumar. P. *Application of ICT in Education*. Hyderabad: Neelkamal Publication.2009. Print.

2. Borghans, L., &Weel, Baster. "Are computer skills the new basic skills? The returns to computer, writing and math skills in Britain," *Labour Economics*, Elsevier, vol. 11(1), pages 85-98, 2004.

3. Bauer, J., & Kenton, J. "Toward technology integration in the schools: Why it isn't happening". *Journal of Technology and Teacher Education*,vol. 13, no. 4, pp. 519–546, 2005.

4. Das, B.C. *Educational Technology*. New Delhi. Kalyani Publishers. 2002. Print.

5. Dutta, Indrajeet & Dutta, Neeti. Blended Learning; A pedagogical Approach to teach in Smart Classrooms. *Edutracks; A monthly Scanner of Trends in Education*, 11(10), 6-10.2012.

6. Franklin, C. "Factors that influence elementary teachers' use of computers". *Journal of Technology and Teacher Education*,vol. 15, no. 2, pp.267–293, 2007.

7. Roy, Sudipta Deb. Application of ICTs in Teaching-Learning Process. *IRJIMS*. Karimganj, Assam. Scholar Publication. Vol I, issue VII. Pp. 72-84. Aug. 2015.

8. Thiyagu, K. Web 2.0 tools for classrooms Applications. *Edutracks; A monthly Scanner of Trends in Education*, 12(8), 29-33. 2013.

VISION, MISSION, AIMS & OBJECTIVES OF THE INSTITUTION

VISION

Our sole vision is to nurture, nourish & chisel the students specially to make them self –reliant, self-sufficientand knowledgeable citizens to contribute to all round progress of the society.

MISSION

To develop the institution into a reputed brand name for excellence in academics and empower thestudents with higher learning and research capabilities through dynamic and value based educationfor global competency and strength of character.

AIMS & OBJECTIVES

- *To impart updated and socially relevant knowledge disciplines in Arts and Commerce studies.*
- *To strive for total development of the personality and character of students enlisting activecooperation of the parents, guardians and responsible citizens in society.*
- *To inculcate among the students a sense of discipline, social responsibility and live for national unity.*
- *To provide all possible facilities for the moral development of the students. As it has been said by Plato, "Mould conditions aright and men will grow good to fit them."*
- *To endeavour to create an atmosphere in the college free from any such extraneous pressures that hamper the quiet and peaceful pursuit of learning and research.*

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REVIEW ARTICLE

Metal/Metal Oxide Nanoparticles: Toxicity, Applications, and Future Prospects

Ratiram Gomaji Chaudhary[1,*], Ganesh S. Bhusari[2], Ashish D. Tiple[3], Alok R. Rai[4], Subhash R. Somkuvar[5], Ajay K. Potbhare[1], Trimurti L. Lambat[6], Prashant P. Ingle[7], and Ahmed A. Abdala[8,*]

[1]Post Graduate Department of Chemistry, Seth Kesarimal Porwal College of Arts, Commerce and Science, Kamptee, (Maharashtra)-441001, India; [2]Research and Development Division, Apple Chemie India Private Limited, Nagpur-441108, (Maharashtra), India; [3]Department of Zoology, Vidyabharti College, Seloo, Wardha (Maharashtra), India; [4]Post Graduate Department of Microbiology, Seth Kesarimal Porwal College of Arts, Commerce and Science, Kamptee, (Maharashtra)-441001, India; [5]Department of Botany, Dr. Ambedkar College, Nagpur, (Maharashtra)-440 010, India; [6]Department of Chemistry, Manoharbhai Patel College of Arts, Commerce & Science, Deori, Gondia 441901, Maharashtra, India; [7]Saibaba Arts and Science College, Parseoni, (Maharashtra)-441105, India; [8]Chemical Engineering Programm, Texas A&M University at Qatar POB 23784, Doha, Qatar

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Abstract: The ever-growing resistance of pathogens to antibiotics and crop disease due to pest has triggered severe health concerns in recent years. Consequently, there is a need of powerful and protective materials for the eradication of diseases. Metal/metal oxide nanoparticles (M/MO NPs) are powerful agents due to their therapeutic effects in microbial infections. In this context, the present review article discusses the toxicity, fate, effects and applications of M/MO NPs. This review starts with an introduction, followed by toxicity aspects, antibacterial and testing methods and mechanism. In addition, discussion on the impact of different M/MO NPs and their characteristics such as size, shape, particle dissolution on their induced toxicity on food and plants, as well as applications in pesticides. Finally, our prospective on current and future issues and applications is presented.

Keywords: Metal oxide Nanoparticles, Toxicity, Microbial assay, Callus poisoning, Pest control, Plant biotechnology.

1. INTRODUCTION

Nanotechnology is a revolutionary technique that can resolve major problems faced by humans worldwide [1]. Novel applications of nanotechnology in energy generation, conversion and storage, optics, microelectronics, mechanical, and ceramics engineering are increasing day-by-day. Currently, metal/metal oxide nanoparticles (M/MO NPs) are gaining substantial attention in diverse fields of solid-state chemistry, owing to their unique Physico-chemical properties [2-3]. Nanomaterials (NMs) are being fabricated purposefully using numerous techniques, which exposed to the atmosphere with no safety measurement. Nanotoxicology is the study of NMs' toxicity, which is impacted by the NMs' small particle size, very large surface/volume ratio, as well as their ability to diffuse freely as compared to the bulky particles.

Several approaches, including chemical, thermal, physical and chemical vapored position, precipitation photo-deposition, sputtering, and pulsed electro-deposition, are used for the synthesis of M/MO NPs [4-9]. Various NPs are being already used in commercial applications, including food and agriculture, but they accumulate intracellularly and face difficulty in eliminating from living organisms and because of their toxicity, they could impact the ecosystem [10-13]. Therefore, the present review starts with an analysis of the noxious impacts of NPs on the environment and their contributions to cellular damage. The exposure to NPs through food and its impact are discussed in Section 3. Applications of M and MO NPs on agriculture are a growing field of research; the effect of different M and MO NPs on plants is analyzed in Section 4. In Section 5, applications of M/MO NPs in pesticides are comprehensively discussed. Finally, conclusions and prospective on applications and impact of M/MO NPs are presented in Section 6.

*Address correspondence to these authors at the Post Graduate Department of Chemistry, Seth Kesarimal Porwal College of Arts, Commerce and Science, Kamptee, (Maharashtra)-441001, India;
Tel: +91-9860032754; E-mail: chaudhary_rati@yahoo.com
Chemical Engineering Programm, Texas A&M University at Qatar POB 23784, Doha, Qatar; Tel: +974-4423-0180; E-mail: aabdala@qatar.tamu.edu

2. TOXICITY ASPECTS

M/MO NPs are heterogeneous in nature and their impact on living being rests on their size and shape other than the chemical behaviour of specific metal ion used [11]. Metals having a high dissolution rate are considered highly toxic, while other characteristics such as composition, concentration, morphology, particle dimensions, chemical reactivity, agglomeration, and dispersal directly affect their behaviour and interactions with surroundings [8]. Moreover, NPs liberated ionic species is among the main sponsors to noxiousness.

Moreover, surface charges dictate the interactions between NPs and cellular components. Aggregation helps particles to bond *via* the weak interactive forces and they are predominantly reliant on the charge, concentration and ingredients of the nearby environment. Agglomeration disturbs the bio-distribution plus interactions of NPs, when exposed to the cells. Agglomeration can be analysed by means of laser diffraction technique by measuring the *Brownian motion* in suspension and applying the *Stokes-Einstein* equation [12-13]. The surface area and chemical composition of NPs are measured by *Brunauer–Emmett–Teller* (BET) adsorption-desorption behaviour under nitrogen. As the particle size declines, the relative surface area per unit mass inclines and as a consequence, the fraction of active atoms, those on the surface, increases, which can enhance toxic reactions [14]. Stable accumulation of NPs can remain energetic for a long time in the body. However, degradable NPs cause severe effects by releasing reactive oxygen species (ROS).

2.1. NPs toxicity in Microbial Community

The properties of M/MO NPs are different than their bulk counterparts, due to the small size, diverse morphology, solubility, surface structure and aggregation.[15]These variances provide good functionalities for M/MO NPs. While, on the other hand, contribute to their negative impact on the environment and microbial community [15-16]. Numerous studies emphasized on the exposure to M/MO NPs. It has been revealed that the NPs concentration is highest in soil compared to water and air, indicating that soil is the key for the engineered NPs liberated in the atmosphere [17-18]. Nanowaste undergoes adsorption with carbon-based material and biomass, combined with other carbon materials or even undergo microbial conversion [19-20]. Endorsement of NPs by the pathogens might take place *via* diffusion, specific or non- specific uptake, or *via* membrane damage [18, 21-22].

Reports on NPs interaction with microorganisms indicated that they bind with different biological matter and change their surface behaviour (Fig. **1a**) *via* interruption of membrane-membrane potential, ROS production, oxidative damage to proteins, interference through electron transport or respiration, potential DNA damage and effects observed on the *gram-positive* species.[21] The definitive mechanism behind the microbial community is not clear, but possible mechanisms are (a) damage of cell membrane, (b) oxidation of protein molecules, (c) interaction with respiratory chain, (d) genotoxicity, (e) ROS reactive oxygen species, and apoptosis (Fig. **1b**) [23-24].

Most of the toxicity studies focused on cellular level mechanism; however, far less data of molecular-level interactions of NPs are reported and metagenomic environmental sample survey leads to the study of NPs effects on microbial community shift in soil using techniques like quantitative PCR, 16S r-RNA and species sensitivity distribution method (SSD) [25-26].

2.2. ROS Establishment

ROS is a cluster of active species formed in particular metabolic courses with oxygen participation. According to Haber–Weiss reaction, hydrogen peroxide (H_2O_2) and superoxide ($\bullet O^{2-}$) catalysed by Metal ions produce hydroxyl radicals (•OH). ROS is the main signalling molecules throughout cell signalling and homeostasis which are reactive species of molecular oxygen. ROS creates a pool of oxidative species comprising $\bullet O^{2-}$ anion, OH• radical, H_2O_2, singlet oxygen (O^2), and hypochlorous acid (HOCl). The ROS are produced intrinsically or extrinsically inside the cell. Molecular oxygen generates $\bullet O^{2-}$, the primary ROS *via* one-electron reduction catalyzed using nicotinamide adenine dinucleotide phosphate (NADPH) oxidase. Additional, the oxygen reduction either leads to H_2O_2 or OH• *via* dismutation and metal-catalyzed Fenton reaction, respectively [27-28], which is the most reactive and effective, as it can accept additional electron(e^-) giving rise to water (H_2O) molecule. M/MO NPs can produce different ROS that can participate in different reactions by undergoing oxidation or reduction reactions. The ROS causes DNA damage by the oxidation of amino acids and polyunsaturated fatty acids. Alteration of the balance in the mechanisms of ROS production and elimination, in favour of production, induces the state of cellular oxidative stress in the bacterial cell. O_2 and H_2O_2 originate less acute stress reactions and can be neutralized by endogenous antioxidants, such as superoxide and catalyse enzymes, while OH^- and O_2^- lead to acute pathogens death [29-30].

The key finding of Haber–Weiss reaction was that H_2O_2 is decomposed by a chain reaction [31-32]. The reaction chain proceeds by three successive steps, as followed by (i) initiation, (ii) propagation and (iii) termination (Fig. **2**).

The chain is initiated by Fenton reaction:

$M^{2+} + H_2O_2 \rightarrow M^{3+} + HO^- + HO^\bullet$ ……. (Step 1: Initiation)

Then, the reaction chain propagates by means of two successive steps:

$HO^\bullet + H_2O_2 \rightarrow H_2O + O_2^{\bullet-} + H^+$ …… (Step 2: Propagation)

$O_2^{\bullet-} + H^+ + H_2O_2 \rightarrow O_2 + HO^\bullet + H_2O$ …… (Step 3: Propagation)

Finally, the chain is terminated when hydroxyl radical is scavenged by a metal ion:

$M^{2+} + HO^\bullet + H^+ \rightarrow M^{3+} + H_2O$ …….. (Step 4: Termination)

3. ANTIMICROBIAL ASSESSMENT OF M/MO NPS

MO NPs materialize as novel antimicrobial agents and thus, it is essential to examine the effectiveness compared to typical bacteria. Current testing systems are limited by the in vitro formulation testing with one microbial species at the time, and rarely against multi-species biofilms. In this section, we review the different types of antimicrobial testing methods that can be used for measuring the antimicrobial activities of NPs. The type of test to be used depends on the purposes and type of info needed to be acquired.

3.1. Disk-diffusion Method

Owing to more convenient, efficient, straightforward and low cost, Disc-diffusion or Kirby–Bauer test is probably the most widely used technique to determine antimicrobial resistance around the microbiological society. A suspension of the isolate (Approx. 1–2 × 10^8 CFU/mL) is made according to the McFarland standard; afterward this suspension spreads evenly onto an appropriate agar (Müller-Hinton agar) in a Petri dish with pH 7.2-7.4 [33]. Discs are then saturated with different well-defined concentrations of different Nano-antimicrobial positioned on the surface of agar. A multichannel disc dispenser can speed up placement of the discs. After incubation at 35 °C for 16-24 h, zones of growth inhibition about each of the discs are measured. A clear circular zone of no progress in the immediate vicinity of a disc specifies vulnerability to that antimicrobial [34]. The NPs size, diffusion rate, agar's porosity, and possible charge interactions between the antimicrobial and the agar may affect the diffusion and the final size of the inhibition zone. In theory, the highest concentrations will be nearby the antimicrobial-containing disc and will be diluted away from the centre (Fig. **3**) [34].

3.2. Agar Dilution Method

The above-mentioned method is used as a standard for evaluating the minimal inhibitory concentration (MIC). The MIC is noted as less than or equal to the lowest concentration when no growth takes place on any of the agar plates but the growth control. The method includes, the melted agar is mixed to encompass sequential dilutions of the nano-antimicrobial. The subsequent antimicrobial having medium is positioned into Petri-dishes. An aliquot enclosing 104 CFU/mL of test microorganism is located onto the agar's surface and nurtured overnight at 37°C. Then, the plates will be studied for growth to define the last actual concentration to constrain growth (Fig. **4**) [36-37].

3.3. Broth Dilution Method

The broth dilution method-more versatile, generally depends upon microbial inoculation at a specific inoculum density of broth media (in tubes or microliter plates) containing antibiotics at a varying level, usually doubling dilutions are used (*e.g.*, 1, 2, 4, 8, and 16 μg/mL). The standardized bacterial suspension is typically 1–5 × 10^5 CFU/mL. Incubation at 35 °C overnight, turbidity is recorded either visually or with an automated reader, and the breakpoint concentration is established. The lowest concentration of nanoparticles that prevented growth represents the MIC. The precision of this method is to be ±1 twofold concentration [38]. Microliter plates or

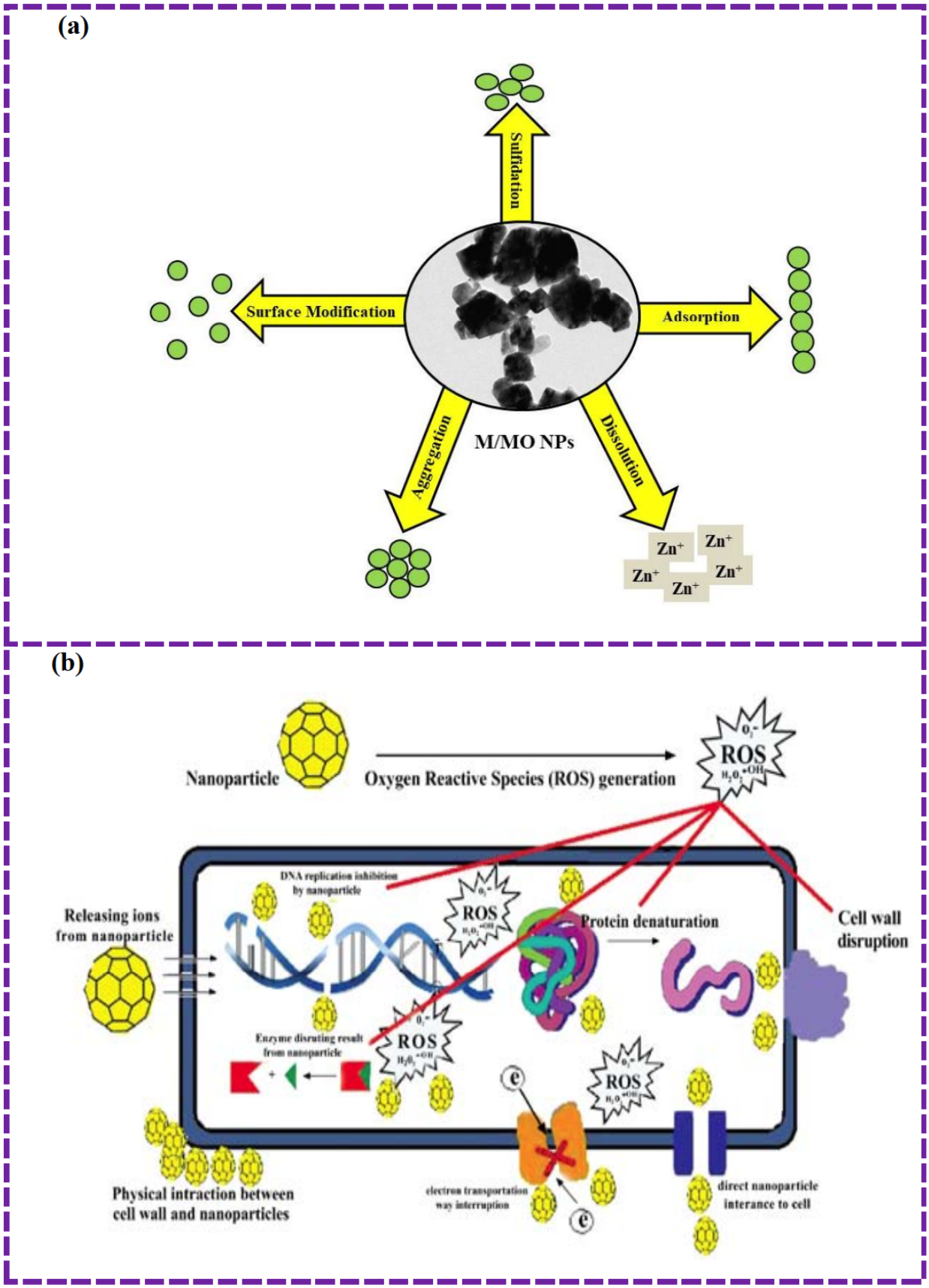

Fig. (1). Feasible mechanism of NPs toxicity to the microbial community. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

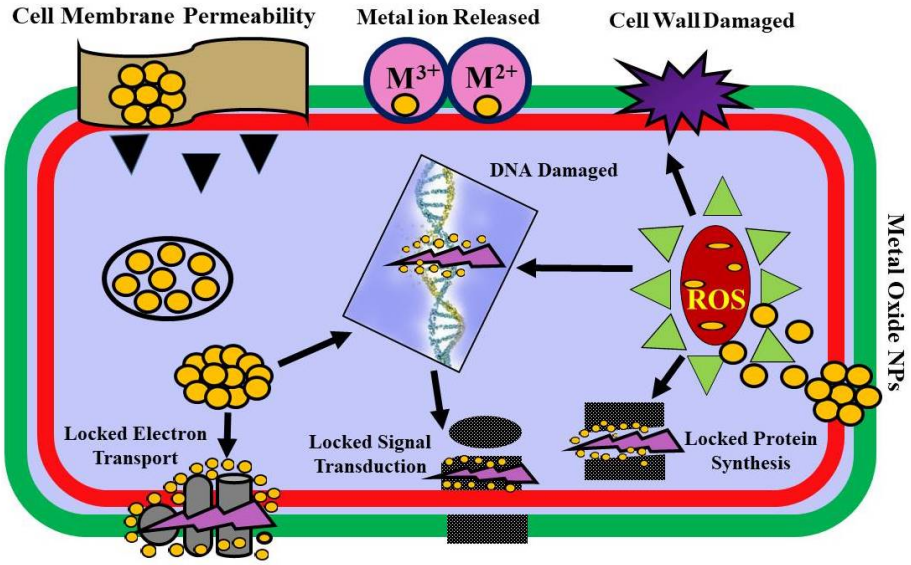

Fig. (2). Mechanisms of interactions between M/MO NPs and bactericidal. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

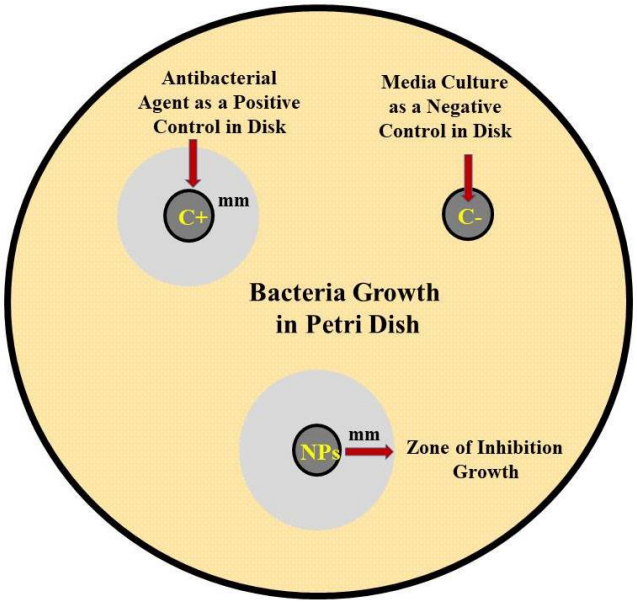

Fig. 3. Disk-diffusion method. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

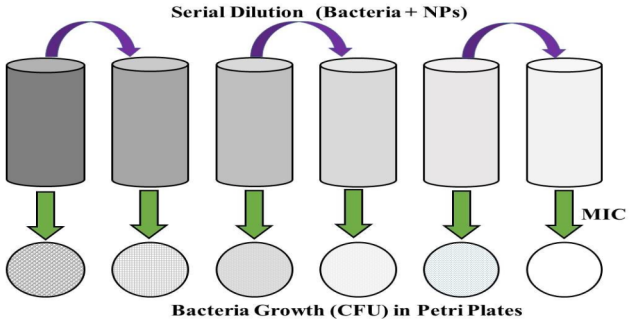

Fig. (4). Agar dilution method. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

ready-to-use strips are commercially available with NPs prepared in the wells. Standard trays contain 96 wells, each containing a volume of 0.1 mL that allows approximately 12 NPs to be tested in a range of eight × twofold dilutions in a single tray [39]. A variation on this approach is the agar dilution method, where a small volume of suspension is inoculated onto agar containing a particular concentration of NPs. When the inoculum has dried, the plate is incubated and again examined for zones of growth. With this microdilution testing, the method uses about 0.05–0.1 mL total broth volume and can be conveniently performed in a microliter format (Fig. **5**).

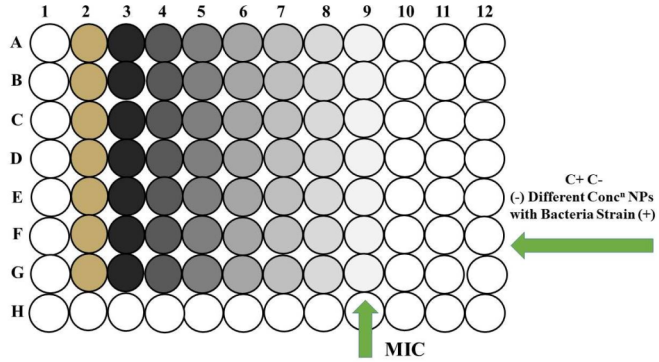

Fig. (5). Broth dilution method. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

3.4. Time-kill Method

Bacterial time-kill assay with different concentrations of NPs was determined. Essentially, bacterial growth after treatment at a different time was measured by turbidometry analysis at 600 nm. The optical density difference between control and test (different concentrations of NPs) was measured after incubation. The reduction in OD values indicates the inhibition activity of NPs and growth inhibition percentage was obtained with respect to the antibiotic positive control [ampicillin (30 µg)] [40]. To confirm the results, Typically, *Mueller-Hinton* broth is made through serialized dilutions of the test antimicrobial. The nano-antimicrobial concentrations spanning around its MIC are measured by the agar dilution tests. Samples are acquired at 30 min intermissions for up to 2 h.

The samples are placed on nutrient agar and survivor counts are plotted to find a 'time-kill curve'. A loopful of culture was streaked on a nutrient agar plate and nurtured at 37 ^{0}C for 24 h [41-42].

3.5. Antimicrobial Activities of M NPs

3.5.1. Gold (Au) NPs

Au NPs are the most studied biogenic metal due to its medical applications and diverse morphologies [43-45]. Au NPs efficiently protect against bacterial cultures because their size is slighter than the wideness of bacterial cell wall, allowing them to easily penetrate and inhibit its growth. Au NPs have no bacteriostatic or bactericidal activities and, therefore, are bio-compatible with microbial. However, Au NPs combined with antibiotics have robust bactericidal consequences against drug resilient bacteria. For example, ampicillin bound Au NPs damage ampicillin-resistant bacteria by multiple mechanisms [46].

3.5.2. Silver (Ag) NPs

Ag NPs have been used widely in numerous bactericidal applications as antimicrobial agents as well as treat burns and diversity of infections and have been exploited in personal care products; polymer coatings, pharmaceutical, food, fabrics, and packaging sectors [47]. A large number of literatures has discussed the large-scale green synthesis of Ag NPs with different shapes and sizes using plants, bacteria, fungi, and yeast. The basic antimicrobial mechanism of Ag NPs is based on either release of Ag ions or intracellular deposition of NPs [48]. The comprehensive mechanism chiefly includes damage of cell membrane, disturbance of the energy metabolism system, and generation of oxidative stress by ROS formation, and transcription inhibition. Ag NPs release Ag ions that interact with the cell wall proteins' sulphur and phosphorus-containing groups and plasma membrane of bacteria [49]. The communication of Ag ions with microbial cells begins with cationic Ag binding with negative charged microbial cell leading to development of multiple pores in the cell membrane and outflow of the intracellular contents, which result in electrochemical imbalance allowing the passage of Ag ions across the plasma membrane into the bacterial cell cytoplasm followed by interaction with the intracellular components leading to permanent damage of the cell [50-52].

Owing to their small size, Ag NPs can cross the peptidoglycan and cell membranes [53], which explain the higher sensitivity of *gram-negative* bacteria near NPs associated to *gram-positive* bacteria that have a thicker peptidoglycan layer. The origins of bactericidal effect are cell wall synthesis inhibition, mediation of protein synthesis by 30S ribosomal sub-unit, and nucleic acid synthesis. Also, Ag NPs enhances the antimicrobial activity of antibiotics such as penicillin G, amoxicillin, vancomycin, clindamycin, and especially erythromycin, against S. aureus and E. coli. [54] In addition, Ag-carbene complexes encapsulated in NPs are effective against multidrug-resistant bacteria [55].

3.6. Antimicrobial Activities of MO NPs

3.6.1. Zinc Oxide (ZnO) NPs

ZnO NPs are very efficient antibacterial agents against both *gram-positive* and *gram-negative* bacteria, two possible mechanisms could be involved in the interaction between ZnO NPs and bacteria:(i) the production of increased levels of ROS, mostly hydroxyl radicals and superoxide ion [56-59] and (ii) NPs deposition on the surface of bacteria or accumulation of NPs either in the periplasmic region of cytoplasm, causing disruption of membranes and disorganisation of cellular function [60-61]. It has been proposed that ZnO NPs are able to slow down the development of E. coli owing to disturbance of cell membranes, which enhances its membrane permeability, helps NPs accumulate directly in the bacterial cell membrane and cytoplasmic regions of the cells. Together, production of the ROS and deposition of ZnO NPs within the cytoplasm or on the surface of S. aureus lead to either inhibition of bacterial growth or the killing of S. aureus cells. ZnO NPs are very likely through increased levels of oxidative stress in bacterial cells. Therefore, ZnO NPs improved antibacterial action is due to the better creation of the ROS in the existence of ZnO and UV light. ROS such as hydrogen peroxide (H_2O_2), superoxide anion (O^{2-}), hydroxyl radicals (OH•), and organic hydroperoxides (OHPs) are poisonous to the cells as they damage cellular constituents such as DNA, lipids, and proteins.[62] The function of ROS in antibacterial studies has been the subject of passionate discussion, and an overall agreement appears to be elusive [63-64] that assists its antimicrobial activity via the release of Zn^{2+}ion in the cell membrane [65].

3.6.2. Copper Oxide (CuO) NPs

CuO NPs are popular among the scientific community due to their characteristic physico*P*hysico-chemical, biological, and antibacterial properties [66-67]. The antibacterial property CuO NPs generally depends on the ROS. The characteristics of ROS are due to the existence *of* huge surface area of CuO NPs with its smaller particle size that increases oxygen vacancies. With increase*d* oxygen vacancies*, more* more will be r*r*eactive oxygen species that*will be* preferred caused *causing* cell death due to *the* damage of Golgi complex, endoplasmic reticulum, mitochondria, DNA, and finally*,* leakage of minerals in bacterial cells and toxic metal ion are is released making them very effective antimicrobial agents. This was absolutely due to superoxide (O2-) and hydroxyl (OH-). Further, superoxide (O2-) with hydrogen ion from CuO NPs that generated to HO2- radical, and finally*,* these radicals collided with electrons to generate H2O2-[68-69]. The CuO NPs produced superoxide ion in excess related with to standard antibiotics. In the case of CuO, the O2- level decreased suddenly that indicate direct adsorption of O2- for the reaction with CuO NPs to form Cu(I). The diffusion-controlled reactions are further possible outside the cells in the presence of CuO *[70]*.

$$Cu(II) + O^{2-} \longrightarrow Cu(I) + O_2$$

At the identical time, Cu_2O did not produce any superoxide radicals. It can be described that Cu^{2+} ion fast reacts with superoxide production, to participate in redox cycling; thus leading to continued oxidative stress.

3.6.3. Nickel Oxide (NiO) NPs

NiO NPs have significantly better and more effective antibacterial activities against all pathogenic bacteria. The activity of NiO NPs annealed at moderate or low temperatures proved that NiO NPs penetrate the cell wall of the strains and alter the cellular membrane and intercellular components leading to cell death. Few reports have also concluded that NiO completely inhibits microbial pathogen growth [71]. The small particle size of NiO could enhance its solubility and the presence of extracellular nickel ions cannot easily pass through the cell membrane via ion channels, but small NiO NPs can be uptaken by cells and then release Ni^{2+} intracellularly [72-73].

3.6.4. Titanium Oxide (TiO_2) NPs

The antibacterial efficiency of TiO_2 NPs is accredited to the oxidative destruction mostly passable by the ROS, such as $O^{\bullet 2-}$, H_2O_2 and HO•. The adsorbed species (such as water and oxygen) produced ROS due to the redox reaction between them and electrons and holes generated by the photo illumination of TiO_2 with UV or sunlight. Studies on *gram-negative* bacteria reveal OH• radicals and superoxide ion are expected to be the main reason for the bactericidal effect [74-75]. Direct oxidation by holes (h^+) from the valence band on the TiO_2 surface has to be emphasized in several studies [76-77]. Concerning the degradation process, the authors agree that the outer membrane, if present, is the first barrier and, once it is broken, the cytoplasmic membrane is attacked. The loss of cytoplasmic membrane reliability, which is involved in the process of cellular respiration, leads to the death of the cell [78].

3.7. Magnesium Oxide *(MgO) NPs*

MgO NPs are very efficient and stable as an antibacterial agent; its mechanism is still unknown, but it produced ROS, such as superoxide anion (O^{2-}), which is produced in the excess amount due to huge surface area of MgO NPs. ROS mechanism of the antibacterial activity of MgO NPs may be lipid peroxidation and the occurrence of holes in oxygen on the surface of MgO NPs. However, the high alkalinity and presence of oxygen gaps, MgO NPs show an exclusive antibacterial property. When the interaction of MgO NPs with bacteria, subsequently disrupts the bacterial surface, damages the cell membrane and causes lipid peroxidation have been planned to describe the antibacterial properties of MgO NPs [79-80]. Electrostatic interaction between the bacteria and MgO NPs surface was responsible for cell death [81-82]. It has been observed that MgO NPs displayed great activity against bacteria owing to the interaction of NPs and bacteria. It was observed that MgO NPs taking up halogen gases owed to the defect nature on their surface having a positive charge, which gives rise to strong interaction with negatively charge bacteria [79, 83].

3.8. Calcium Oxide *(CaO) NPs*

The CaO NPs show excellent antibacterial properties against E. coli and S. aureus, which is in accordance with the documented literature [84-85]. The antibacterial reaction is due to strong connections between bacterial cells and CaO NPs. The CaO NPs show adequate antibacterial property due to their large surface area, which offers improved interaction with bacteria and ROS release on their surface [86-87]. CaO NPs have hydration energy in water because of high alkaline pH and ROS generation [85-88]. The ROS intermingle with the carbonyl linkage that is existing in the bacterial cell membrane, peptide linkages/polyunsaturated phospholipids and influence protein degradation, which consequently indicates the disturbance of bacterial cell wall and discharge of toxic Ca^{2+} ion. Therefore, CaO NPs demonstrated outstanding antimicrobial property but displayed noxiousness due to the generation of ROS free radicals [89].

3.9. Cerium Oxide (CeO_2) NPs

In CeO_2, an atom has two oxidation states (Ce^{4+}, Ce^{3+}). The current literature suggests that Ce^{3+} increases as particle size increases with (Ce^{3+}) are less than 1% in 10 nm particles, whereas it rises to 6% when the size reductions to 6 nm. In addition, the oxygen gap exists in the oxidation states of two CeO_2 NPs [90]. The formations of oxygen hole are complemented by the reduction of Ce^{4+} to Ce^{3+} subsequent in loss of an oxygen molecule. Such distinctive radical scavenging ability of cerium makes CeO_2 NPs find applications in wound healing as they can act as radical scavengers and block the ROS making towards eradicating bacteria [91].

3.10. Iron Oxide *(Fe_3O_4) NPs*

Fe_3O_4 NPs are active antibacterial agents against *gram-positive* and *gram-negative* bacteria. However, they show different effects on growth and membrane activity in *gram-positive* and *gram-negative* bacteria. Importantly, Fe_3O_4 NPs have shown a better bactericidal effect on *gram-negative* than on *gram-positive* due to the presence of ROS, which can lead to oxidative stress, damage of proteins, cell membranes, and DNA, being one of the key mechanisms of nano-toxicity [92-93]. The ROS production follows the Fenton reaction from the metabolic activity, H_2O_2 which is a toxic oxidant causing DNA and protein damage, created in cultures of all aerobic organisms [94-95]. Electrostatic interactions between the bacterial cell and NPs result in damaging of cells, which leads to the death of bacteria [96-98]. The small sizes and large surface area of NPs endorse their interaction with bacterial cell membranes, and the inactivation of bacteria could be coupled with a diffusion of NPs into the bacterial cell [99-101]. Fe_3O_4 NPs dispersal inside the culture media, diverse oxidation-reduction reactions are monitored, including both the species existing in magnetite, Fe^{3+} and Fe^{2+}, subsequent into a generation of different and further strong reactive oxygen species [102-104].

The reactions are known as the Fenton reaction or the Haber-Weiss cycle.

$$Fe\ (III) + H_2O_2 \rightarrow Fe\ (II) + OH^- + OH^{o}$$

$$Fe\ (II) + HO \rightarrow Fe\ (III) + HO_2^{o} + H^+$$

4. AGRICULTURAL APPLICATIONS OF M/MO NPS

Application of NPs in agricultural applications, including nano-fertilizers, nanoparticles, or nanopesticides for nutrient management, genetic improvement, plant disease treatment, and plant growth promotion has been a rapidly growing research area [105-106]. The cellular responses of bulk and nano-sized metals such as Cu, Fe, Ce, Ti, and Ag or their ions are very different [107]. The use of NPs affords several approaches to increase crop production and crop nutraceutical quality [108-109]. Recently, the use of NPs, such as insecticides, fungicides, and nano-fertilizers has been investigated, was reported to induce faster germination, increasing the plant tolerance towards biotic and abiotic stresses, favouring efficient nutrients management and increasing plant growth while reducing environmental influence compared to conventional methods [110-111].

In general, NPs impact on plants depends on several factors including composition, concentration, size, physic-chemical properties, and plant type [112-113]. Metal NPs concentration exceeding optimal range induces stress and/or toxicity, generates ROS and disrupts cellular metabolism. The plant reacts to these changes by producing antioxidant enzymes and non-enzymatic components to diffuse the effect of ROS cytotoxicity on the cellular and subcellular systems [114]. Low doses of Cu NPs (5-20 mg Cu per plant) induce metabolic changes due to Cu accumulation and ROS generation [115]. In addition, when 5 mg L^{-1} CuO NPs were applied in *Arabidopsis thaliana* (L.) Heynh, the flavonoid content was increased.

A significant gene induction due to oxidative stress, sulfur assimilation, glutathione, and proline biosynthesis was also reported as a result of CuO NPs induced stress [116]. While CuO NPs (0-200 mg L^{-1}) were applied to leaves of cucumber plants, it significantly reduced the fruit firmness [117]. When 0.006 mg L^{-1}Cu NPs were applied on plants, the total phenols increased the concentration of the enzymatic and non-enzymatic compounds in tomato fruits when altered [118] and similar results were reported in jalapeno peppers with combined treatment with Cu NPs with Chitosan-polyvinyl alcohol (Cs-PVA) at concentration up to 10 mg L^{-1}[119]. In an attempt to reduce oxidative stress caused by ROS upon application of Cu NPs, the plant activates antioxidant compounds such as glutathione (GSH), vitamin C, and carotenoids and antioxidant enzymes [ascorbate peroxidase (APX), superoxide dismutase (SOD), and catalase (CAT)] [120-121].

4.1. M/MO NPs in the Food Sector

Potential applications of M/MO NPs in the food industry grows and, consequently, do intended or unintended human exposure to NMs.[122] However, few studies focused on toxicity associated with the presence of M/MO NPs in food and slight is discovered about bioavailability, biodistribution ways of M/MO NPs, and their ultimate toxicity. Most noticeably, M/MO NPs used as food additives will come in straight interaction with a humanoid body part, subsequent in higher levels of exposure depending on their concentration in food. Therefore, the impact of M/MO NPs increased use in foods as flavours or colour additives has attracted the interest of public and government sectors [123].

A study on TiO_2 in sugar-coated chewing gum revealed that >90% of TiO_2 in chewing gum is nano-sized and can be easily released, swallowed by person chewing the gum, and gradually ac-

cumulate in the body [124]. Similarly, upon consumption of foods containing E551, gut epithelium is also exposed to SiO_2NPs [125-126]. Nanoencapsulation also leads to direct contact of M/MO NPs with humans through oral intake. For example, SiO_2 NPsused as fragrance carriers or flavours are frequently used M/MO NPs in food.[88]Moreover, lipid-based nanoencapsulation has been developed to improve the performance of antioxidants by enhancing their solubility and bioavailability [127] and entrapping bioactive for effective absorption and targeted delivery [128]. However, the safety of nanoencapsulation remains unidentified and risk assessment and long-term toxicity investigations are necessary [129-131].

Nanoscale edible coatings have emerged as an attractive alternative to preserve food quality, extend storage life, and prevent microbial spoilage [132-134], but also increase direct exposure to M/MO NPs. For example, edible coatings based on gelatine that contain cellulose nanocrystals [135], chitosan/ nanosilica [136], chitosan film with nano-SiO_2 [137], and alginate/lysozyme nanolaminate coatings preserve fresh foods and extend their shelf-life [138]. Moreover, another new polyethylene nano-packing containing nano-Ag, kaolin, anatase or rutile-TiO_2 preserves the quality of strawberry fruits [139].

5. IMPACT OF M/MO NPS ON PLANTS

M/MO NPs toxic impact on plants is related to their chemical toxicity such as discharge of lethal metal ions and the stress or stimuli produced by NPs surface, size and/or shape leading to higher bioavailability and toxicity of M/MO NPs [140-141]. Moreover, the toxicity of M/MO NPs involves the production of hydroxyl radicals upon exposure to visible light producing extracellular ROS that can damage the cell membranes and change the membrane permeability-increasing NPs diffusion into the cell [142]. On the contrary, several studies revealed the positive effects of M/MO NPs on plant growth. The impact of M/MO NPs on plants is shown in Fig. (**6**).

5.1. Ag NPs

Exposure of snails and soil matrix to Ag NPs decreases the activity and viability of land snail and fungal population frequency in soil [143]. Spherical shaped Ag NPs (10 to 20 nm) showed strong antifungal activity against *Bipolarissorokiniana*, the spot blotch pathogen of wheat [144]. Ag NPs (200–800 nm) enhance plant growth [145], whereas 35–40 nm appositively influenced the root and shoot growth of different plants [146] due to the inability of large NPs to penetrate in the studied low concentration [147]. An enhancement of lipid peroxidation was also observed in the wheat-pathogen phyto-system compared to NPs or pathogen alone [148]. Due to its fungicidal activity, Ag NPs have a significant impact on eliminating fungi [149]. Nonetheless, regardless of their proven antibacterial activities on a laboratory level, applications of Ag NPs in agriculture are still not very recommended because of the release of silver ions and they induce biomass accumulation in soil [150-151].

There is a strong correlation between the size of Ag NPs and their toxic impact on the plant as smaller sizes have higher toxicity [152-153]. For example, higher concentrations of Ag NPs (<30 nm) inhibit the root and shoot growth of different plants as the response to Ag NPs stress leads to enhancement in ROS and making of antioxidant enzymes and molecules as an adaptive mechanism [154-157]. Moreover, Ag NPs impact DNA and influence gene expression in several plants [158-161] and the physiological impacts of Ag NPs expressed as a decrease in transpiration [162], chlorophyll concentration [163-166] and chlorophyll fluorescence [167] are observed. Substantial alteration in various macromolecules, lipids, proteins, lignin, pectin and cellulose was observed in *Raphanussativus* after treatment with 500 mg/L of 2 nm Ag NPs [168] and plant hormones such as cytokinin and auxin are moreover affected by Ag NPs [169-170].

Recent studies revealed that a combination of Ag NPs with different treatment/compounds impacts plants differently [171-172]. For example, Ag NPs treatment combined with the magnetic field improves yield in *Zeal mays*, whereas nitric oxide controls Ag uptake, antioxidant system, oxidative stress, and anatomical structure as well as alleviates the impact of Ag NPs [173].

5.2. Cu/CuO NPs

Cu is a vital micronutrient combined in numerous proteins and enzymes and plays a significant function in plant nourishment. Cu NPs have various applications such as gas sensors, catalysts, electronics, batteries, heat transfer nanofluids, and antimicrobial agents.[174] Due to its oxidation state, CuO NPs have higher toxicity than Cu NP. Low concentrations (<0.25 ppm) of CuO NPs positively impact on *Elodea densa* (waterweed) and stimulate photosynthesis, but higher doses (>1 ppm) suppresses photosynthesis. The morphology of the roots is badly affected with Cu and CuO NPs and complete inhibition is reached at a high dose of NPs [175-180].

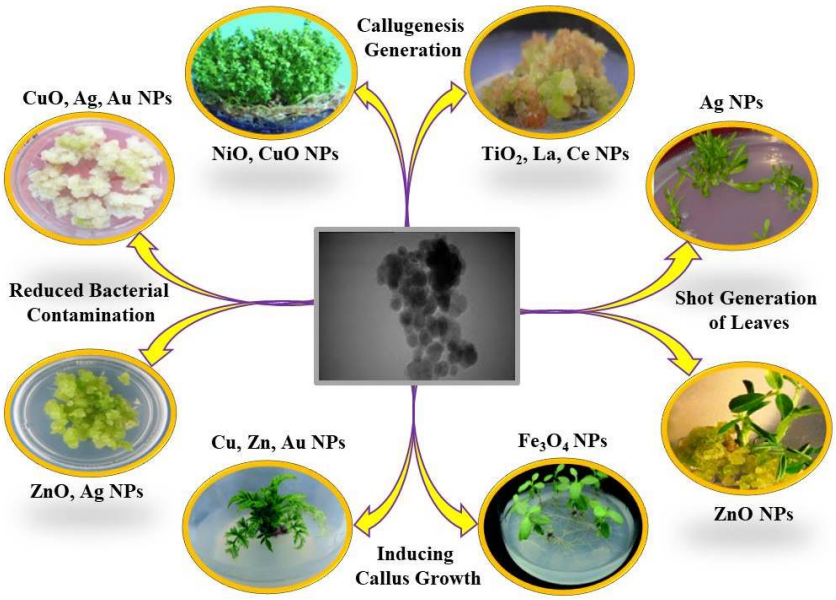

Fig. (6). The impacts of M/MO NPs on plants. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

Different antioxidant compounds were observed to be significantly increased in Plants treated with CuO NPs, found to have increased levels of antioxidants possibly due to activation of the plant protective mechanism. Several researchers reported large accumulation of oxidatively altered, mutagenic DNA lesions in different plants upon treatment with CuO NP; which also affect the photosynthetic activity negatively by inactivating PS II reaction canters reducing electron transport, photosynthetic pigments, thylakoid number per grana, transpiration rate, photosynthetic rate, and stomatal conductance.

5.3. ZnO NPs

Zinc insufficiency is a general micronutrient issue that undesirably affects agricultural production in alkaline carbonate soils, characteristics of arid and Mediterranean. Zinc availability in calcium carbonate soils is limited by the alkaline pH that reduces zinc solubility and the high calcium carbonate ($CaCO_3$) content that absorbs and precipitates zinc. Diffusion of dissolved zinc movement from fertilizer to the plant roots follows the dissolution process. ZnO NPs have stronger antimicrobial activity than large zinc particles [181] and can induce ROS generation that causes cell death as the anti-oxidative capacity of the cell exceeds. Generation of reactive nitrogen species (RNS) and hydrogen peroxide (H_2O_2) upon exposure to Ag and ZnO NPs on the duckweed (*Spirodelapunctuta*) reveals the toxicity of Ag and ZnO NPs which is mainly caused by the particulates and ionic forms. Zn NPs encourage free radical development in wheat, high levels of antibacterial activity against *B. subtilis* and *S. paratyphi*. Biosynthesized ZnO NPs protect against bacterial and fungal phytopathogens indicating as effective antimicrobial and anticancer mediators for biomedical uses [182].

5.4. TiO_2 NPs

TiO_2 NPs are widely used in wastewater treatment as a photocatalyst, anti-corrosion coatings, personal-care products, antiseptic and wastewater. TiO_2 does not form toxic and dangerous compounds and, therefore, can have applications in plant protection as it possesses excellent pathogen disinfection efficiency that can be further enhanced by dye doping and other methods. Few studies indicate that TiO_2 NPs might have a constructive and destructive influence on plants with studies where TiO_2 NPs were used at foliar level discloses encouraging impact on plants. Ti encourages the manufacturing of more carbohydrates growth and photosynthesis rate in plants. TiO_2 can photo-catalytically degrade pesticides. Moreover, foliar treatment of TiO_2 NPs resulted in improved plant growth, rises fruit yield, and chlorophyll concentration in *Solanumlycopersicum*. However, high concentrations of TiO_2 NPs are poisonous to plants, even in soil systems with a phytotoxic response similar to Ag NPs or CuO NPs leading to a reduction in plant growth and mitotic index and rises in ROS, antioxidant activity, and genotoxicity [183].

6. M/MO NPS IN PESTICIDES

Insects make up more than half of Earth's diversity of species with a very successful evaluative history. The insects are the important organism on our planet because of significant evolutionary features like wings, malleable exoskeleton, high reproductive potential, habits diversification, desiccation-resistant eggs and metamorphosis. While insects act as a vector for many vector-borne diseases and damage various agriculture land by infecting various crops, it influences health and economy as well. To suppress agriculture loss, several chemicals have been utilized to defeat their reproduction and feeding habits [184]. Metal oxide could be used as pesticides as shown in Fig. (**7**).

Nanotechnology is an encouraging arena of the interdisciplinary research study; it would be boon for agriculture crop management. While the utilization of NPs for crop protection in agriculture, it is an under-explored research area [185]. To overcome the pest population in agriculture land, pesticides are used and important for national food security. Nanomaterials can offer targeted tools in the form of pesticides with environmentally responsive controlled releases *via* compound and chemical changes. Many countries are now being shifted from the use of chemical pesticides to biological control, wherever the usage of pesticides and biological nanomaterials have a vital function to play in pest control [186-187]. Since the preparation of nanomaterials is simple and reliable, it was prepared from *Pongamiapinnata*, *Azadirachtaindica*, *Annonasquamosa*, *Chrysanthemum sp.* and utilized for various biological purposes [188-191].

6.1. Occurrence of NPs in Several Insects

NPs are naturally occuring nano-structures but are being overlooked [192]. Nanotechnology-based industries have made little use of 'free' technology accessible in nature [193]. A serious instance is the ordered hexagonal packed array of constructions in the wings of cicada, for instance, *Psaltodaclaripennis*ashton and termite, for example, *Rhinotermitidae* family [194]. Surveys have indicated that the size of NPs may vary from 200 to 1000 nm [195]. The structures tend to deliver a rounded shape at the apex and protrude some 150-350 nm out from the surface planer. These wing NPs help in the aerodynamic efficiency of the insect. Nanostructure correspondingly exists in the eyes of pests. The colour element of the butterfly's wings is nothing but NPs.

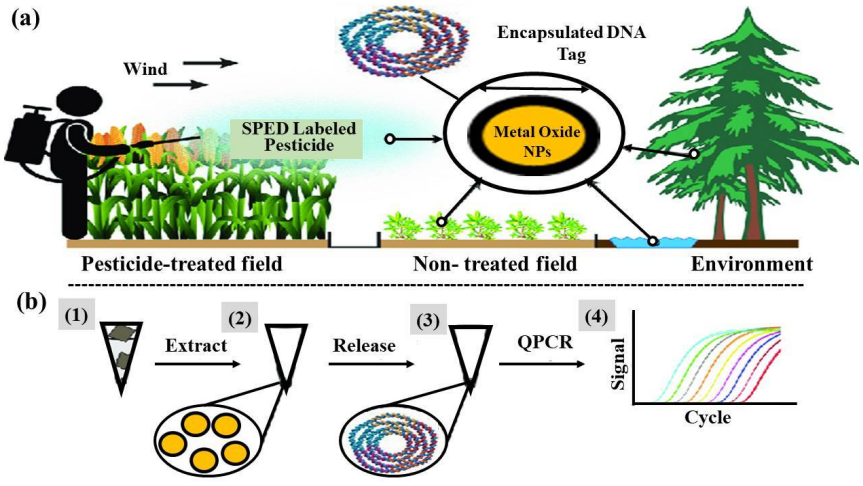

Fig. (7). MO NPs in agriculture as pesticides. (*A higher resolution / colour version of this figure is available in the electronic copy of the article*).

6.2. Nanopesticides

Nanopesticides can be defined as the plant protection products formulated intentionally using NPs, to enhance efficacy and reduce an environmental load of pesticides. Nanopesticides include a large diversity of products and cannot be regarded as a solitary class. Nanopesticides can comprise of carbon-structured parts (*e.g*. polymers) or inorganic ingredients (*e.g*., metal oxides) in numerous forms (*e.g*., particles and micelles). The aims of nano-formulations are mostly similar to other pesticide formulations and consist in growing the apparent solubility of the poorly soluble active ingredient, liberating the active ingredient in a slow and targeted manner and shielding the active ingredient against early degradation.

6.3. Developing New Nanopesticides

Ecologists have long tried to manage outbreaks of insects by biological control, which is a lengthy process. Controlled release formulations (CRFs) subordinate the active compound with inert materials. Furthermost controlled release bio-pesticides applications still are successfully made due to the progresses in the nanotechnology part. Nanocapsules have been widely utilized in the medicinal area as a drug carrier in the handling of various diseases [196-198]. Microencapsulation has been employed as a flexible instrument for hydrophobic pesticides, improving their dispersal in aqueous media and allowing a controlled release of an active compound. As smart delivery systems, they discuss more selectivity, without hindering in the bioactive compounds to the target pathogen [199].The advantages of the use of NPs insecticides is it decreases the troubles related to drifting and leaching, due to its substantial nature, and pointers toward a further active interaction with the target pest.

6.4. Nanoencapsulation

It is a technique in which a chemical is gradually but well released to the special host for insect pest control. Release mechanisms comprise dissolution, biodegradation, diffusion and osmotic pressure with specific pH [200]. Encapsulated citronella oil, nanoemulsion is made by high-pressure homogenization of surfactant and glycerine. Nanopesticides, nanofungicides and nanoherbicides are being utilized proficiently in agriculture [165]. Bhagat *et al* [201] stated that eco-friendly controlling of fruit flies including pheromones, is advantageous in cutting down the unwanted pest populations accountable for reducing the yield and crop quality. A nanogel has been made from a pheromone, methyl eugenol (ME) using a low-molecular-mass gelator. The participation of the nano gelled pheromone brought about active management of oriental fruit fly, Bactroceradorsalis, a predominant injurious pest for a number of fruits with guava [202].

6.5. Pest Management in Agriculture

Nanotechnology has transformed conventional agriculture into a modern counterpart. They have shown countless potential for pest management and control. However, it also produced some new concerns in the form of pest resistance. Polyethylene glycol-coated NPs have showed the enhanced insecticidal activity of garlic essential oil against *Triboliumcastaneum*. Estimated control efficiency around 80% against adult *T. castaneum,* attributed the slow and constant liberation of active ingredients from the NPs. Uses of various NPs like Ag, Al_2O_3, ZnO, TiO_2, *etc* used in management and control of rice weevil, grasserie disease in silkworm, baculovirus caused by *sitophilusoryzae, bombyxmori* and *B. mori*nuclear polyhedrosis virus, respectively. The transformation of *Bombyxmori* nucleopolyhedrovirus by lipophilically coated SiO_2, Al_2O_3 NPs in the hexagonal close-packed α structure and aspartate capped-Au NPs in *B. mori* cell line using cytopathic effect and plaque reduction assay was studied by Das *et al*. Consequently, commercially accessible insecticides, inorganic Al_2O_3 may offer a low-priced and consistent option for control and management of pests. *Debnath et al*. studied the entomotoxicity of SiO_2 NPs against rice weevil and compared the efficiency with bulk-sized SiO_2. Non-crystalline SiO_2 NPs possess high effectivity more than 90% mortality against the pest, pointing towards the effectiveness of SiO_2 NPs to management and control pests. Nano-encapsulation of pesticide permits appropriate absorption of the chemical into the plants, owing to slow and constant liberation which has a long-lasting and persistent effect, unlike the normal agrochemicals. Man-made pesticides have harmful environmental impacts, but their high specificity to the targeted pests. Thus, there is a necessity to overcome the limitations of botanical insecticides with the use of NPs-based technologies in pest management.

6.5.1. Nanoherbicide

Weeds are the main menace, which reduces crop productivity to a greater extent in the farming sector. Eradicating weeds using traditional techniques is lengthy. There are numerous commercial herbicides available in the market. They exterminate the weeds as well as an impairment to the standing crops. They are accountable too in reducing the soil fertility and consistently, contributing to soil contamination. Nanoherbicides can play a vital role in weeds control from crops *via* an environmental friendly way. Encapsulation of polymeric NPs with Herbicides results into environmental safety. Uneven application of herbicides leaves behind traces in soil, which lays the foundation to damage the standing crops. Incessant employ identical herbicide for the regular time period. Weeds develop the resistance against the same herbicide. Loading of target-specific NPs with the herbicide has been produced for delivery in the roots of weeds. These molecules go into the roots of weeds, translocate into cells and constrain metabolic pathways such as glycolysis. Finally, direct towards the demise of plants.

Noxiousness study of poly(ε-caprolactone) nanocapsules comprising ametryn and atrazine against alga *Pseudokirchneriellasubcapitata* and the microcrustacean Daphnia similis. Ag NPs chitosan encapsulated paraquatenano herbicides used against *Eichhorniacrassipes*. Ag, Cu, Fe, Zn, Mn-based nanoherbicides used against *Allium cepa*, Cu nanoherbicides used against *Cucurbitapepo*, CuO nanoherbicides used against *Raphanussativus*, *Loliumperenne* and *Loliumrigidum*, CuO and ZnO nanoherbicides used against *Fagopyrumesculentum*, Cu nanoherbicides used against *Elodea densa*, CuO and ZnO nanoherbicides used against *Cucumissativus*.

6.5.2. Nanobarcodes

Nanobarcodes are prepared through a vastly scalable, semi-automated electroplating process using inert metals such as Au, Ag, *etc*. into templates defining particle diameter. These nanobarcodes are used as recognition tags for multiplexed investigation of gene expression. Nanotechnology supported progression in biotechnology has seen enhancement in the plant resistance in the direction of environmental stresses. While the capability of extracts from different plant species to prepared NPs could be described using the extensive existence of polyphenolic compounds in the kingdom of plant. An accurate knowledge of the green synthesis method is required to understand the potential of process in the medical and industrial sectors. Producing consistently dispersed NPs through green synthesis is a big challenge, as several parameters like temperature, pH, nature of capping agent; concentration of active ingredients may play an important function in defining the size and morphology.

Therefore, dropping the capping, or stabilizing agents contributing to the green synthesis is required to be examined to specify NP structural relationships. NPs prepared by medicinal plant extracts should be examined for a variety of bioactivities compared to Physico-chemical synthesized NPs, to study whether the observed bioactivities could be due to the existence of capping agents in the NPs. Taking into consideration, bioactivities of NPs differ in their size, shape and zeta-potential. In-spite of outstanding antibacterial

properties reported against antibiotic-resistant strains, it is not clear whether this is due to NPs, the compounds attached to NPs, or both.

CONCLUSION

Currently, NPs are used vastly and have become an essential part of humanoid life. Nevertheless, owing to the existing prerequisite and modern life, environs cannot be ignored. It is noticeable from the assessment that M/MO NPs in superfluous are dangerous to plant life, while, in traces, beneficial for plants. Nanoscience is a fascinating lot of research finance, particular of which needs to be diverted for the alertness of the people about the appropriate discarding of NPs based products. This review article clearly shows the influence of M/MO NPs on plant life; however, there is a necessity of study to understand the molecular mechanism of plant-NPs interaction. There are many research articles that display the favourable part of M/MO NPs in the agriculture sector, on the other hand, the mechanism at large extant yet to be unstated, and the studies are in its preliminary phase. Consequently, numerous study research is essential before bringing the NPs to the field. The maximum study shows morphological variation caused to plants due to the M/MO NPs. Thus, research is desirable in the area to know the influence of M/MO NPs on the plant. Subsequently, applying eco-friendly practices has become more and more indispensable for accomplishment in today's agro-business; bio-inspired attitude is attractive in biological researches and several other appropriate arenas.

CONTRIBUTION OF AUTHORS

The authors (whose names are mentioned in the paper) pronounce that this work was collaboratively done by them. Initially, Dr. Ratiram Chaudhary, Dr. Prashant Ingle, Dr. Trimurti Lambat, and Dr. Ashish Tiple) made out-line of review articles. Then, plants taxonomy and callus investigation was done by Dr. Subhash Somkuwar. Further, Mr. Ajay Potbhare, and Dr. Ganesh Bhusari and Dr. Alok Rai contributed their investigation and write up on nanomaterials and its biological aspects. Dr. Ashish Tiple contributed write up on pest control. Later, the manuscript was well written, thoroughly evaluated and compile by both corresponding authors (Dr. Ratiram Chaudhary and Dr. Mohmed Abdala). All the authors have reviewed and approved the content of the submitted manuscript.

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REFERENCES

[1] Hickey DJ, Ercan B, Sun L, Webster TJ. Adding MgO nanoparticles to hydroxyapatite-PLLA nanocomposites for improved bone tissue engineering applications. Acta Biomater 2015; 14(2105): 175-84. [http://dx.doi.org/10.1016/j.actbio.2014.12.004] [PMID: 25523875]

[2] Tanna J, Chaudhary R, Gandhare N, Juneja H. Adv Mater Lett 2016; 11: 933-8. [http://dx.doi.org/10.5185/amlett.2016.6245]

[3] Tanna J, Chaudhary R, Gandhare N, Rai A, Yerpude S, Juneja H. Juneja (2016). J Exp Nanosci 2016; 11: 884-900. [http://dx.doi.org/10.1080/17458080.2016.1177216]

[4] Zhang L, Pornpattananangku D, Hu CM, Huang CM. Development of nanoparticles for antimicrobial drug delivery. Curr Med Chem 2010; 17(6): 585-94. [http://dx.doi.org/10.2174/092986710790416290] [PMID: 20015030]

[5] Domb A, Tabata Y, Ravi Kumar M, Farber S. Ame. Stevenson Ranch, CA: Scient Publ 2007.

[6] Shreya K, Neha G, Deepali V, Siddhartha M, Upendra N. J Pharm (Cairo) 2018; 19.

[7] Sanchez-Dominguez M, Boutonnet M, Solans C. J. Nanopart. Res. 11 (2009) 1823. Teske S, Detweiler C. Int J Environ Res Public Health 2015; 12: 1112-34.

[8] Wang P, Lombi E, Zhao FJ, Kopittke PM. Nanotechnology: A New Opportunity in Plant Sciences. Trends Plant Sci 2016; 21(8): 699-712. [http://dx.doi.org/10.1016/j.tplants.2016.04.005] [PMID: 27130471]

[9] Mirco B, Juliane F, Simon L, Stephan W. Environ Sci Eur 2018; 30.

[10] Batley G, Kirby J. McLaughlinM. Acc Chem Res 2013; 46: 854-62. [http://dx.doi.org/10.1021/ar2003368] [PMID: 22759090]

[11] Niazi J, Gu M. Atmos. Biolog. Environ. Monitoring 2009; pp. 193-206.

[12] Mukherjee A, Majumdar S, Servin AD, Pagano L, Dhankher OP, White JC. Carbon Nanomaterials in Agriculture: A Critical Review. Front Plant Sci 2016; 7: 172. [http://dx.doi.org/10.3389/fpls.2016.00172] [PMID: 26941751]

[13] MircoBundschuh, JulianeFilser, Simon Lüderwald, Moira S. McKee, George Metreveli, Gabriele E. Schaumann, Ralf Schulz, Stephan Wagner. Environ SciEurope. 2018; 30.

[14] Xue PP, Carrillo Y, Pino V, Minasny B, McBratney AB. Soil Properties Drive Microbial Community Structure in a Large Scale Transect in South Eastern Australia. Sci Rep 2018; 8(1): 11725. [http://dx.doi.org/10.1038/s41598-018-30005-8] [PMID: 30082740]

[15] Simonin M, Guyonnet JP, Martins JM, Ginot M, Richaume A. Influence of soil properties on the toxicity of TiO2 nanoparticles on carbon mineralization and bacterial abundance. J Hazard Mater 2015; 283: 529-35. [http://dx.doi.org/10.1016/j.jhazmat.2014.10.004] [PMID: 25464292]

[16] Dinesh R, Anandaraj M, Srinivasan V, Hamza S. Geoderma 2012; 173–174: 19-27. [http://dx.doi.org/10.1016/j.geoderma.2011.12.018]

[17] Klaine SJ, Alvarez PJ, Batley GE, *et al.* Nanomaterials in the environment: behavior, fate, bioavailability, and effects. Environ Toxicol Chem 2008; 27(9): 1825-51. [http://dx.doi.org/10.1897/08-090.1] [PMID: 19086204]

[18] Vogel M, Fischer S, Maffert A. C, Steudtner R. J Hazard Mater 2019; 344: 749-57. [http://dx.doi.org/10.1016/j.jhazmat.2017.10.034] [PMID: 29156387]

[19] Kiser MA, Ryu H, Jang H, Hristovski K, Westerhoff P. Biosorption of nanoparticles to heterotrophic wastewater biomass. Water Res 2010; 44(14): 4105-14. [http://dx.doi.org/10.1016/j.watres.2010.05.036] [PMID: 20547403]

[20] Klaine SJ, Alvarez PJ, Batley GE, *et al.* Nanomaterials in the environment: behavior, fate, bioavailability, and effects. Environ Toxicol Chem 2008; 27(9): 1825-51. [http://dx.doi.org/10.1897/08-090.1] [PMID: 19086204]

[21] Li D, Lyon DY, Li Q, Alvarez PJ. Effect of soil sorption and aquatic natural organic matter on the antibacterial activity of a fullerene water suspension. Environ Toxicol Chem 2008; 27(9): 1888-94. [http://dx.doi.org/10.1897/07-548.1] [PMID: 19086207]

[22] Slavin J, Asnis J, Häfeli U, Bach H, Nanobiotechnol J. 15. 2017. 65

[23] Korshed P, Li L, Liu Z, Wang T. PLoS One 2016; 110160078 [http://dx.doi.org/10.1371/journal.pone.0160078]

[24] Doolette GV, Lu Y, Payne J, *et al.* PLoS One 2016; 11.

[25] Metch J, Burrows N, Murphy C, Pruden A, Vikesland P. NatureNanotechnol 2019; 13: 253-9.
[26] Haber F, Weiss J. Naturwissenschaften 1932; 20: 948-50. [http://dx.doi.org/10.1007/BF01504715]
[27] Liochev SI. The mechanism of "Fenton-like" reactions and their importance for biological systems. A biologist's view. Met Ions Biol Syst 1999; 36: 1-39. [PMID: 10093922]
[28] Kehrer Toxicology J P. 149. 2000; 43–50.
[29] Sies H. Academic Press. San Diego, CA 1991; pp. XV-XXII.
[30] Koppenol WH. The Haber-Weiss cycle--70 years later. Redox Rep 2001; 6(4): 229-34. [http://dx.doi.org/10.1179/135100001101536373] [PMID: 11642713]
[31] Behar D, Czapski G, Rabani J, Dorfman LM, Schwarz HAJ. Phy. Chem 1970; 74: 3209-13.
[32] Atlas R. London. CRC Press 2004; p. 1226.
[33] Bauer A, Kirby W, Sherris J, Turk MJ. ClinPathol 1966; 45: 493-6.
[34] Wayne, PClinical and Laboratory Standards Institute 2009.
[35] Baker CN, Stocker SA, Culver DH, Thornsberry C. Comparison of the E Test to agar dilution, broth microdilution, and agar diffusion susceptibility testing techniques by using a special challenge set of bacteria. J Clin Microbiol 1991; 29(3): 533-8. [PMID: 2037671]
[36] Wiegand I, Hilpert K, Hancock RE. Agar and broth dilution methods to determine the minimal inhibitory concentration (MIC) of antimicrobial substances. Nat Protoc 2008; 3(2): 163-75. [http://dx.doi.org/10.1038/nprot.2007.521] [PMID: 18274517]
[37] Ericsson J, Sherris J. ActaPatholMicrobiolScand. 217. 1971; p. 1-9.
[38] Jorgensen J, Turnidge J. In: Murray P, Baron E, Jorgensen J, Landry M, Pfaller M, editors. 2007; pp. 1152-72.
[39] Pal S, Tak Y, Song J. Appl Environ Microbiol 2007; 73: 712-20. [http://dx.doi.org/10.1128/AEM.02218-06]
[40] Shahverdi A, Fakhimi A, Shahverdi H, *et al.* Nanomed 2007; 3: 168-71. [http://dx.doi.org/10.1016/j.nano.2007.02.001]
[41] Maruthai K, Vallayyachari K, Ravibalan T, *et al.* ProgBiosciBioeng 2017; 1: 29-35.
[42] Aromal S, Vidhu V, Philip D. Acta Part A Mol. Biomol Spectrosc 2012; 85: 99-104. [http://dx.doi.org/10.1016/j.saa.2011.09.035]
[43] Suman T, Rajasree S. Acta Part A Mol. Biomol Spectrosc 2014; 118: 11-6. [http://dx.doi.org/10.1016/j.saa.2013.08.066]
[44] Sheny D, Mathew J. Acta Part A Mol. Biomol Spectrosc 2012; 97: 306-10. [http://dx.doi.org/10.1016/j.saa.2012.06.009]
[45] Brown AN, Smith K, Samuels TA, Lu J, Obare SO, Scott ME. Nanoparticles functionalized with ampicillin destroy multiple-antibiotic-resistant isolates of Pseudomonas aeruginosa and Enterobacter aerogenes and methicillin-resistant Staphylococcus aureus. Appl Environ Microbiol 2012; 78(8): 2768-74. [http://dx.doi.org/10.1128/AEM.06513-11] [PMID: 22286985]
[46] Suresh A, Pelletier D, Morrell-Falvey J, Gu B, Doktycz M, Langmuir ACS. J Surf Colloids 2012; 28: 2727-35.
[47] Kim T, Braun GB, She ZG, Hussain S, Ruoslahti E, Sailor MJ. Composite Porous Silicon-Silver Nanoparticles as Theranostic Antibacterial Agents. ACS Appl Mater Interfaces 2016; 8(44): 30449-57. [http://dx.doi.org/10.1021/acsami.6b09518] [PMID: 27754645]
[48] Hindi KM, Ditto AJ, Panzner MJ, *et al.* The antimicrobial efficacy of sustained release silver-carbene complex-loaded L-tyrosine polyphosphate nanoparticles: characterization, in vitro and *in vivo* studies. Biomaterials 2009; 30(22): 3771-9. [http://dx.doi.org/10.1016/j.biomaterials.2009.03.044] [PMID: 19395021]
[49] Edris H, Pouran M, Parisa T. Ashraf. Curr Drug Metab 2017; 18: 120.
[50] Ale A, Liberatori G, Vannuccini ML, *et al.* Exposure to a nanosilver-enabled consumer product results in similar accumulation and toxicity of silver nanoparticles in the marine mussel Mytilus galloprovincialis. Aquat Toxicol 2019; 211: 46-56. [http://dx.doi.org/10.1016/j.aquatox.2019.03.018] [PMID: 30946994]
[51] Ale A, Bacchetta C, Rossi A, Galdopórpora J, Desimone M. Ecotoxicol Environ Saf 2018; 148: 976-84. [http://dx.doi.org/10.1016/j.ecoenv.2017.11.072]
[52] Lara H, Ayala-Núñez N. IxtepanTurrent L, Rodríguez. J Microbiol Biotechnol 2010; 26: 615-21. [http://dx.doi.org/10.1007/s11274-009-0211-3]
[53] Shahverdi A, Fakhimi A, Shahverdi H. Minaian. Nanomedicine (Lond) 2007; 3: 168-71. [http://dx.doi.org/10.1016/j.nano.2007.02.001] [PMID: 17468052]
[54] Leid JG, Ditto AJ, Knapp A, *et al.* In vitro antimicrobial studies of silver carbene complexes: activity of free and nanoparticle carbene formulations against clinical isolates of pathogenic bacteria. J Antimicrob Chemother 2012; 67(1): 138-48. [http://dx.doi.org/10.1093/jac/dkr408] [PMID: 21972270]
[55] Yang H, Liu C, Yang D, Zhang H, Xi Z. Appl Toxicol 2009; 29: 69-78. [http://dx.doi.org/10.1002/jat.1385]
[56] Chaudhary R, Tanna J, Gandhare N, Rai A, Juneja H. Adv Mater Letts 2015; 6: 990-8. [http://dx.doi.org/10.5185/amlett.2015.5901]
[57] Franklin NM, Rogers NJ, Apte SC, Batley GE, Gadd GE, Casey PS. Comparative toxicity of nanoparticulate ZnO, bulk ZnO, and ZnCl2 to a freshwater microalga (Pseudokirchneriella subcapitata): the importance of particle solubility. Environ Sci Technol 2007; 41(24): 8484-90. [http://dx.doi.org/10.1021/es071445r] [PMID: 18200883]
[58] Sawai J, Shoji S, Igarashi H, *et al.* Ferment Bioeng 1998; 86: 521-2. [http://dx.doi.org/10.1016/S0922-338X(98)80165-7]
[59] Zhang L, Jiang Y, Ding Y, Povey M, York D. Nanopart Res 2007; 9: 479-89. [http://dx.doi.org/10.1007/s11051-006-9150-1]
[60] Tanna T, Chaudhary R, Juneja H, Gandhare N, Rai A. BioNanoSci 2015; 5: 123-34. [http://dx.doi.org/10.1007/s12668-015-0170-0]
[61] Maisch T, Bosl C, Szeimies RM, Lehn N, Abels C. Photodynamic effects of novel XF porphyrin derivatives on prokaryotic and eukaryotic cells. Antimicrob Agents Chemother 2005; 49(4): 1542-52. [http://dx.doi.org/10.1128/AAC.49.4.1542-1552.2005] [PMID: 15793136]
[62] Wainwright M. Drugs Future 2004; 29: 85-93. [http://dx.doi.org/10.1358/dof.2004.029.01.777826]
[63] Banerjee M, Mallick S, Paul A, Chattopadhyay A, Ghosh SS. Heightened reactive oxygen species generation in the antimicrobial activity of a three component iodinated chitosan-silver nanoparticle composite. Langmuir 2010; 26(8): 5901-8. [http://dx.doi.org/10.1021/la9038528] [PMID: 20085297]
[64] Rizwan W, Young-Soon K, Amrita M. J Nanoscale Res Lett 2010; 5: 1675-81. [http://dx.doi.org/10.1007/s11671-010-9694-y]
[65] Raja Naika H, Lingaraju K, Manjunath K, *et al.* J. TaibahUniver. Science 2015; 9: 7-12.
[66] Saporito-Magriñá CM, Musacco-Sebio RN, Andrieux G, *et al.* Copper-induced cell death and the protective role of glutathione: the implication of impaired protein folding rather than oxidative stress. Metallomics 2018; 10(12): 1743-54. [http://dx.doi.org/10.1039/C8MT00182K] [PMID: 30311620]
[67] Jadhav S, Gaikwad S, Nimse M, Rajbhoj AJ. Clustered. Science 2011; 22: 121-9.
[68] Potbhare A, Chaudhary R, Chouke P, *et al.* Mater Sci Eng C 2019; 99: 783-93. [http://dx.doi.org/10.1016/j.msec.2019.02.010]
[69] Meghana S, Kabra P, Chakraborty S, Padnavaty N, Adv RSC. 5. 2015. 12293
[70] Guy A, Jonathan L, Anat L, Yeshayahu N, Rachel L, Ehud B. Small 2012; 772.
[71] Santhoshkumar A, Kavitha P, Suresh R. J Adv Chem Scie 2016; 2: 230-2.
[72] Chaudhary R, Tanna J, Gandhare N, Rai H, Juneja H. Adv Mater Letts 2015; 6: 990-8. [http://dx.doi.org/10.5185/amlett.2015.5901]
[73] Kikuchi Y, Sunada K, Iyoda T, Hashimoto K, Fujishima A. J Photochem Photobiol Chem 1997; 106: 51-6. [http://dx.doi.org/10.1016/S1010-6030(97)00038-5]
[74] Sunada K, Watanabe T, Hashimoto K. J Photochem Photobiol Chem 2003; 156: 227-33. [http://dx.doi.org/10.1016/S1010-6030(02)00434-3]

[75] Nadtochenko V, Denisov N, Sarkisov O, Gumy D, Pulgarin C, Kiwi J. J Photochem Photobiol Chem 2006; 181: 401-7. [http://dx.doi.org/10.1016/j.jphotochem.2005.12.028]

[76] Nadtochenko VA, Sarkisov OM, Nikandrov VV, Chubukov PA, Denisov NN. Russ J Phys Chem B Focus Phys 2008; 2: 105-14.

[77] Jesline NP. Narayanan, C. Vani,Sevanan M. Appl Nanosci 2015; 5: 157-62. [http://dx.doi.org/10.1007/s13204-014-0301-x]

[78] Zhen-Xing Tang Bin-Feng L. Braz J Chem Eng 2014; 31: 591-601. [http://dx.doi.org/10.1590/0104-6632.20140313s00002813]

[79] Stoimenov PK, Klinger RL, Marchin GL, Klabunde KJ. Langmuir 2002; 18: 6679-86. [http://dx.doi.org/10.1021/la0202374]

[80] Peter K, Rosalyn L, George L. KlabundeJ. Langmuir 2002; 6679-86.

[81] Makhluf S, Dror R, Nitzan Y, Abramovich Y, Jelinek R, Gedanken A. Adv Funct Mater 2005; 15: 1708-15. [http://dx.doi.org/10.1002/adfm.200500029]

[82] Jin T, He Y. J Nanopart Res 2011; 13: 6877-85. [http://dx.doi.org/10.1007/s11051-011-0595-5]

[83] Roy A, Gauri SS, Bhattacharya M, Bhattacharya J. Antimicrobial activity of caO nanoparticles. J Biomed Nanotechnol 2013; 9(9): 1570-8. [http://dx.doi.org/10.1166/jbn.2013.1681] [PMID: 23980504]

[84] Sawai J, Shiga H, Kojima H. Int Biodeterior Biodegradation 2001; 2001(47): 23-6. [http://dx.doi.org/10.1016/S0964-8305(00)00115-3]

[85] Sawai J, Yoshikawa T. Quantitative evaluation of antifungal activity of metallic oxide powders (MgO, CaO and ZnO) by an indirect conductimetric assay. J Appl Microbiol 2004; 96(4): 803-9. [http://dx.doi.org/10.1111/j.1365-2672.2004.02234.x] [PMID: 15012819]

[86] Hewitt C, Bellara S, Andreani A, Nebe-von-Caron G, McFarlane C. Biotechnol Lett 2001; 23: 667-75. [http://dx.doi.org/10.1023/A:1010379714673]

[87] Bae DH, Yeon JH, Park SY, Lee DH, Ha SD. Bactericidal effects of CaO (scallop-shell powder) on foodborne pathogenic bacteria. Arch Pharm Res 2006; 29(4): 298-301. [http://dx.doi.org/10.1007/BF02968574] [PMID: 16681035]

[88] Doaa Mohammed Abd El-Aziz. Naeima M H Yousef, ARC J. Animal and Veterinary Sciences 2017; 3: 38-45.

[89] Syed Khadara Y, Balamuruganb A, Devarajana V, Subramanianc R. JMRTEC 2018; 345: 1-8.

[90] Ivanov V, Fedotov G, Nikulina M, Polezhaeva O, Omelyanyuk G, Romanenko S. Korol'S,Yu. D. TretyakovDoklady Chem 2008; 420: 141-3.

[91] Irshad R, Tahir K, Li B, Ahmad A, R Siddiqui A, Nazir S. Antibacterial activity of biochemically capped iron oxide nanoparticles: A view towards green chemistry. J Photochem Photobiol B 2017; 170: 241-6. [http://dx.doi.org/10.1016/j.jphotobiol.2017.04.020] [PMID: 28454048]

[92] Sonkusare V, Chaudhary R, Bhusari G. A. Rai A, Juneja H, Nano-Struct. &. Nano-Objet 2018; 13: 121-31.

[93] González-Flecha B. Demple, B. J Biol Chem 1995; 270: 13681-7. [PMID: 7775420]

[94] Ravindra Kumar S, Imlay JA. How Escherichia coli tolerates profuse hydrogen peroxide formation by a catabolic pathway. J Bacteriol 2013; 195(20): 4569-79. [http://dx.doi.org/10.1128/JB.00737-13] [PMID: 23913322]

[95] Dwivedi S, Wahab R, Khan F, Mishra Y, Musarrat J, Al-Khedhairy A. PLoS One 2014; 9111289 [http://dx.doi.org/10.1371/journal.pone.0111289]

[96] Choudhury SR, Ordaz J, Lo CL, Damayanti NP, Zhou F, Irudayaraj J. From the Cover: Zinc oxide Nanoparticles-Induced Reactive Oxygen Species Promotes Multimodal Cyto- and Epigenetic Toxicity. Toxicol Sci 2017; 156(1): 261-74. [PMID: 28115643]

[97] Dayem A, Hossain M, Lee S, *et al.* MolSci 2017; 18: 120.

[98] Sathyanarayanan M, Balachandranath R, Srinivasulu Y, Kannaiyan S, Subbiahdoss G. Int Res Scholar Notices Microbiol 2013; 5272086

[99] Lee C, Kim JY, Lee WI, Nelson KL, Yoon J, Sedlak DL. Bactericidal effect of zero-valent iron nanoparticles on Escherichia coli. Environ Sci Technol 2008; 42(13): 4927-33. [http://dx.doi.org/10.1021/es800408u] [PMID: 18678028]

[100] Park HS, Koduru JR, Choo KH, Lee B. Activated carbons impregnated with iron oxide nanoparticles for enhanced removal of bisphenol A and natural organic matter. J Hazard Mater 2015; 286: 315-24. [http://dx.doi.org/10.1016/j.jhazmat.2014.11.012] [PMID: 25594935]

[101] Auffan M, Rose J, Wiesner MR, Bottero JY. Chemical stability of metallic nanoparticles: a parameter controlling their potential cellular toxicity in vitro. Environ Pollut 2009; 157(4): 1127-33. [http://dx.doi.org/10.1016/j.envpol.2008.10.002] [PMID: 19013699]

[102] Muthukumar H. J Ind Eng Chem 2017; 45: 121-30. [http://dx.doi.org/10.1016/j.jiec.2016.09.014]

[103] Potbhare A, Chauke P, Zahra S, *et al.* Mater Today: Proceedings 2019; 15: 454-63.

[104] de la Rosa G, García-Castañeda C, Vázquez-Núñez E, *et al.* Physiological and biochemical response of plants to engineered NMs: Implications on future design. Plant Physiol Biochem 2017; 110: 226-35. [http://dx.doi.org/10.1016/j.plaphy.2016.06.014] [PMID: 27328789]

[105] Peng C, Zhang H, Fang H, Xu C, Huang H, Wang Y. J Environ Toxicol Chem 2017; 34: 1996-2003. [http://dx.doi.org/10.1002/etc.3016]

[106] Zuverza-Mena N, Martínez-Fernández D, Du W, *et al.* Exposure of engineered nanomaterials to plants: Insights into the physiological and biochemical responses-A review. Plant Physiol Biochem 2017; 110: 236-64. [http://dx.doi.org/10.1016/j.plaphy.2016.05.037] [PMID: 27289187]

[107] Judy J, Bertsch P. Adv Agron 2017; 123: 1-64.

[108] Genady E, Ahmed S, Fahmy A, Ashour R. J Am Sci 2017; 13: 108-14.

[109] Raliya R, Biswas P, Franke C, Chavalmane S, Nair R. Front Plant Sci 2016; 7: 1-10. [http://dx.doi.org/10.3389/fpls.2016.01288] [PMID: 26858731]

[110] Shalaby T, Bayoumi Y, Abdalla N. Taha In: Berlin, German: Nanoscience in Food and Agriculture I; Springer International Publishing 2016; 20: pp. 283-312.

[111] Khan MN, Mobin M, Abbas ZK, AlMutairi KA, Siddiqui ZH. Role of nanomaterials in plants under challenging environments. Plant Physiol Biochem 2017; 110: 194-209. [http://dx.doi.org/10.1016/j.plaphy.2016.05.038] [PMID: 27269705]

[112] Hong J, Rico CM, Zhao L, *et al.* Toxic effects of copper-based nanoparticles or compounds to lettuce (Lactuca sativa) and alfalfa (Medicago sativa). Environ Sci Process Impacts 2015; 17(1): 177-85. [http://dx.doi.org/10.1039/C4EM00551A] [PMID: 25474419]

[113] Keller A, Adeleye A, Conway J, Garner K, Zhao L, Cherr G. Nano-Impact 2017; 7: 28-40. [http://dx.doi.org/10.1016/j.impact.2017.05.003]

[114] Nair PM, Chung IM. Impact of copper oxide nanoparticles exposure on Arabidopsis thaliana growth, root system development, root lignificaion, and molecular level changes. Environ Sci Pollut Res Int 2014; 21(22): 12709-22. [http://dx.doi.org/10.1007/s11356-014-3210-3] [PMID: 24965006]

[115] Hong J, Wang L, Sun Y, *et al.* Peralta-Videa. Sci Total Environ 2016; 563: 904-11. [http://dx.doi.org/10.1016/j.scitotenv.2015.08.029] [PMID: 26351199]

[116] Juarez-Maldonado A, Ortega-Ortíz H, Pérez-Labrada F. Cadenas-Pliego. J Appl Bot Food Qual 2016; 89: 183-9.

[117] Pinedo-Guerrero Z, Delia Hernández-Fuentes A. Molecules 2017; 22: 926. [http://dx.doi.org/10.3390/molecules22060926]

[118] Shaw A, Ghosh S, Kalaji H, Bosa K, Brestic M. Environ Exp Bot 2014; 102: 37-47. [http://dx.doi.org/10.1016/j.envexpbot.2014.02.016]

[119] ElsyRubisela Lopez-Vargas. Hortensia Ortega-Ortíz, Gregorio Cadenas-Pliego, Antonio Juárez-Maldonado. Appl Sci (Basel) 2018; 8: 1020.

[120] Barbasz A, Kreczmer B, Oc'wieja M. Acta Physiol Plant 2016; 38: 76. [http://dx.doi.org/10.1007/s11738-016-2092-z]

[121] Joghee S. GaneshanPradheesh, Vincent Alexramani, Mahalingam-Sundrarajan and Sun Ig Hong (2018). Adv Nat Sci: Nanosci Nanotechnol 2018; 9015008
[122] Mishra S, Singh A, Keswani C, Naqvi AH. H.B. PLoS One 2009; 9: 97881. [http://dx.doi.org/10.1371/journal.pone.0097881]
[123] Hojjat S. Int J Agric Crop Sci 2015; 8: 627-30.
[124] Takkar PN, Walker CD. Development in Plant and Soil Science. Boston: Kluwer Academic Publishers 1993; pp. 151-65.
[125] Alloway BJ. Soil factors associated with zinc deficiency in crops and humans. Environ Geochem Health 2009; 31(5): 537-48. [http://dx.doi.org/10.1007/s10653-009-9255-4] [PMID: 19291414]
[126] Rashid A, Ryan J. J Plant Nutr 2004; 27: 959-75. [http://dx.doi.org/10.1081/PLN-120037530]
[127] Mortvedt J. Fert Res 1992; 33: 249-55. [http://dx.doi.org/10.1007/BF01050880]
[128] Gangloff W, Westfall D, Peterson G, Mortvedt J. Commun Soil Sci Plant Anal 2006; 37: 199-209. [http://dx.doi.org/10.1080/00103620500403200]
[129] Xie Y, He Y, Irwin PL, Jin T, Shi X. Antibacterial activity and mechanism of action of zinc oxide nanoparticles against Campylobacter jejuni. Appl Environ Microbiol 2011; 77(7): 2325-31. [http://dx.doi.org/10.1128/AEM.02149-10] [PMID: 21296935]
[130] Long TC, Saleh N, Tilton RD, Lowry GV, Veronesi B. Titanium dioxide (P25) produces reactive oxygen species in immortalized brain microglia (BV2): implications for nanoparticle neurotoxicity. Environ Sci Technol 2006; 40(14): 4346-52. [http://dx.doi.org/10.1021/es060589n] [PMID: 16903269]
[131] Lovrić J, Cho SJ, Winnik FM, Maysinger D. Unmodified cadmium telluride quantum dots induce reactive oxygen species formation leading to multiple organelle damage and cell death. Chem Biol 2005; 12(11): 1227-34. [http://dx.doi.org/10.1016/j.chembiol.2005.09.008] [PMID: 16298302]
[132] Lewinski N, Colvin V, Drezek R. Cytotoxicity of nanoparticles. Small 2008; 4(1): 26-49. [http://dx.doi.org/10.1002/smll.200700595] [PMID: 18165959]
[133] Thwala M, Musee N, Sikhwivhilu L, Wepener V. The oxidative toxicity of Ag and ZnO nanoparticles towards the aquatic plant Spirodela punctuta and the role of testing media parameters. Environ Sci Process Impacts 2013; 15(10): 1830-43. [http://dx.doi.org/10.1039/c3em00235g] [PMID: 23917884]
[134] Panda S, Chaudhury I, Khan M. Biol Plant 2003; 46: 289-94. [http://dx.doi.org/10.1023/A:1022871131698]
[135] Aarti P, Tanaka R, Tanaka A. Physiol Plant 2006; 128: 186-97. [http://dx.doi.org/10.1111/j.1399-3054.2006.00720.x]
[136] Jamdagni P, Poonam K, Rana J. Journal of King Saud University Science 2018; 30: 168-75. [http://dx.doi.org/10.1016/j.jksus.2016.10.002]
[137] Sang L, Zhao Y, Burda C. TiO2 nanoparticles as functional building blocks. Chem Rev 2014; 114(19): 9283-318. [http://dx.doi.org/10.1021/cr400629p] [PMID: 25294395]
[138] Owolade O, Ogunleti D, Adenekan M. Electron J Environ Agric Food Chem 2008; 7: 2942-7.
[139] Khodakovskaya MV, Lahiani MH. Handbook of Nanotoxicology, Nanomedicine and Stem Cell Use in Toxicology. Wiley 2014; pp. 121-30. [http://dx.doi.org/10.1002/9781118856017.ch7]
[140] Chen H, Seiber JN, Hotze M. ACS Select on nanotechnology in food and agriculture: a perspective on implications and applications. J Agric Food Chem 2014; 62(6): 1209-12. [http://dx.doi.org/10.1021/jf5002588] [PMID: 24479582]
[141] Ali MA, Rehman I, Iqbal A, *et al*. S. Adv Life Sci 2014; 1: 129-38.
[142] Clemente Z, Grillo R, Jonsson M, *et al.* Ecotoxicological evaluation of poly(epsilon-caprolactone) nanocapsules containing triazine herbicides. J Nanosci Nanotechnol 2014; 14(7): 4911-7. [http://dx.doi.org/10.1166/jnn.2014.8681] [PMID: 24757962]
[143] Namasivayam SKR, Aruna A. Res J Biotechnol 2014; 9: 19-27.
[144] Konotop YO, Kovalenko MS, Ulynets VZ, Meleshko AO. LM Cytol Genet 2014; 48: 99-102. [http://dx.doi.org/10.3103/S0095452714020054]
[145] Musante C, White JC. Toxicity of silver and copper to Cucurbita pepo: differential effects of nano and bulk-size particles. Environ Toxicol 2012; 27(9): 510-7. [http://dx.doi.org/10.1002/tox.20667] [PMID: 22887766]
[146] Hawthorne J, Musante C, Sinha SK. JC Int J Phytorem 2012; 14: 429-42. [http://dx.doi.org/10.1080/15226514.2011.620903]
[147] Atha DH, Wang H, Petersen EJ, Cleveland D, Halbrook RD, Jaruga P. M Environ Sci Technol 2012; 46: 1819-27. [http://dx.doi.org/10.1021/es202660k]
[148] Lee S, Chung H, Kim S, Lee I. Water Air Soil Pollut 2017; 224: 1668. [http://dx.doi.org/10.1007/s11270-013-1668-0]
[149] Nekrasova G, Ushakova A. Ermakov. Russ J Ecol 2011; 42: 458-63. [http://dx.doi.org/10.1134/S1067413611060117]
[150] Kim S. S. Lee I. Lee. Water Air Soil Pollut 2012; 223: 2799-806. [http://dx.doi.org/10.1007/s11270-011-1067-3]
[151] Branton D, Deamer DW, Marziali A, *et al.* The potential and challenges of nanopore sequencing. Nat Biotechnol 2008; 26(10): 1146-53. [http://dx.doi.org/10.1038/nbt.1495] [PMID: 18846088]
[152] Dekkers S, Krystek P, Peters RJ, *et al.* Presence and risks of nanosilica in food products. Nanotoxicology 2011; 5(3): 393-405. [http://dx.doi.org/10.3109/17435390.2010.519836] [PMID: 20868236]
[153] Peters R, Kramer E, Oomen AG, *et al.* Presence of nano-sized silica during in vitro digestion of foods containing silica as a food additive. ACS Nano 2012; 6(3): 2441-51. [http://dx.doi.org/10.1021/nn204728k] [PMID: 22364219]
[154] Athinarayanan J, Periasamy VS, Alsaif MA, Al-Warthan AA, Alshatwi AA. Presence of nanosilica (E551) in commercial food products: TNF-mediated oxidative stress and altered cell cycle progression in human lung fibroblast cells. Cell Biol Toxicol 2014; 30(2): 89-100. [http://dx.doi.org/10.1007/s10565-014-9271-8] [PMID: 24526451]
[155] Magnuson B, Jonaitis T, Card J. J Food Sci 2011; 76: 126-33. [http://dx.doi.org/10.1111/j.1750-3841.2011.02170.x]
[156] Jovanović B. Critical review of public health regulations of titanium dioxide, a human food additive. Integr Environ Assess Manag 2015; 11(1): 10-20. [http://dx.doi.org/10.1002/ieam.1571] [PMID: 25091211]
[157] Chen XX, Cheng B, Yang YX, *et al.* Characterization and preliminary toxicity assay of nano-titanium dioxide additive in sugar-coated chewing gum. Small 2013; 9(9-10): 1765-74. [http://dx.doi.org/10.1002/smll.201201506] [PMID: 23065899]
[158] Mozafari M, Flanagan J, Matia-Merino L. J Sci Food Agric 2006; 86: 2038-45. [http://dx.doi.org/10.1002/jsfa.2576]
[159] Ezhilarasi P, Karthik P, Chhanwal N. Food Bioprocess Technol 2013; 6: 628-47. [http://dx.doi.org/10.1007/s11947-012-0944-0]
[160] Borel T, Sabliov CM. Nanodelivery of bioactive components for food applications: types of delivery systems, properties, and their effect on ADME profiles and toxicity of nanoparticles. Annu Rev Food Sci Technol 2014; 5: 197-213. [http://dx.doi.org/10.1146/annurev-food-030713-092354] [PMID: 24387603]
[161] McCracken C, Zane A, Knight DA, Dutta PK, Waldman WJ. Minimal intestinal epithelial cell toxicity in response to short- and long-term food-relevant inorganic nanoparticle exposure. Chem Res Toxicol 2013; 26(10): 1514-25. [http://dx.doi.org/10.1021/tx400231u] [PMID: 24028186]
[162] Flores-Lopez M, Cerqueira M, de Rodrı´guez D. Food Eng Rev 2015; 1-14.
[163] McClements D. J Food Sci 2010; 75: 30-42. [http://dx.doi.org/10.1111/j.1750-3841.2009.01452.x]
[164] Shi S, Wang W, Liu L, Wu S, Wei Y, Li W. J Food Eng 2013; 118: 125-31. [http://dx.doi.org/10.1016/j.jfoodeng.2013.03.029]
[165] Yu Y, Zhang S, Ren Y, Li H, Zhang X, Di J. J Food Eng 2012; 113: 408-14. [http://dx.doi.org/10.1016/j.jfoodeng.2012.06.021]
[166] Medeiros B, Souza M. Food Bioprocess Technol 2014; 7: 1088-98. [http://dx.doi.org/10.1007/s11947-013-1097-5]
[167] Yang F, Li H, Li F, *et al.* J Food Sci 2010; 75: 236-40. [http://dx.doi.org/10.1111/j.1750-3841.2010.01520.x]
[168] Seyed M, Mousavi K, Mehrdad L. Int J Nanosci Nanotechnol 2018; 14: 133-41.
[169] Ahmad P, Rasool S. USA: Academic Press 2014.

[170] Malabadi R, Chalannavar R, Vijaya Kumar S. Res Pharm 2012; 2: 18-31.
[171] Hegazy H, Rabie G, Shaaban L, Raie D. Life Sci J 2014; 11: 1211-4.
[172] Mandeh M, Omidi M, Rahaie M. In vitro influences of TiO_2 nanoparticles on barley (Hordeum vulgare L.) tissue culture. Biol Trace Elem Res 2012; 150(1-3): 376-80. [http://dx.doi.org/10.1007/s12011-012-9480-z] [PMID: 22855306]
[173] Mahna N, Vahed S, Khani S. J Nanomed Nanotechnol 2013; 4: 161. [http://dx.doi.org/10.4172/2157-7439.1000161]
[174] Arab M, Yadollahi A, Hosseini M. J Genet Eng Biotechnol 2014; 12: 103-10. [http://dx.doi.org/10.1016/j.jgeb.2014.10.002]
[175] Helaly M, El-Metwally M, Omar S, El-Sheery N. AJCS 2014; 8: 612-24.
[176] Murashige T, Skoog F. Physiol Plant 1962; 15: 473-97. [http://dx.doi.org/10.1111/j.1399-3054.1962.tb08052.x]
[177] Akasaka-Kennedy Y, Yoshida H, Takahata Y. Cell Rep 2005; 24: 649-54. [http://dx.doi.org/10.1007/s00299-005-0010-8]
[178] Maróti M, Bognár J. Effect of heavy metals on the growth of tissue cultures (II). Acta Biol Hung 1988; 39(1): 75-85. [PMID: 3254011]
[179] Samantaray S, Rout G, Das P. Plant Sci 1999; 143: 201-9. [http://dx.doi.org/10.1016/S0168-9452(99)00036-9]
[180] Turner A, Dickinson N. New Phytol 1993; 123: 523-30. [http://dx.doi.org/10.1111/j.1469-8137.1993.tb03764.x]
[181] Bagade R, Chaudhary R, Potbhare A, *et al.* ChemistrySelect 2019; 4: 6233-44. [http://dx.doi.org/10.1002/slct.201901115]
[182] Chouke P, Potbhare A, Bhusari G, Somkuwar S, Dadamia PMD. Shaik, Mishra R, Chaudhary R. Adv Mater Lett 2018; 10: 355-60.
[183] Bacchetta C, Ale A, Simoniello MF, *et al.* Ecol Indic 2017; 76: 230-9. [http://dx.doi.org/10.1016/j.ecolind.2017.01.018]
[184] Mogul M, Akin H, Hasirci N. Resour Conserv Recycling 1996; 16: 289-320. [http://dx.doi.org/10.1016/0921-3449(95)00063-1]
[185] Resham S, Khalid M, Kazi A. 13. India: Springer 2015; pp. 683-98.
[186] Khot L, Sankaran S, Maja J, Ehsani R. A review. Crop Prot 2012; 35: 64-70. [http://dx.doi.org/10.1016/j.cropro.2012.01.007]
[187] Bhattacharyya A, Bhaumik A, Epidi T. Afr J Biotechnol 2012; 9: 3489-93.
[188] Naik B, Gowreeswari G, Daravath S, Reddy P. Adv Entomol 2014; 2: 93-101. [http://dx.doi.org/10.4236/ae.2014.22016]
[189] Velusamy P, Das J, Pachaiappan R. Ind Crops Prod 2015; 66: 103-9. [http://dx.doi.org/10.1016/j.indcrop.2014.12.042]
[190] Vivek R, Thangam R, Kaveri K, Kannan S. Process Biochem 2012; 47: 2405-10. [http://dx.doi.org/10.1016/j.procbio.2012.09.025]
[191] He Y, Du Z, Lv H, *et al.* Green synthesis of silver nanoparticles by Chrysanthemum morifolium Ramat. extract and their application in clinical ultrasound gel. Int J Nanomedicine 2013; 8: 1809-15. [http://dx.doi.org/10.2147/IJN.S43289] [PMID: 23687447]
[192] Ehrlich H, Janussen D, Simon P, Bazhenov V, Shapkin N. J Nanomater 2008; 3: 1-8.
[193] Watson GS, Watson JA. Appl Surf Sci 2004; 235: 139-44. [http://dx.doi.org/10.1016/j.apsusc.2004.05.129]
[194] Zhang J, Liu Z. Lithography 2006; 2: 1440-3.
[195] Guan H, Chi D, Yu J, Li X. Pestic Biochem Physiol 2008; 92: 83-91. [http://dx.doi.org/10.1016/j.pestbp.2008.06.008]
[196] Fanger G. Process and Applications. New York: Plenum Press 1974; pp. 1-20.
[197] Kuntworbe N, Martini N, Shaw J, Al-Kassas R. Drug Dev Res 2012; 73: 167-84. [http://dx.doi.org/10.1002/ddr.21010]
[198] Joshi MD, Unger WJ, Storm G, van Kooyk Y, Mastrobattista E. Targeting tumor antigens to dendritic cells using particulate carriers. J Control Release 2012; 161(1): 25-37. [http://dx.doi.org/10.1016/j.jconrel.2012.05.010] [PMID: 22580109]
[199] Peteu S, Oancea F, Sicuia O, Constantinescu F, Dinu S. Polymers (Basel) 2010; 2: 229-51. [http://dx.doi.org/10.3390/polym2030229]
[200] Margulis-Goshen K. Adv. Technolo. Manag.Insect Pests 2012; pp. 295-314.
[201] Owolade O, Ogunleti D, Adenekan M. Agri. Food Chem 2008; 7: 2942-7.
[202] Bhagat D, Samanta SK, Bhattacharya S. Efficient management of fruit pests by pheromone nanogels. Sci Rep 2013; 3: 1294. [http://dx.doi.org/10.1038/srep01294] [PMID: 23416455]

EFFECT OF pH AND TEMPERATURE VARIATION ON THE AMYLASE ACTIVITY OF THE FISH CLARIAS BATRACHUS

B.S. Rahile[1], K.B. Nagarnaik[1], M.K. Bangadkar[2] and P.P. Ingle[3]
[1]Science College Pauni Dist. Bhandara
[2]S.S. Jaiswal College Arjuni/Morgaon, Dist. Gondia
[3]Saibaba College, Parsevni
pratya87@gmail.com

ABSTRACT

Amylase is a key enzyme for carbohydrate digestion and is a limiting factor in absorption efficiency in bivalves. The present study was undertaken to study the effect of temperature and pH on the amylase activity of the fish Clarias batrachus. The liver, pyloric cacae and intestine was considered to study the amylase activity. The live fishes was acquired from the river, acclimatized in laboratory and sacrificed to acquire the liver, pyloric cacae and intestine. The results of the present study depicted that, amylase activity showed optimum pH at 7 for liver and pyloric caecal extract where as at pH 7.5 maximum activity shown by intestinal extract. The enzyme activity showed a proportional increased up to the optimum pH, decreasing thereafter proportionally towards more alkalinity. As regard the effect of temperature on amylase activity it was observed that maximum activity was found to be at 35oC for liver, 40oC for pyloric caecae and 45 oC for intestinal extract the, activity failing down temperature.

Keywords: *Amylase, Enzyme activity, Clarias batrachus, Liver, Pyloric cacae, Intestine.*

Introduction

The animal living between tide marks are obliged to adapt themselves to circumstances to an even more marked degree than the land of purely aquatic forms because they are exposed to regular alteration between submergence and emergence. Inter tidal organism appear to be well adopted to resist the stress and two of the most obvious of such stresses are those of temperature and decision.

Considerable amount of literature is available showing relationship between respiratory activity and pollution stress in aquatic animals (Robberts, 1972). Several workers have noted alternation of physiological process in bivalves and gastropods due to pollutants. Aquatic animals have to pass large quantities of water over their respiratory surface and are subjected to a relatively greater risk of exposure to the toxic substance. These compounds might act as physiological stress for non target animals.

The diversity in feeding habit is reflected in the structural adaptations in the alimentary canal. The study of digestive enzyme shows correlation with the feeding habit. Temperature tolerance as an experimental criteria for the demonstration of physiological change has found many uses. Much of the experimental literature was found on fishes and very little on invertebrates (Gowanlocj and Hayes, 1926). Work on the animals and found out lethal point at which the death occurs. It was found that the upper limit of thermal tolerance may vary according to the season or conditioning temperature (Vernberg et al., 1963).

α-Amylase (α-1,4 glucan-4-glucanohydrolase) is a key enzyme for carbohydrate digestion and is a limiting factor in absorption efficiency in bivalves (Moal et al 2000; Sellos et al 2003). In general, α-amylase can represent individual energy status, as observed in Drosophila when starch is the only carbohydrate source in the substrate (Powell & Andjelkovic 1983). α-Amylase catalyses the hydrolysis of internal (α-1,4) glucoside bonds in starch or related poly- and oligosaccharides. External factors affect the regulation processes of digestive enzymes such as the amylase in crustaceans (Guarna & Borowsky 1995; Le Moullac et al 1997). In Brine shrimpArtemia salina, adaptation of amylase enzyme varies according to particular starch concentration in the diet (Samain et al 1980). This observation could probably extend to the existing high carbohydrate content of the brine shrimp right after hatching. Influence of different pH and temperature on amylase activity in liver pyloric caecae and intestine of C. batrachus was studied. The optimum pH for a mylase activity in liver and pyloric caecae was studied and it has been found that the digestion depends upon the physical state of food as well as kind and

quality, quantity of enzyme secreted. Fishes are more specific in the digestion of different kinds of foods. The determination optimum pH and temperature in the various parts of digestive track for different digestive enzyme is the most important aspects in the study of digestion because different enzyme act optimally under different a biotic factors. The study of digestive enzyme would be useful in the understanding the adjustment of feed of fishes in the piscicultural practices.

Though C. batrachus is one of the important, protenaceous and delicious food fish, no work has been done on this aspects. The literature on diagram in fishes shows a need for further investigation is specially by systematic comparison of the digestive enzyme in representative throughut the vertebrates series. It would be of value to know if differences in digestive enzyme have occurred in the course of evolution of groups of higher vertebrates from more primitive ones, with the migration of aquatic vertebrates to land habitats, and with the metabolic changes necessitated by the transformation from aquatic life on land. Present communication relates to study effect of various pesticides pollutions on fish C. batrachus the quantitative estimation of amylase in liver, pyloric caecae and intestine of fish C.batrachus at various pH and temperature.

Materials and Methods

For the present investigation Clarius batrachus weighing about 25 to 50 gm is used. The live fishes were procured from the Wainganga river and brought to the laboratory. In laboratory fishes were acclimatize for seven days in well aerated aquarium. Before proceeding to the experiment specimens were starved for 24 hours. Starved specimens were dissected out to acquire liver, pyloric caecae and intensive. The isolated tissues were washed with cold distilled water. The mucosal lining of each part was then scraped off and homogenized in a homogenizer.

1% aqueous enzyme extracts were prepared and centrifuged. The supernatants were use immediately after the addition of toluene to prevent bacterial growth.

The amylase activity was then studied following the procedure of DNS method (Bernfeld 1955). The amylase activity was studies at different temperatures and different pH to studied the optimum temperature and pH for the activity of amylase in fish *C.batrachus.*

The data was statistically analyzed using statistical software for social sciences (SPSS). The analyzed data was presented in table 1 and 2.

Observations and Results

The observations of the effect of different pH and temperature on the amylase activity in liver pyloric caecae and intensitine of *C.batrachus* was depicted in table 1 and 2. It is revealed that amylase activity showed optimum pH at 7 for liver and pyloric caecal extract where as at pH 7.5 maximum activity was shown by intestinal extract of *C.batrachus*.

The enzyme activity was showed a proportional increased up to the optimum pH, decreasing thereafter proportionally towards more alakalinity.

As regard the effect of temperature on amylase activity it was observed that maximum activity was found to be at 35°C. For liver, 40°C, for pyloric caecae and 45 °C. for intestinal extract the, activity failing down these temperature.

Table 1: Rate of reaction of amylase under varying pH at 37^0 C in liver and different regions of alimentary canal of the *C.batrachus*

pH	Amylase activity in mg/of maltose/100mg of wet tissue per 30 minutes		
	Liver	Pyloric caecae	Intestine
5.0	3.983±0.374	2.732±0.189	5.833±0.658
5.5	7.016±0.903	5.133±0.431	9.999±0.658
6.0	10.683±0.676	6.933±0.360	12.399±0.616
6.5	11.716±0.874	10.533±0.361	14.999±0.657
7.0	17.206±0.767	15.299±0.491	16.499±0.474
7.5	15.884±0.761	13.515±0.487	17.916±0.658
8.0	9.866±0.590	10.376±0.541	11.736±0.353
8.5	8.133±0.535	7.083±0.300	8.749±0.658
9.0	5.449 ±0.412	3.616±0.266	5.999±0.725

Values are Mean±SD, N=5 for each group

Table 2: Rate of reaction of activity under different temperature but at constant optimum pH in liver and different regions of alimentary canal of the *C.batrachus*

Temperature	Amylase activity expressed in mg of maltose/100 mg of wet tissue per 30 minutes		
	Liver	Pyloric caecae	Intestine
15°c	7.949±0.320	6.985±0.346	5.633±0.466
20 °c	11.299±0.566	7.149±0.494	7.133±0.456
25 °c	13.283±0.332	8.992±0.498	8.234±0.545
30 °c	16.249±0.344	12.016±0.314	11.884±0.335
35 °c	19.540±0.450	13.483±0.355	13.560±0.331
40 °c	18.599±0.490	16.149±0.375	15.834±0.429
45 °c	16.109±0.311	15.931±0.648	11.630±0.314
50 °c	12.079±0.340	10.185±0.502	14.758±0.309
55 °c	12.079±0.340	10.185±0.502	14.756± 0.343
60 °c	0.288±0.501	8.043±0.348	11.385±0.386

Values are Mean±SD, N=5 for each group

Discussion

There is a definite correlation between the diet consumed and the type of relative strength of digestive enzyme (Young 1937). Amylase activity is stronger in herbivorous fishes than in carnivorous and omnivorous fishes (A1-Hussaini, 1949) reported that the pancreas whether compact of diffused was the main site of enzyme production.

Amylase activity was certainly due to the enzyme produced in pancreas of telecast (Barrington, 1957). Preliminary studies in *C.batrachus* confirmed that the amylase is strongly present in liver, pyloric caecae and intestine.

The pH and temperature have an important role in the activities of enzymes in the aquatic animals. A particular enzymes shows its maximum activity at a particular pH and temperature.

The amylase activity is considerably less at pH 7.4 in certain marine fishes. In the intestine of *Pleluronectus* sp. it is active at pH 7.5 and 8 (Bayliss, 1935). Cockson and Bourne (1972) found optimum pH for amylase 7.5 and 7.0 for anterior and posterior intestine of *Barbus palidiniosus.*

Amylase activity is maximum at pH 7.5 in the intestine of *Oreochromis niloticus* (Tengjroenkul et al 2000). Agrawal et al, (1975) recorded optimum pH for amylas activity from 5 to 6 in *Wallago attu*, and *Labeo rohita*. Maximum digestion of starch takes place at pH 7.4 due to liver extract and at pH 7.2 due to intestinal extract of *Periophthalmus koelreuteri* (Dhage and Mohammad, 1977).

The extract of liver and pyloric caecae of C.batrachus demonstrated the optimum activity at pH 7.0 and in the intestine at pH 7.5 There are slight variations from the above author's findings in the optimum pH. Variations are due to species variations (Agrawal et al, 1975).

Table 1 clearly indicates that the amylase activity is highest in intestine followed by that in liver and pyloric caecae. Pancreas, which is main source of enzyme secretion, is diffused in liver lobes mesenteric tissue and alimentary canal and hence intestine shows the maximum activity where actually the process of digestion takes place where slightly alkaline medium is required, whereas pyloric caecae supplements the digestion.

It is generally agreed that the enzymes of fishes are similar to those of warm blooded animals. Fishes being poikilothermic animals are liable to show changes in the digestive capabilities with thermal fluctuations. In the present investigation, the amylase activity was found to be maximum at 35°C in liver at 40°C in pyloric caecae and at 45°C in intestine. Later the activity decreases proportionally up to 60°c (Table 2)

The present findings are in concurrence with those of Dhage and Mohammad (1977). The velocity of the reaction catalyzed by enzyme is accelerated in relation to the increase in temperature within a particular level. The increase in temperature brings down the velocity of reaction.

References

1. Agrawal, V.P., Sastry, K.V. and Kaushab, S.K., (1975). Digestive enzymes of three teleost fishes. Acta Physiologica Academiae Scientiarum Hungaricae, 462:93-98.
2. AL-Hussaini, A.H. (1949). On the functional orphology of the alimentary tract of some fishes in relation to their feeding habit. Q.J1 Microc.Sci. 90 (4) : 323-3564
3. Barrington, E.J.W. (1957). The alimentary canal and digestion in "The Physiology of fishes" edited by M.E. Brown, Acad. Press, New York. Vol I. pp. 109-161
4. Bayliss. L.E. (1935). Digestion in, place Pleuronectus platessa, J Mar. Biol A.S.U.K. 20 (1) : 73-91.
5. Bernfeld, P. (1955). Amylase α and ß.In Methods in Enzymology (Colowick SP, Kaplan NO, ed.) Academic Press Inc, New York 1:149-158.
6. Cockson, A, and Bournes, D, (1972). Enzymes in the digestive tract of the two Euryhaline fish, Comp Biochem. Physiol. , 41 (A) : 715-718.
7. Dhage, K.P., Mohammed, O.M.M.J.(1977). Study of amylase activity in Mudskipper *Periophthalmus koelreuteri* (PaWas). Indian J. Fish., 24: 129-134
8. Gownaloch, J.N. and Hayes, F.B. (1926). Contributions to the study of marine gastropods I the physical factor, behavior and interidal life of Littorina. Centr. Candad. Biol. N.S.3 : 133-166.
9. Guarna M. M., Borowsky R. L., (1995). Biochemical properties of amylase isozymes from Gammarus palustris. A comparative study. Comp Biochem Physiol B 112:619-628.
10. Le Moullac G., Klein B., Sellos D., Van Wormhoudt A., (1997). Adaptation of trypsin, chymotrypsin and alpha-amylase to casein level and protein source in Penaus vannamei (Crustacea Decapoda). J Exp Mar Biol Ecol 208:107-125.
11. Moal J., Daniel J. Y., Sellos D., Van Wormhoudt A., Samain J. F. (2000). Amylase mRNA expression in Crassostrea gigas during feeding cycles. J Comp Physiol B 170:21-26.
12. Powell J. R., Andjelkovic M., (1983). Population genetics of Drosophila amylase IV. Selection in laboratory populations maintained on different carbohydrates. Genetics 103:675-689.
13. Roberts R.J.(1972).Ulcerative dermal necrosis(UDN) of salmon (Salmo salar L.)Symposium of Zoological Society, London 30,53-81
14. Samain J. F., Moal J., Daniel J. Y., Le Coz J. R., Jezequel M., (1980). The digestive enzymes amylase and trypsin during the development of Artemia: effect of food conditions. In: The Brine Shrimp Artemia. Vol. 2. Physiology, Biochemistry, Molecular Biology (Persoone G., Sorgeloos P., Roels O., Jaspers E. eds.). Universa Press, Wtteren, Belgium. p. 147-443.
15. Sellos D., Moal J., Dégremont L., Huvet A., Daniel J. Y., Nicoulaud S., Boudry P., Samain J. F., Van Wormhoudt A., (2003). Structure of amylase genes in populations of Pacific cupped oyster (Crassostrea gigas): tissue expression and allelic polymorphism. Mar Biotechnol 5:360-372.
16. Tengjroenkul, B., Smith, B.J. Caceci T. and Smith, S.A.(2000)Distribution of intestinal enzyme activities along the intestinal tract of cultured Nile tilapia, *Oreochromis niloticus* L.Acquaculture 182(3):317-327.
17. Vernberg ,F.J. (1963). Acclimation of intertidal crabe. Am. Zool.9 : 333-341.
18. Young C.M. (1937). Evaluation and adaption in the digestive system of metazoan Biol. Revs. 12(1) : 87-115.

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Assessment of water quality status of Chichtola Lake in Gondia District of Maharashtra State, India

Gorghate Nilesh D., [1] Raut Mahendra B.,[2] and Ingale Prashant P.

[1]Asst Prof and Head, Dept. of Zoology, M. B. Patel College Sadak/Arjuni- nilesh.gorghate@gmail.com
[2]Research Scholar, J. M. Patel College, Bhandara – mahendraraut5@gmail.com,
[3]Asst Prof and Head, Dept. of Zoology, Saibaba Arts and Science College Parseoni - pratya87@gmail.com

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Abstract

Wetlands, the vigorous water filled inland aquatic systems perform variety of functions like provide irrigation, fisheries and recreation resource etc., Assessment of water quality is an important criterion for determining the suitability of water for irrigation, fishing and drinking purpose. The present study deals with the seasonal physicochemical investigation of water of the Chichtola lake, district Gondia of Maharashtra State during the year 2018-20. The physic-chemical parameters such as Temperature, pH, Conductivity, Transparency, Dissolved Oxygen DO, CO_2, Biological Oxygen Demand BOD, Chemical Oxygen Demand COD, Phosphate and Nitrate were studied at three sampling sites of the lake during the study period. The analysis of various parameters carried out by using standard methods (APHA and NEERI). Regular monitoring of water quality parameters can help to conserve freshwater ecosystem.

Keywords: Chichtola lake, Conservation, Freshwater ecosystem

1. Introduction

Water contamination is becoming the most serious threats to human health. It has been estimated that about 80% of all the diseases in mankind are due to one or another unhealthy aspects of water. Contamination of lakes and other reservoirs is seen as one of the commonly occurring phenomenon in almost all developing nation, especially urban ones, due to demographic expansion coupled with lack of civic amenities results in hitting these natural water reservoirs very hard. Majority of the urban and rural lakes have vanished due to this human neglect and the others which could sustain this

pressure, present non-potable water or are not able to meet human requirements [1,2,3].

Conservation of Biodiversity has emerged as key environmental concerns of the day [4]. Water is the most abundant and most useful compound in the world and hence it is called "Jeevan" in Sanskrit or life. Life is not possible without water, the 2/3rdmass of our body is water and 70% surface of the earth is covered by water [5]. Water of good quality is required for living organisms. The quality of water is described according to its physical, chemical and biological parameters. The water quality assessments are used to detect the effects of pollution on the water quality. Changes in the water quality are reflected in the biotic community structure. Biological production in any aquatic body gives direct correlation with its physicochemical status which can be used as tropic status and fisheries resources potential [6]. The physical and chemical parameters exert their influence both, individually and collectively and their interaction creates a biotic environment, which ultimately conditions the origin, development and finally succession of the biotic communities [7].

Present study deals with a Chichtola lake which is situated in Gondia district of Maharashtra State, India. The lake is situated on the periphery of Nagzira Wildlife Sanctuary near Chichtola village at coordinates N 21.202600° and E 80.098697°. In the present study the attempt was made to analyze the physicochemical properties (Temperature, pH, Conductivity, Transparency, DO, CO_2, BOD, COD, Phosphate and Nitrate) from 3 different sites of Chichtola lake to understand the status of water quality from the month of October 2018 to September 2020.

2. Materials and Method

Eastern site of the lake has named as site I (S1) where anthropogenic activities like washed cloths, bullock cart and other vehicles cleaning, dirt from washed cloths, idol immersion and animal washing activities were commonly seen at this site. The western side of the lake has named as site II (S2) of the lake. Minimum human activities and disturbances were seen at S2. Site III (S3) of Chichtola lake is at northern side towards the catchment of the lake. The water samples were collected fortnightly in clean glass bottles of various sizes from the water surface of study sites.

In the present study sampling programme were started in the month of October 2018 to September 2020. Sampling was done in the morning hours from 8.30 am to 10.00 am.

Fig 1- Google Map of Chichtola Lake

Water sample were collected from three sites of the lake in fresh unsullied plastic bottles and brought to the laboratory for analysis of physico-chemical parameters by standard methods.

The parameters like temperature, pH and conductivity were measured on the spot during the study with the help of water analysis kit Systronics model-371 at the sampling sites. For the dissolved oxygen, the water sample was taken in 300 ml. capacity of BOD bottle and fixed the DO on the spot. Measurement of transparency was done by Secchi disc. The results were calculated as per the standard formulas and methods suggested by APHA [8] NEERI [9,10].

3. Results and Discussion

In the present study water quality assessment of Chichtola lake were analyzed. The mean with standard error value of all physico-chemical parameters of water sample collected from all three sampling sites are presented in table 1 and table 2. The temperature at all the sampling sites range between 21.59±0.39 to 28.07±1.10. Similar observations reported by Punam [11] with lowest water temperature 24.66±1.23 during winter season and highest water temperature was 30.99±3.75 during summer in Chandpur lake of district Bhandara, Maharashtra. In the current investigation pH value of all sites under study were slightly alkaline throughout study period which ranges from 7.10±0.05 – 7.78±0.08. Similar observations were reported by Bhaskar [12] with minimum pH value 7.10±0.88 during winter season and maximum 7.84±0.43 during summer season in Shionibandh lake of district Bhandara, Maharashtra. During the present study the conductivity values were differ from 0.18 ± 0.01 during winter season and 0.34 ± 0.01 during summer season. Acharjee *et al*., [13] also observed the similar observations in Dighali Lake of Assam. In the present investigation minimum transparency was observed during monsoon season however maximum transparency was recorded during summer season at all sites. Average transparency value fluctuates from 74.26 ± 2.61 during summer season to 39.79 ± 1.63 during Monsoon season. During the study period the minimum mean values of free Carbon dioxide (CO_2) differ from 3.03 ± 0.11 during Monsoon season to 3.93 ± 0.16 during summer season. Koli *et al*., [14] observed the CO_2 ranged in between 1.89 to 5.98 mg/lit. The minimum CO_2 observed in monsoon and maximum was during summer season in Tulashi tank, Kolhapur district. During the study period, the minimum mean values of BOD differ from 8.20 ± 0.42 during winter season and maximum 12.72 ± 0.24 during summer season. Higher BOD values in summer may be due to organic load from some agricultural activities at the mouth of the lake towards its catchment and reduced water flow. Udayashankara *et al*., [15] observed the BOD from Lingambudhi lake water ranged in between 5.9 to 25.9 mg/lit. Corroborative results presented by Khiradkar et al. [16] from Labhansarad Dam in Warora Taluka of Chandrapur District, Maharashtra State, India. During the study period the mean values of COD varied from 21.15 ± 0.44 during winter season to 34.72 ± 1.19 during summer season. In the present investigation the maximum value of COD was recorded during the summer season from Site I, it might be due to the domestic and agricultural and other anthropogenic activities from nearby areas. During the study period the mean values of Phosphate was differ from 0.35 ± 0.02 during winter season to 0.92 ± 0.03 during summer season. In the present investigation the lower value were recorded during winter season might be due to rapid utilization by aquatic plants and also due to assimilation by phytoplankton while summer maximum may be due to low water level and inflow of agricultural runoff from summer paddy cultivation in some patches at the catchment area. The lower values of Nitrates were recorded during the winter season at all sites whereas the higher values of Nitrates were recorded during monsoon seasons. During study period the mean values of Nitrate were varied from 0.57 ± 0.05 during winter season to 1.00 ± 0.03 during monsoon season. Analogous findings by Ingale et al[17] from Bhiwapur lake.

Table 1- Seasonal Mean Variations of Physico-chemical Parameters in Chichtola Lake in the Year 2018-2019.

S. N.	Parameters	Winter Season (Oct- Nov-Dec- Jan)	Summer Season (Feb- March- April- May)	Monsoon Season (June- July- Aug- Sept)
1	Temperature	22.00±0.49	28.07±1.10	26.21±0.72
2	pH	7.10±0.05	7.49±0.10	7.67±0.08
3	Conductivity	0.18±0.01	0.32±0.01	0.23±0.01
4	Transparency	52.98±1.01	74.24±2.61	39.79±1.63
5	Dissolved Oxygen (DO)	8.70±0.18	6.52±0.20	5.64±0.13
6	CO_2	3.12±0.13	3.87±0.16	3.03±0.11
7	Biological Oxygen Demand (BOD)	8.20±0.42	11.83±0.30	9.39±0.26
8	Chemical Oxygen Demand (COD)	20.15±0.44	33.89±1.25	23.18±1.37
9	Phosphate	0.35±0.02	0.88±0.02	0.48±0.01
10	Nitrate	0.63±0.05	0.77±0.05	1.00±0.03

Table 2- Seasonal Mean Variations of Physico-chemical Parameters in Chichtola Lake in the Year 2019-2020.

S. N.	Parameters	Winter Season (Oct- Nov-Dec- Jan)	Summer Season (Feb- March- April- May)	Monsoon Season (June- July- Aug- Sept)
1	Temperature	21.59±0.39	27.59±1.12	26.09±0.66
2	pH	7.12±0.05	7.61±0.09	7.78±0.08
3	Conductivity	0.20±0.01	0.34±0.01	0.24±0.01
4	Transparency	53.00±1.01	74.26±2.61	41.84±1.55
5	Dissolved Oxygen (DO)	8.98±0.19	6.88±0.24	6.07±0.14
6	CO_2	3.16±0.13	3.93±0.16	3.08±0.12
7	Biological Oxygen Demand (BOD)	9.37±0.33	12.72±0.24	9.31±0.27
8	Chemical Oxygen Demand (COD)	20.63±0.45	34.72±1.19	24.15±1.40
9	Phosphate	0.37±0.02	0.92±0.03	0.53±0.01
10	Nitrate	0.57±0.05	0.79±0.05	0.96±0.03

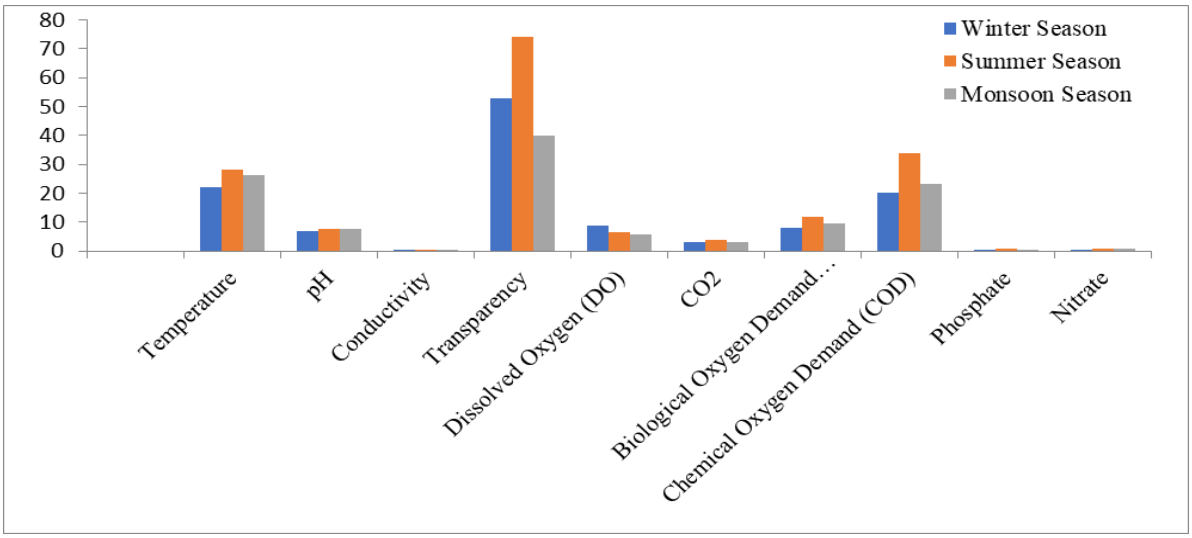

Fig. 1- Graph showing seasonal fluctuation of Physico-chemical Parameters in Chichtola Lake in the Year 2018-2019.

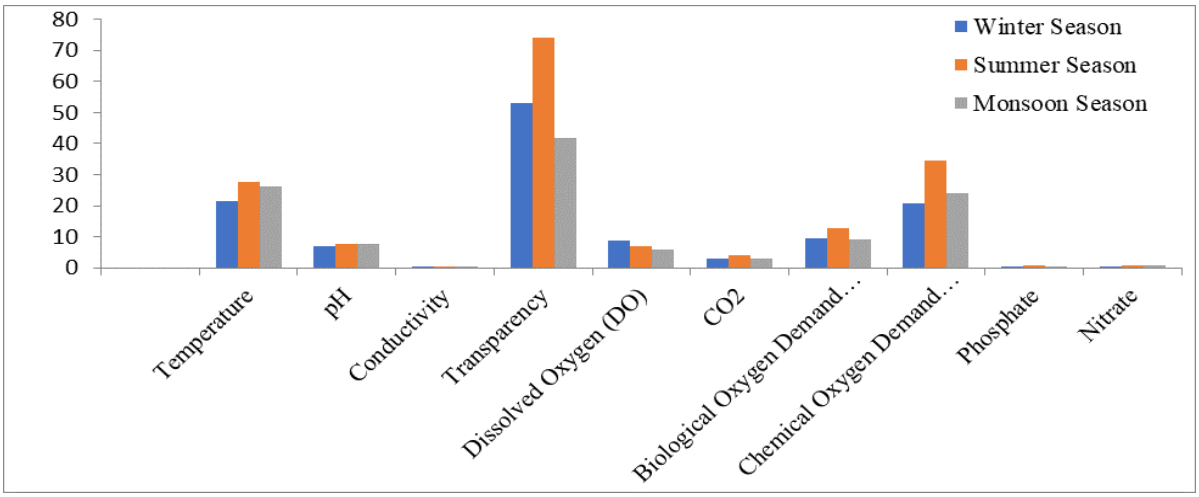

Fig. 2- Graph showing seasonal fluctuation of Physico-chemical Parameters in Chichtola Lake in the Year 2019-2020.

4. Conclusion

The Chichtola lake is most important for migratory birds in winter season and lake ecosystems can affect both fauna and flora. Site I of the lake has little polluted due to contamination by human and animal interventions, religious rituals and all anthropogenic activities. Overall the physico-chemical characteristics of lake show good quality water. Biodiversity contributes both.

Conflict of interest

No conflict of interest influenced in this research.

5. References

1. Iscen CF, Emiroglu Ö, Ilhan S, Arslan N, Yilmaz V, Ahiska S. (2008): Application of multivariate statistical techniques in the assessment of surface water quality in Uluabat Lake, Turkey. *Environmental monitoring and assessment*, Sep 1; 144(1-3): 269-76.
2. Zhang Q, Li Z, Zeng G, Li J, Fang Y, Yuan Q, Wang Y, Ye F. (2009): Assessment of surface water quality using multivariate statistical techniques in red soil hilly region: a case study of Xiangjiang watershed, China. *Environmental monitoring and assessment*, May 1; 152 (1-4):123.
3. Prasanna MV, Chidambaram S, Gireesh TV, Ali TJ (2011): A study on hydrochemical characteristics of surface and sub-surface water in and around Perumal Lake, Cuddalore district, Tamil Nadu, South India. *Environmental Earth Sciences*, May 1;63(1):31-47.
4. Ranjit Daniels, Joshi N. V. and Madhav G. (1992): On the Relationship between the Bird and Woody Plant Species Diversity in the Uttara Kannada District of South India. *Proc. Natl. Acsd. Sci. USA,* Vol. 89, pp. 5311-5315.
5. Khare K. C. and Jadhav M. S. (2008): Water Quality Assessment of Katraj Lake, Pune (Maharashtra, India): A Case Study. *Proceedings of Taal 2007*: The 12th World Lake Conference, 292-299.
6. Jhingran V. G., Natrajan A. V., BanarjeeS. M. and David A. (1965): Methodologies on Reservoir Fisheries Investigation in India. Bull, *Cant. Inl. Fish. Res. Ins*. Barrackpore, 12: 1-109.
7. SalaskarP. B. and YerangiS. G. (1997): Studies on Water Quality Characteristics of Shenala Lake, Kalyan, Maharashtra, India. *J. of Aqa. Biol.* 12 (1&2), 26-31.
8. APHA (1985): Standard methods for examination of water and waste water. 16 ed. American Public Health Association, Washington D.C.
9. NEERI (1986): Manual on water and waste water analysis. National Environmental Engineering Research Institute Nehru Marg, Nagpur.
10. NEERI (2012): Water testing- A laboratory manual salient parameters: council of scientific and industrial research, National Environmental Engineering Research Institute, Nehru Marg, Nagpur.
11. Punam T. (2017): Hydrobiological studies of Chandpur lake, dist- Bhandara (M.S.) with special reference to productivity status, Ph.D. thesis of R.T.M. Nagpur University, Nagpur.

12. Bhaskar P. (2013): Impact of abiotic factors of Shionibandh reservoir on the fish diversity and productivity. Ph.D. thesis of R.T.M. Nagpur University Nagpur.

13. Acharjee B. and Dutta A. (1999): Role of physico-chemical parameters in the evaluation of productivity of Dighalilake of Assam. *Environment and Ecology,* 17 (2): 274-279.

14. Koli K. and Muley D. (2014): Water quality assessment of Tulashi tank from Kolhapur district, Maharashtra, India. *International Journal of Emerging Research in Management and Technology*, 3 (4): 1-3.

15. Udayashankara T., Anitha K., Rao S., Shifa A. and Shuheb M. (2013): Study of water quality and dynamics analysis of phytoplankton in four freshwater lakes of Mysor, India. *International Journal of Innovative Research in Science, Engineering and Technology*. 2: 2600-2609.

16. Khiradkar Sandeep S., Kambdi Ramdas R. and Ingale Prashant P. Gorghate N.D. (2017): Preliminary study of Some Physico-Chemical Parameters in Labhansarad Dam in Warora Taluka of Chandrapur District, Maharashtra State, India. International Journal of Researches in Biosciences, Agricultures and Technology. Vol. V, (2).

17. Ingale Prashant P., Bobdey Atul D. and Gorghate Nilesh D. (2018): Comprehensive hydrobiological status of Bhiwapur Lake of Maharashtra, India: an environmental aspect. Taylor and Francis Journal of the Chinese Advanced Materials Society, Vol. 6 (4): 655-665.

2020-21

Synthesis and spectral study of 2, 4-Diaminophenol based copolymer

Synthesis and spectral study of 2, 4-Diaminophenol based copolymer

M S Dhore[1*], A N Bondre[2], C Behera[1] and S Amalraj[1]

[1]Department of Chemistry, Raisoni University, Amravati-440 010, (MS), India.

[2]Department of Chemistry, Saibaba Arts and Science College, Nagpur – 441105, (MS), India.

E-mail: mangeshdhore2@gmail.com

Abstract. A copolymer resin was synthesized by condensation polymerization reaction of 2,4-diaminophenol, Oxamide and formaldehyde with 2N NaOH as a catalyst. The purification of copolymer was carried out by precipitation technique and column chromatography. The purified copolymer resins were confirmed by Infra-red, ^{1}H and ^{13}C-NMR spectroscopy. Further formation of copolymer has been confirmed by Mass Spectrometry. The surface morphology of copolymers was established by Scanning Electron Microscopy (SEM). Degradation of synthesized copolymer were performed by Thermogravimetric Analysis (TGA). The stability is observed as up to 473 K and complete mass loss was observed up to 1173 K.

Keywords. Condensation polymerization, Characterization, Thermogravimetry.

1. Introduction

In recent year tremendous scientific development of polymer is due to their applicability in numerous filed like epoxy binder, coating material, water softening, environmental remediation, bimolecular separation, hydrometallurgy and medical equipment's. Synthesized copolymer has ionic functional groups with suitable physical and chemical properties further it is applicable especially as cation exchanger. Cation exchange or chelate ion exchange properties for various alkali and alkaline earth metals ions implement adsorption and desorption by activated carbon and batch ion exchange method were together discussed in order to confirm the presence of metal ion uptake selectivity. It involves the measurements of distribution of a metal ion between the two parts, shaking time and in media of different ion concentration. The weakly acidic ion exchangers i.e. carboxylate -COOH, basic ion exchanger i.e tertiary and secondary amine $–NR_3$ and $-NR_2$ with extreme absorption capacity at pH >7.0. Copolymers of aniline and 3-nitroaniline are ideally use in conduction it has other applications in numerous field of optoelectronic as well as energy storage devices due to conjugated system in organic synthesized polymers.

A versatile synthetic copolymer derived from hydroxyphenol and amino group containing compounds were studied due to their tremendous use as anion exchanger, thermal stabilizer, electrical conductor, photographic binder [1-5] etc. Copolymers that is manufacture from 8-hydroxyquinoline using the linkage of formaldehyde have been reported extensively. [6,7,8] Polymer derived from hexamine and m-cresol and polymer ion exchange resin of phenolic compounds with amines and amide with formaldehyde and their properties such as thermal stability [9] electrical conductivity, and ion exchange properties for toxic metal ions were studied. [10] Synthesis and Characterization of

Pyrogallol-Formaldehyde have been studied and used as an adsorbent material for the recovery of rhodium(III) [11]. Biobased Phenol Formaldehyde polymer synthesized and characterized by Yong Zhao and et.al [12]. Substituted carbamide and 2, 2-dihydroxy biphenyl were used to synthesized novel polymers having good properties like ion-exchange, binder and well thermal stability [13-15] However, the literature studies have publicized that no copolymer were synthesized using the monomer 2,4-diaminophenol having strong ion exchangeable groups, oxamide and formaldehyde as a condensing material. Hence, in the present research we discuss the synthesis, spectral characterization and degradation studies of 2,4-DAPOF copolymer.

2. Preparation method of copolymer (2,4-DAPOF)

The synthesis of 2,4-diaminophenol-Oxamide-Formaldehyde (2,4-DAPOF) copolymer is as follows: 200 mL of 2 N NaOH solution containing a mixture of 2,4-diaminophenol (0.1 mol), oxamide (0.1 mol), and formaldehyde (0.3 mol) were transfer to a 500-ml round-bottom flask armed with a mechanical stirrer. The round bottom flask kept in oil bath and heated at 414 K for 7 h, The reaction scheme is represented in figure 1. Purification of synthesized polymer was carried out by transferred it in to ether all the impurities that dissolved in to the ether has been removed and then it subjected to the column chromatography using the solvent Dimethyl sulphoxide (DMSO) and Hexane in the different proportion. The purity of final polymer was check by the thin layer chromatographic (TLC) technique. The purified polymer was concentrated from DMSO. The finished product, brown powder was kept in oven for about 2 hours at 90 ^{0}C.

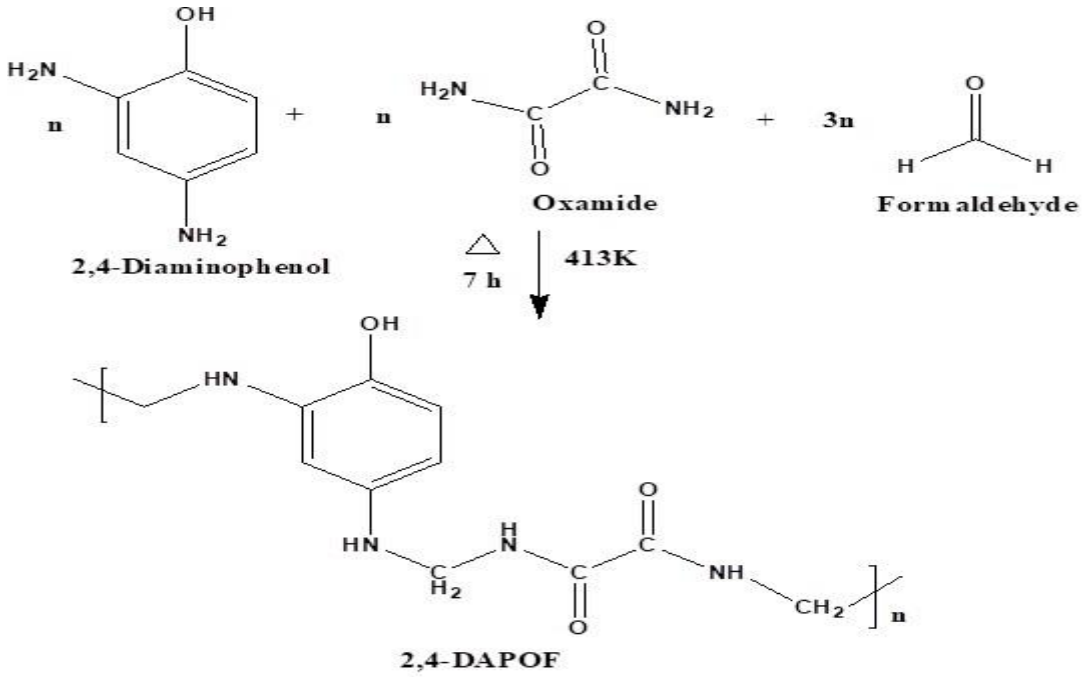

Figure 1. Reaction of 2, 4-DAPOF copolymer

3. Spectral and thermal studies

IR spectrum were recorded in Fourier Transform Infrared Spectrophotometer (FT-IR) in between of 500-4000 cm^{-1}. Hydrogen-NMR spectrum were recorded in DMSO-d_6 used as solvent on 400 MHz

Bruker Advance-II spectrophotometers & ^{13}C-NMR spectrum was recorded using Bruker 100 MHz Spectrophotometer. Scanning Electron Microscopy (SEM) analysis was carried out in Diya labs, Mumbai. Degradation pattern of copolymer were studied on Electron Impact-Mass Spectrometry (EI-MS). The thermogravimetric study were performed in oxygen atmosphere at 10 ^{0}C.min^{-1} heating flow on Pyris1 Thermogravimetric Analyzer (Perkin Elmer) up to 1000 ^{0}C.

4. Thermo gravimetric analysis

Thermo gravimetric analysis (TGA) is very valuable tools to regulate the stability of polymer in certain temperature and also provide information regarding degradation pattern of polymer. Normally, in TGA at starting evaporation of volatile matter and moisture content could determine. Moisture content means the water molecule that are associated with the polymeric material that is called water of crystallization. After the removal of water content from the polymer some functional group has been degraded those containing ester and ether linkages and some other groups containing oxygen is in the back bone of that polymeric material. With continuation of functional groups, the branching attached to the aromatic ring has been degraded. At the end of degradation, the heavy materials like benzene ring and remaining moiety has been finished. TGA technique mostly used for polymeric material including elastomer, thermoplastic, thermosetting, fibers, coating material, paints and composite material. [16,17]

5. Results and discussion

5.1. FT-IR analysis

The **FT-IR analysis** is used to identify the functional group of the synthesized material [28].The FTIR-spectra of 2,4-DAPOF copolymer spectral data is mentioned in Table 1 and characterized in Figure 2. From the figure it appears that, 3291.4 cm^{-1}, a broad and strong band which might be due to phenolic –OH, stretching vibration of showing intermolecular hydrogen bonding. [18] The presence of -NH-stretch in oxamide moiety may be ascribed as weak band at 3400 cm^{-}. [18] The strong and sharp signals at 1518.4 cm^{-1} has been assigned due to the presence of –NH stretching in aromatic amine. [18] A medium band displayed, 1417.6 cm^{-1} may be caused by stretching vibration of carbon-carbon bond in aromatic ring. >C-O stretch in oxamide moiety is represented by a broad band appeared at 1690 cm^{-1}. A medium band at 1208.3 cm^{-1} may be due to carbon oxygen stretching in phenol. The trisubstitution of benzene ring is acknowledged from the small bands observed at 864.1 and 1089.2 cm^{-1}. [18] Methylene group obtained at 2770.3 cm^{-1}. Results obtained in these studies are in well arrangement with those reported in literature. [18]

Table 1. FT-IR Spectral data of 2,4-DAPOF copolymer

Observed Wavenumber (cm^{-1})	Assignment
2,4-DAP-O-F	
3291.4 b,st	-OH (phenolic)
34,000 st,w	>NH stretch (amino)
2970.3 m,st	methylene –CH_2 stretch
1417.6 m	>C=C< stretch in aromatics
1690.0 st	>C=O stretch in amino
1518.4 st	Ar-NH (Amine)
1208.3 sh,m	>C-O stretch in phenol

1089.2 sh 864.1 sh	Tri substituted benzene ring

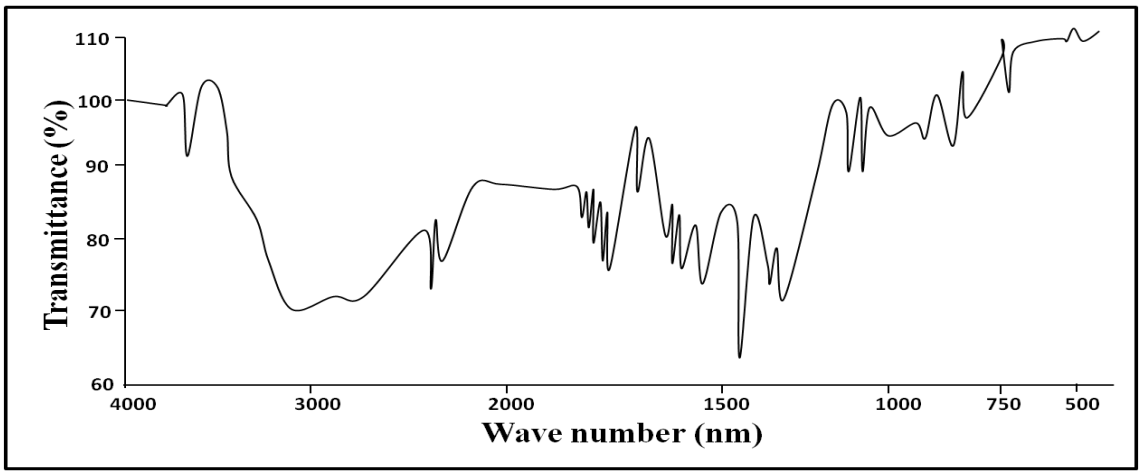

Figure 2. Infrared spectra of 2,4-DAPOF copolymer

5.2. ^{1}H- NMR analysis

^{1}H-NMR spectrum of 2,4-DAPOF is given in Figure 3. A Phenolic -OH group proton detected at δ 5.1 ppm, is caused by deuterated proton exchange reaction [19,20]. Singlet is observed at δ 6.0 & 7.5 ppm and is owing to aromatic protons of phenol. In oxamide moiety, amino proton of $–CH_2$-NH-CO- linkage appeared as medium singlet signal at δ 6.5 ppm. Singlet signal for methylene protons of NH-CH_2-NH- linkage looked at δ 4.2 ppm. Another singlet seemed at δ 4.0 ppm may be credited to amino proton of Ar-NH. One singlet signal observed at 2.71 ppm might be recognized for methyl protons of HN-CH_2 moiety [19, 20].

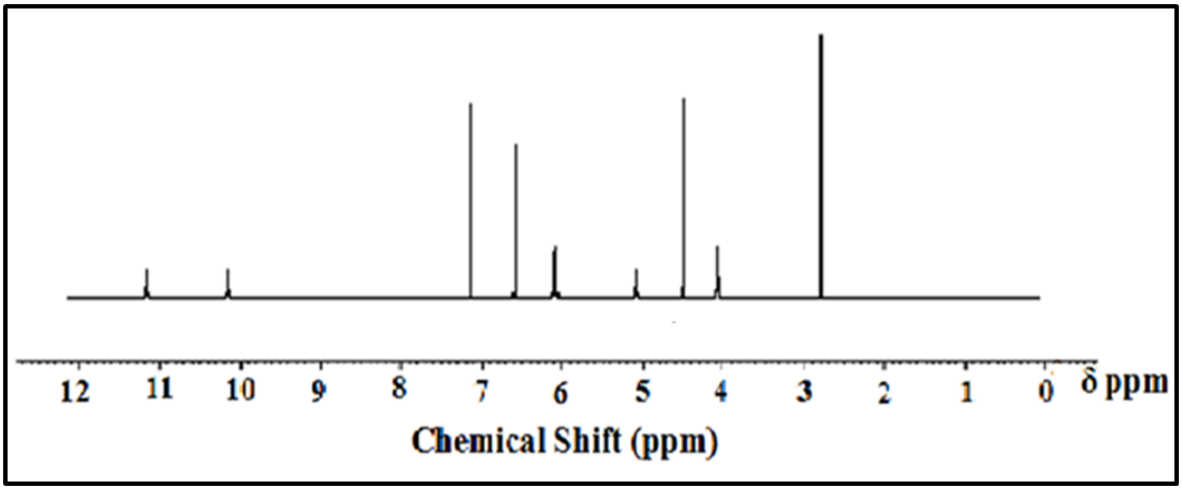

Figure 3. ^{1}H- NMR spectra of 2,4-DAPOF copolymer

5.3. ^{13}C-NMR analysis.

The ^{13}C-NMR graph of 2,4-DAPOF copolymer is displayed in Figure 4 and chemical shift values of particular carbon reported according to standard books [23, 24]. The Carbon first to Carbon six of the aromatic ring indications the peaks at 134.2, 114.2, 120.6, 137.8, 103.9 and 136.7 ppm respectively. The peak observed at 35.3 ppm is given to the CH_2 carbon of Ar-CH_2-NH. [21, 22]. The peaks observed at 26.3 ppm is caused by the CH_2 carbon of NH-CH_2 group and at 162.7 ppm caused by –C=O carbon of oxamide moiety of copolymer. [25]

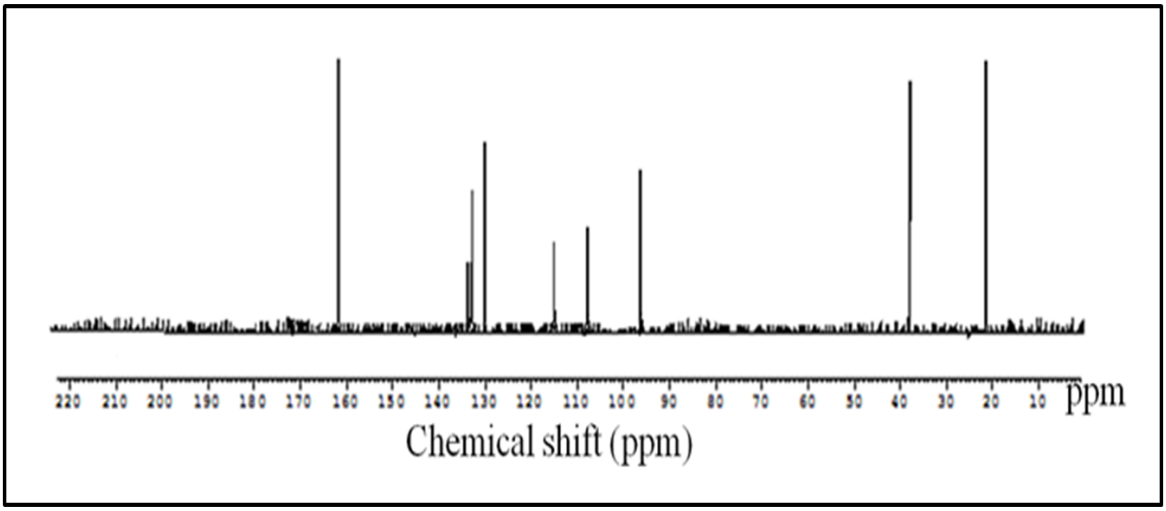

Figure 4. ^{13}C - NMR spectra of 2,4-DAPOF copolymer

5.4. EI- MS analysis

The *EI- MS* spectrum of 2,4-DAPOF copolymer is shown in Figure 5 and peaks observed at m/z 250, 136, 114, 85 and 56. Following is the fragmentation mechanism to account for the MS peaks are mentioned in figure 6. [26].

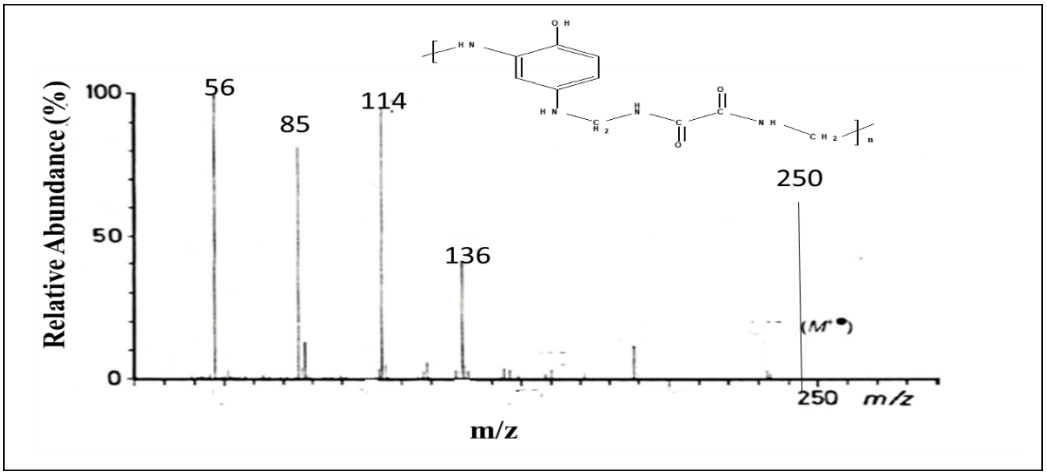

Figure 5. EI- MS spectra of 2,4-DAPOF copolymer

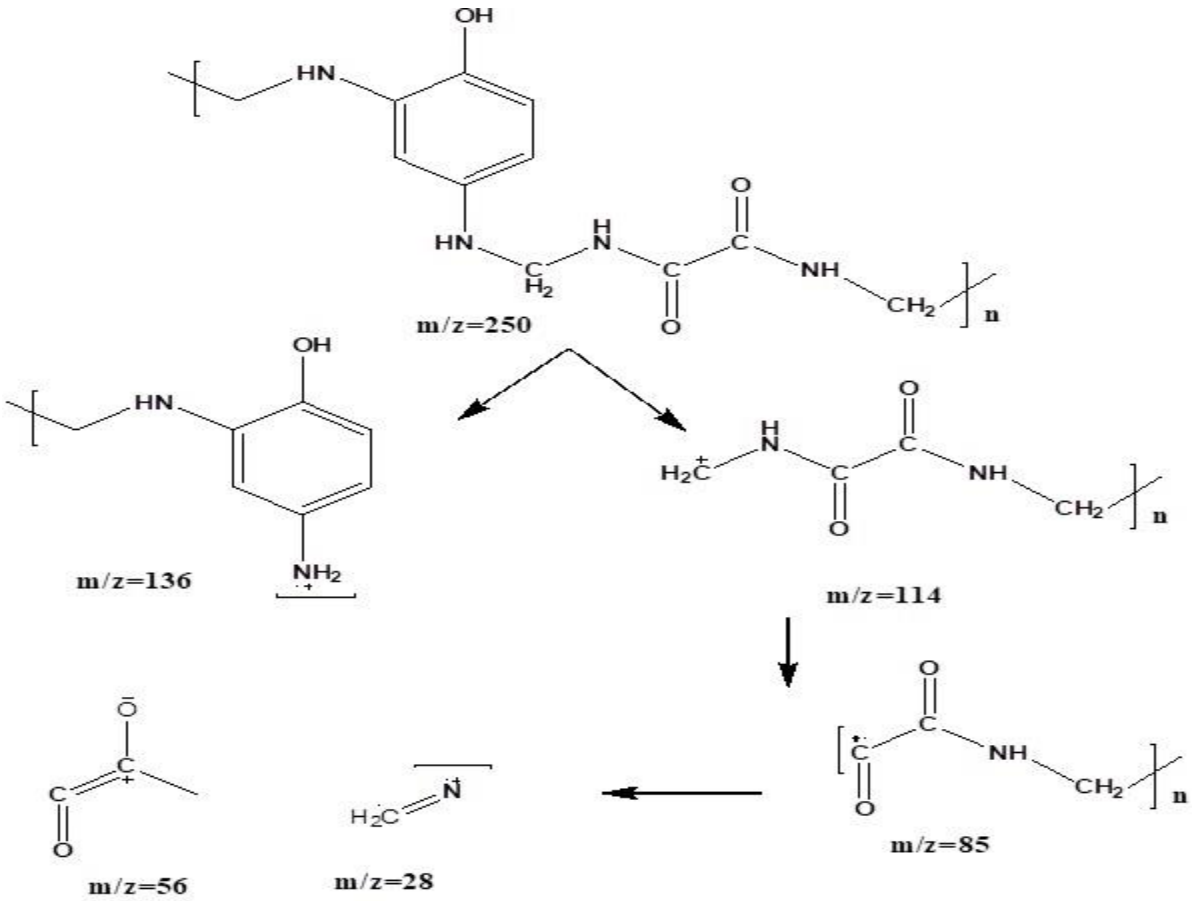

Figure 6. Mass fragmentation mechanism of 2,4-DAPOF copolymer

5.5. SEM Analysis

SEM analysis was performed on 2,4-DAPOF and shown in Figure 7. The SEM image displays porous structure with surface integrity. The SEM photograph at 2,000 and 1,500 magnifications is clearly revealing of porous structure with high sponginess or cavities. The swelling behavior and active sites on polymer surface appeared due to sponginess present in the copolymer. The image also showed an amorphous and crystalline structure of polymer. Predominantly condensation polymerization reaction is responsible for amorphous nature of copolymer. [21,27]

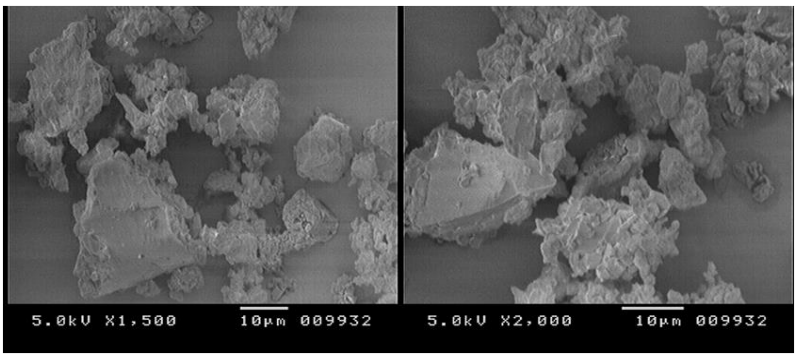

Figure 7. SEM Micrographs of 2,4-DAPOF copolymer

5.6. Thermo gravimetric Analysis

TGA analysis of 2,4-DAPOF synthesized copolymer shows in Figure 8. The plot depicted the percent mass verses temperature in an air atmosphere, approximately 10 mg of sample was heated at a rate of 10 ^{0}C /min with air as an atmosphere. The TGA results show that the 2,4-DAPOF polymer undergoes thermal degradation beginning at 200 ^{0}C with a total mass loss of 90.14 % and residue remaining about (10.0%). [16,17] Polymers absorb a small amount of moisture as a water of crystallization which can be determine the percentage of water present with polymer by TGA graph. The newly synthesized polymer degraded in three stages with initial loss of water molecule which is shown in Table 2.

Table 2. Degradation pattern of 2,4-DAPOF copolymer with temperature range

Temperature	Loss of materials	Percentage loss
0-200 ^{0}C	Moisture (May be water molecule)	7.15 %.
200-800 ^{0}C	Loss of Benzene ring with one –OH and two –NH groups and one –CH_2	55.29 %
800-1000 ^{0}C	Two –CONH and two –CH_2	90.14 %

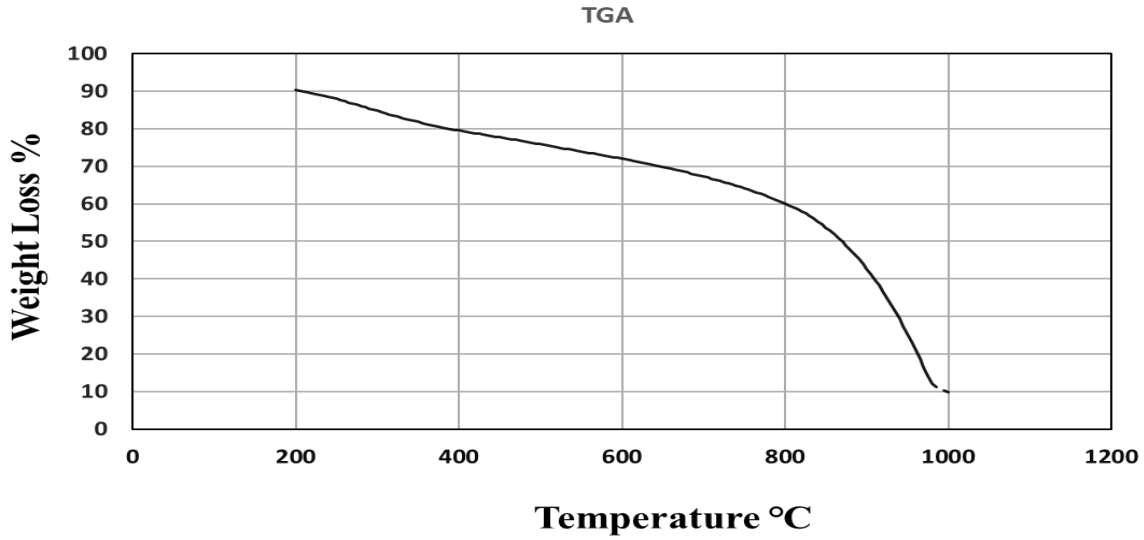

Figure 8. Thermal degradation thermogram of 2,4-DAPOF copolymer

6. Conclusion

2,4-DAPOF newly synthesized copolymer has confirmed and is checked by the results got by the TLC and spectral technique like Infra-red, ^{1}H and ^{13}C-NMR spectroscopy. Further formation of copolymer and its degradation pattern has been confirmed by mass spectrometry. TGA Monograph has shown three degradation phases, first indicating evaporation of water molecule associated with the polymer, second

shows deduction of benzene ring with one –OH, two –NH and one –CH_2 groups and third step represents lasting molecule. The synthesized polymer is very suitable as coating material because of its stability was observed as up to 473 K. The surface of the copolymer was observed to be more sponginess or cavities. The swelling behavior and active sites on polymer surface appeared due to sponginess present in the copolymer, clearly showing the appropriateness of the synthesized polymeric resin for ion-exchange properties.

7. References

[1] Waware U & Hamouda, A M S & Majumdar D (2020). Synthesis, characterization and physicochemical studies of copolymers of aniline and 3-nitroaniline. Polymer Bulletin. 77. 10.1007/s00289-019-02957-y. Jadhao M M, Paliwal L J, Bhave N S, 2009 *Desalination.* **247** 456-465.

[2] Jadhao M & Paliwal l & Bhave N (2009). Ion-exchange properties of 2,2'-dihydroxybiphenyl - urea - formaldehyde terpolymer resins. *Desalination*. **247**. 456-465. 10.1016/j.desal.2008.07.020.

[3] Karunakaran M & Magesh C (2011). Thermal and ion-exchange studies on chelating terpolymer resins derived from o cresol urea formaldehyde. *Arabian Journal of Chemistry*. 4. 339-348. 10.1016/j.arabjc.2010.06.057

[4] Karunakaran M. & Vijayakumar CT & Magesh C & Amudha T (2011). Terpolymer resin-ii -thermal and metal ion binding properties of resorcinolthiourea- formaldehyde terpolymer resin. *International Journal of Engineering Science and Technology*. **3**.

[5] Deivasigamani P & Subramanian M (2003). A new chelating sorbent for metal ion extraction under high saline conditions. *Talanta*. 59. 1227-36. 10.1016/S0039-9140(03)00030

[6] Telkhade S (2014). Selective removal of toxic metals from waste water using p-cresol, dithiooxamide and formaldehyde (p-CDF). *International Journal of Researches in Biosciences and Agriculture Technology*. 10.29369/ijrbat.2014.02.II.0039.

[7] Mahmoud, M. & Kenawy, I.M.M. & Hafez, MM.A.H. & Lashein, R. (2010). Removal, preconcentration and determination of trace heavy metal ions in water samples by AAS via chemically modified silica gel N-(1-carboxy-6-hydroxy) benzylidenepropylamine ion exchanger. *Desalination*. **250**. 62–70. 10.1016/j.desal.2009.09.009.

[8] Pizarro, Guadalupe & Marambio, O. & Jeria-Orell, Manuel & Oyarzún, Diego & Rivas, Bernabé & Habicher, Wolf. (2009). Synthesis and characterization of hydrophilic copolymers of maleimide derivatives with 2-hydroxyethyl methacrylate: Electrochemical and thermal behavior. *Polymer International*. **58**. 1160-1166. 10.1002/pi.2644.

[9] Dhore M S & Butoliya S & Zade AB (2015). Non-isothermal degradation studies and ion-exchange properties of 4-aminosalicyclic acid, urea and formaldehyde copolymer resin. *Journal of the Indian Chemical Society*. **92**. 147-157.

[10] Dhore M S & Butoliya S & Zade A (2014). Removal of Toxic Metal Ions from Water Using Chelating Terpolymer Resin as a Function of Different Concentration Time and pH. *ISRN Polymer Science*. **2014**. 1-11. 10.1155/2014/873520.

[11] Can, Mustafa & Bulut, Emrah & Ozacar, Mahmut. (2012). Synthesis and Characterization of Pyrogallol-Formaldehyde Nano Resin and Its Usage as an Adsorbent. *Journal of Chemical & Engineering Data*. **57** 2710−2717.

[12] Zhao, Yong & Yan, Ning & Feng, Martin. (2012). Biobased Phenol Formaldehyde Resins Derived from Beetle-Infested Pine Barks—Structure and Composition. *ACS Sustainable Chemistry & Engineering*. **1**. 91–101. 10.1021/sc3000459.

[13] Belsare P. & Zade A & Kalbende P & Dhore M S (2014). Thermal Degradation Studies of Terpolymer Derived from 2-Aminothiophenol, Hexamethylenediamine, and Formaldehyde. *Journal of Polymers*. **2014**. 1-9. 10.1155/2014/350832.

[14] Raval D & Narola B. & Patel A. (2005). Synthesis, characterization and composites from resorcinol-urea-formaldehyde-casein resin. *Iranian Polymer Journal* (English Edition). **14**. 775-784.

[15] Belsare P U & Zade A B. & Dhore M S (2015). Thermal degradation studies of terpolymer derived from 2-aminothiophenol and butanediamine. *Research Journal of Pharmaceutical,* Biological and Chemical Sciences. **6.** 1284-1294.

[16] J. Mitchell Applied polymer analysis and characterization: Recent developments in techniques, instrumentation, problem solving edited by J. Mitchell, Jr, Hanser Publishers, Munich, 1987, pp. xvii ISBN 3-446-14710-1

[17] W. Schnabel: *Polymer Degradation, Principles and Practical Applications.* Carl Hanser Verlag, München 1981. 227 Seiten, Preis: Volume87, Issue **9**

[18] Pavia, Lampman, Kriz and Vyvyan, 2013 *Introduction to Spectroscopy*. 5th Edition

[19] Timothy D. W, Claridge, 1999 *High-Resolution NMR Techniques in Chemistry*, Pergamon, [20] Roger S. magomber, 1998 *A Complete introduction to modern NMR Spectroscopy*. John Wiley.

[21] Raja S, Azarudeen & Riswan Ahamed, Mohamed & Burkanudeen, Abdul. (2011). Chelating terpolymer resin: Synthesis, characterization and its ion-exchange properties. *Desalination*. **268**. 90-96. 10.1016/j.desal.2010.10.002.

[22] Raja S, Azarudeen & Burkanudeen, Abdul. (2012). Sorption investigation on the removal of metal ions from aqueous solutions using chelating terpolymer resin. *Research on Chemical Intermediates*. **38**. 10.1007/s11164-012-0534-9.

[23] Nakanishi K, 1967 *"Infrared absorption spectroscopy practical., Golden Day"*, INC and Nankodo Co. Ltd. Tokyo.

[24] Silverstein R M, Bassler G C, Morrill T C, 1991 *"Spectrometric identification of organic compounds"*, 5th Ed, Wiley, Singapore.

[25] Pretsch E P, Buhlmann C Afflolter, 2000 *"Structure determination of organic compounds", Springer,* New York 180–181.

[26] Jurgen H. Gross, 2004 *A Text book of Mass spectrometry* – A textbook, Springer.

[27] Ramesh P & Amalraj S & Arunachalam P & Gopiraman M. & al-abdullah M & Vasanthkumar S. (2021). Covalent intercalation of hydrazine derived graphene oxide as an efficient 2D material for supercapacitor application. *Synthetic Metals*. **272**. 116656. 10.1016/j.synthmet.2020.116656.

[28] Amalraj S & Michael P (2019). Synthesis and characterization of Al2O3 and CuO nanoparticles into nanofluids for solar panel applications. *Results in Physics*. **15**. 102797. 10.1016/j.rinp.2019.102797.

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Diversity and Conservation Status of Fish Fauna in Chichtola Lake, Gondia District, Maharashtra, India

Gorghate Nilesh D.[1*], Raut Mahendra B.[1] and Ingale Prashant P.[2]

[1]M.B. Patel College Sadak Arjuni, Gondia 441807, India
[2]Saibaba Arts and Science College, Parseoni, Nagpur 441105, India

**Corresponding Author*

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Abstract: Chichtola Lake is located at the periphery of Nagzira Wildlife Sanctuary and one of the most important perennial lake which supports diverse fisheries communities. Present study was carried out to assess the fish diversity and their status. The present work was carried out for two years from October 2017 to September 2019 in Chichtola lake of Gondia district, Maharashtra State, India. The present finding showed that the lake is the habitat of 31 fish species from 13 families. Cyprinidae was the most dominant family. The family Cyprinidae represents sixteen (16) species followed by Channidae (3 species), Bagridae (2 species), Ambassidae (1 species), Anabantidae (1 species), Badidae (1 species), Belonidae (1 species), Claridae (1 species), Cichlidae (1 species), Heteropneustidae (1 species), Nandidae (1 species), Notopteridae (1 species) and Siluridae (1 species). Out of 31 species 90.91% species are Least Concern (LC), 3.03% Vulnerable (VU), 3.03 % Near Threatened (NT) and 3.03% are Data Deficient (DD). Habitat loss, over fishing and increase in number of invasive species of plants and fishes are the major threats causing biodiversity loss of fish in the lake.

Keywords: Fish diversity, Conservation, Chichtola lake, Gondia, Cyprinidae, Channidae, Bagridae, Heteropneustidae

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Introduction

The varied weather and physico-geographic topographies underwrite to rich biodiversity. Biodiversity has been viewed in many ways depending upon the perspectives of people from different spheres. In many instances, it has also been referred to "life" or "wilderness" (Winter and Hughes, 1997). Biodiversity affects the capacity of living systems to respond to changes in the environment and is essential for providing goods and services from ecosystems nutrient cycling and clean water (Rahbek and Colwell, 2011). Globally lots of wetlands are under threat (Finlayson *et al*., 1991). An increasing population in India places enormous pressure on natural wetlands and described major causes of wetland loss in the country, agriculture again dominating as the primary cause (Foote *et al*., 1996). The freshwater resources are very precious for the life on our planet. The number of dams, reservoirs, tanks, etc. have significantly increased in last few years. The aquatic ecosystem is important as it contains numerous economically important animals

especially fish which form an important source of protein for human food. The development of fisheries in these fresh water resources needs to be increased through the scientific development (Pawara *et al*., 2014). Fishes form the most diverse group of vertebrates and have importance both as human food and as material for scientific study (Marshell, 2000). Fish diet provides proteins, fat and vitamins A and D. For better knowledge regarding fish and fisheries especially in Maharashtra, it is essential to study the distribution and the availability of fish from lakes, rivers and tanks (Shinde, 2009). Thus, there is need to survey fish fauna associated with different freshwater habitats, which will help in planning methods for their production. The freshwater ichthyofaunal diversity is changing and getting depleted fast as a result of the water pollution, destruction or degradation of habitats and invasion of exotic species (Revenga *et al*., 2005). The water management systems of eastern Vidarbha observed that introduction of high yield species of fishes resulted in increased production till natural fish food was available in the tanks. Year after year the fishing continued, but the aspect of fish food was neglected. Today after 30-40 years of continuous production, the major problem for the fisheries cooperatives is drastically falling production of high yield species. In past the growth of fish was 1-1½ kg in a year but now it is only about 200 g in a year (Rajankar *et al*., 2011). Velankar (2011) has published an article on Village Tanks and Community Based Management in Gondia District, Maharashtra State, India. Raut *et al*. (2021) has documented 62 number of fish species with the title - Ichthyofaunal Diversity and Conservation Perspective of Some Selected Wetlands in Nagzira– Navegaon (NN) Corridor, Gondia District of Maharashtra State, India.

Chichtola Lake (GPS Coordinates 21°12'15.01"N and 80°5'52.39" E; Fig. 1) is located at the periphery of Nagzira Wildlife Sanctuary and one of the most important perennial lake which supports diverse fisheries communities. Present study was carried out (from October 2017 to September 2019) to assess the fish diversity and their status in Chichtola lake of Gondia district, Maharashtra State, India.

Fig. 1: Google map of Chichtola Lake.

Materials and Methods

The present work was carried out for two years from October 2017 to September 2019 in Chichtola lake of Gondia district, Maharashtra. The fish study was carried out on monthly basis in different seasons during the study period. The seasons defined as winter from October to January, summer from February to May and monsoon from June to September. Fishes were collected with the help of local fishermen during their fishing period using different type of nets namely gill nets, cast nets and drag nets. Fishes were brought to laboratory and preserved in 10% formalin solution in separate specimen jars according to the size of species. Small fishes were directly placed in the 10% formalin whereas large fishes were given an incision in their abdomen and preserved. Species identification and confirmation were carrying out with the help of standard keys and books of Jayram (1999) and Talwar *et al*. (1991).

Results and Discussion

The present finding showed that the Chichtola lake is the habitat of 31 fish species from 13 families (Table 1). Some fish species found in this lake have been shown in Figure 2. Cyprinidae was the most dominant family. The family Cyprinidae represents sixteen (16) species followed by

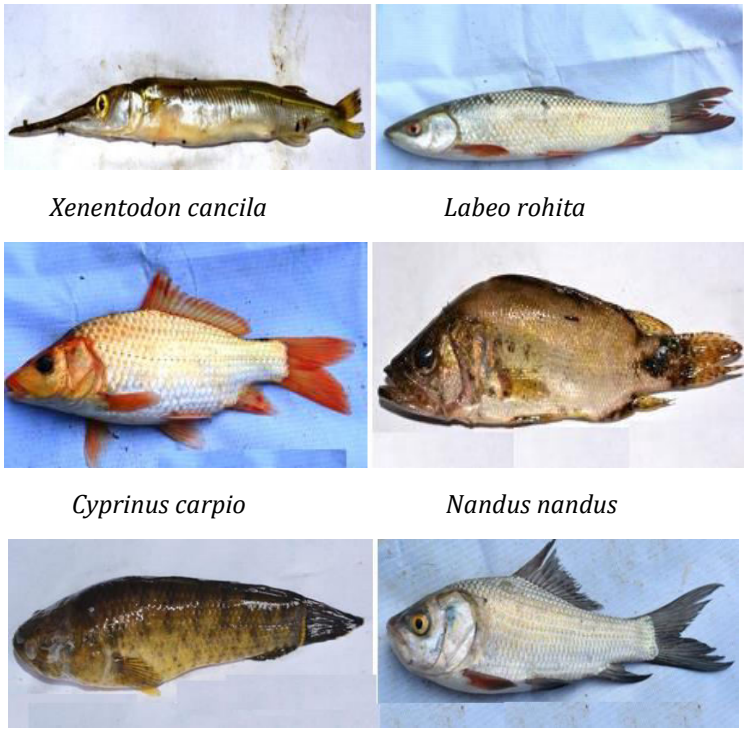
Table 1: Diversity and status of fishes during study period

S. No.	Local Name	Scientific Name	Family	IUCN Status
1	Zamdi	*Parambassis lala*	Ambassidae	LC
2	Koi	*Anabas testudineus*	Anabantidae	LC
3	Rengdya Katwa	*Mystus bleekeri*	Bagridae	LC
4	Jalya Katwa	*Mystus cavasius*	Bagridae	LC
5	Telgi	*Badis badis*	Badidae	LC
6	Chachya	*Xenentodon cancila*	Belonidae	LC
7	Bilona	*Channa gachua*	Channidae	LC
8	Botri	*Channa punctata*	Channidae	LC
9	Dadak	*Channa striata*	Channidae	LC
10	Wagur	*Clarias batrachus*	Clariidae	LC
11	Laltilapia	*Oreochromis niloticus*	Chichlidae	LC
12	Katla	*Catla catla*	Cyprinidae	LC
13	Mrugal	*Cirrhinus mrigala*	Cyprinidae	LC
14	Grass Carp	*Ctenopharyngodon idella*	Cyprinidae	LC
15	Sipnus	*Cyprinus carpio*	Cyprinidae	VU
16	Silver Carp	*Hypophthalmichthys nobilis*	Cyprinidae	DD
17	Rohu	*Labeo rohita*	Cyprinidae	LC
18	Mulki Rohu	*Labeo calbasu*	Cyprinidae	LC
19	Khunus	*Labeo gonius*	Cyprinidae	LC
20	Gadad	*Pethia conchonius*	Cyprinidae	LC
21	Karvali	*Puntius chola*	Cyprinidae	LC
22	Poshti	*Puntius sarana*	Cyprinidae	LC
23	Pershi	*Salmophasia bacaila*	Cyprinidae	LC
24	Molwar	*Amblypharyngodon mola*	Cyprinidae	LC
25	Gani	*Rasbora daniconius*	Cyprinidae	LC
26	Nevara	*Labeo boggut*	Cyprinidae	LC
27	Kanas	*Labeo fimbriatus*	Cyprinidae	LC
28	Singur	*Heteropneustes fossilis*	Heteropneustidae	LC
29	Dukkar	*Nandus nandus*	Nandidae	LC
30	Bhadar	*Notopterus notopterus*	Notopteridae	LC
31	Waranja	*Ompok bimaculatus*	Siluridae	NT

DD- Data deficient; LC- Least concern; NT- near threatened; VU- Vulnerable

Channidae (3 species), Bagridae (2 species), Ambassidae (1 species), Anabantidae (1 species), Badidae (1 species), Belonidae (1 species), Claridae (1 species), Cichlidae (1 species), Heteropneustidae (1 species), Nandidae (1 species), Notopteridae (1 species) and Siluridae (1 species) (Fig. 3). Out of 31 species 90.91% species are Least Concern (LC), 3.03% Vulnerable (VU), 3.03 % Near Threatened (NT) and 3.03% are Data Deficient (DD) (Fig. 4). Habitat loss, over fishing and increase in number of invasive species of plants and fishes are the major threats causing biodiversity loss of fish in the lake. The fishery of lake Chichtola is of great importance to the surrounding villages where protein is scarce. Fishing is the greatest simple economic activity depended upon by the communities surrounding the lake and it is overfishing perceived to be one of the major threats to biodiversity.

The fishermen should make aware about scientific training for fishing which may help in high yield of fish production in the Chichtola lake. Fishing during reverse fish migration should be banned by fishery authorities and fishing cooperative societies. There is a rich diversity of



Xenentodon cancila *Labeo rohita*

Cyprinus carpio *Nandus nandus*

Channa punctata *Catla catla*

Fig. 2: Pictures of some fishes of Chichtola lake.

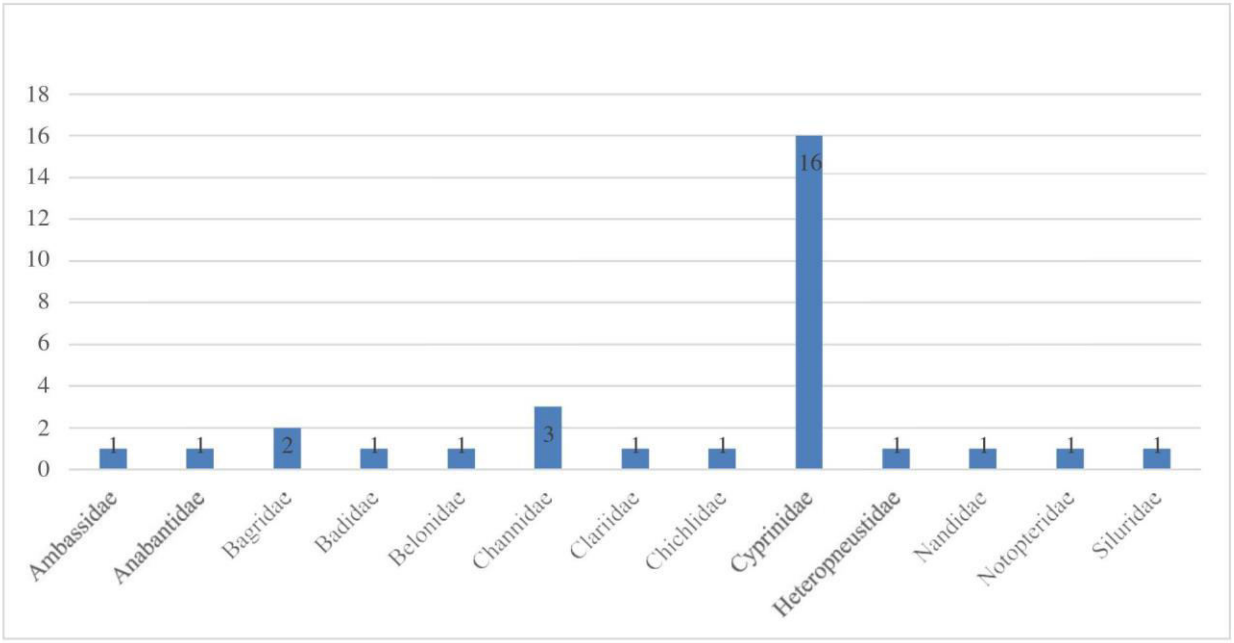


Fig. 3: Family-wise distribution of fish species of Chichtola lake.

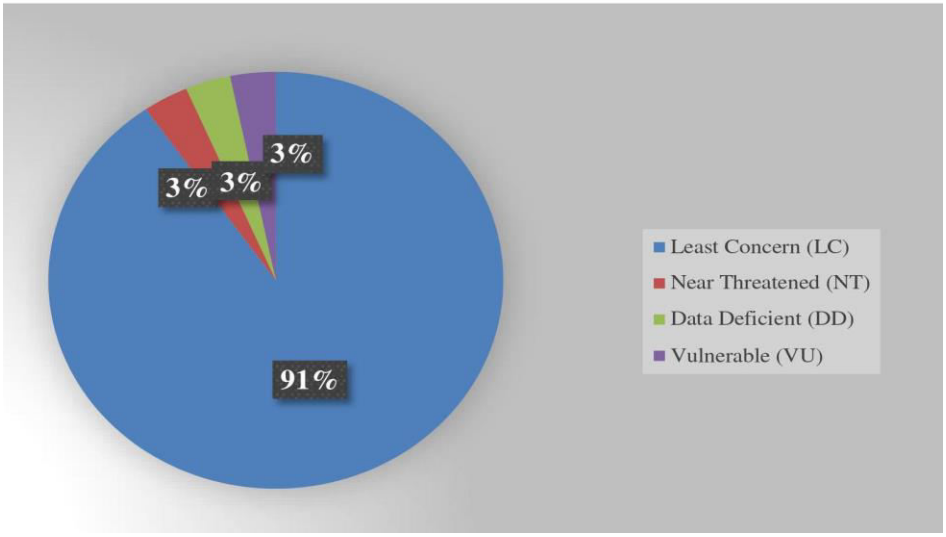


Fig. 4: IUCN Status of fish species of Chichtola lake.

fish in Chichtola lake but majority of the fish diversity is threatened by anthropogenic activities. Ichthyofaunal diversity and distribution is useful for designing and implementing conservation strategies. Fishery Department should provide scientific training to fishermen, provide facilities to fish farmers and provide loan on subsidized basis which may help in high yield of fish species and there is an urgent need to follow legislative and other measures for conservation of fishery.

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References

Finlayson M. and Moser M. (1991) Wetlands. International Waterfowl and Wetlands Research Bereau, Oxford University Press.

Foote A, Pandey S and Krogman N. (1996) Processes of wetland loss in India. Environ Conserv. 23: 45-54.

Jayram K. (1999) The fresh water fishes of the India region, Narendra Publishing House, Delhi.

Marshell N. (2000) Fish life environment and diversity. Agribios (India) pp. 347.

Pawara R., Patel N and Patel Y. (2014) Review on fresh water fish diversity of Maharashtra (India). J Entomol Zool Stud. 2(5):358-364.

Rahbek C and Colwell RK. (2011) Biodiversity: species loss revisited. Nature 573: 288-289.

Rajankar M. (2011) Traditional water system of eastern Vidarbha-II: Current status South Asia Network on Dams, Rivers and People, 1-4.

Raut MB, Chintaman JK and Laxman PN. (2021) Ichthyofaunal diversity and conservation perspective of some selected wetlands in Nagzira – Navegaon (NN) Corridor, Gondia district of Maharashtra State, India. Intern J Innov Sci Engineer Technol.. 8(5): 84-94.

Revenga C, Campbell I, Abell R, DeVilliers P and Bryer M. (2005) Prospects for monitoring freshwater ecosystems towards the 2010 targets. Philosop Transac Royal Soc B Biol Sci. 360:397-413.

Shinde S, Pathan T, Raut K, Bhandare R and Sonawane D. (2009) Fish biodiversity of Pravara river at Pravara Sangam district Ahmednagar, (M.S.) India. World J Zool. 4(3): 176-179.

Velankar A. (2011) Village tanks and community based management in Gondia district, Maharashtra State, India. Intern Insti Social Stud. 1-49. http://hdl.handle.net/2105/10780

Winter BD and Hughes RM. (1997) Biodiversity. Fisheries (Bethesda) 22(1): 22-29.

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Contents

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Adopter Categories of Tribals in Adopting Farm Technology

(A Study undertaken in Arjuni Morgaon block of Gondia district in Maharashtra State)

N. Gupta

Research Student P.G.T.D. Home Science, RTMNU, Nagpur

Abstract

India is home to a large number of tribes with population of about 70 million. Due to welfare programmes tribal communities made themselves conscious about their own enlistments. They have becomemore vibrant with new experience and are moving out of their isolation on to paths of development in termsof adoption of new Farm technology. Adoption is the acceptance and the continued use of an innovation. There are five established adopter categories such as Innovator, Early Adopters, Early Majority, Late Majority and Laggards. Adoption of innovation refers to the decision to apply an innovations and to continueto use it. The study concludes that the respondents belong to the 'Innovator category'.

Key words : Innovation, adopter categories, Tribes, Farm technology.

Introduction

"India is the home to a large number of indigenous people, who are still untouched by the life style of the modern world. With more than 84.4 million, India has the largest population of the tribal people in the world. These tribal people also known as the 'Adivasis' are the poorest in the country, who are still dependent on hunting, agriculture and fishing."

Due to welfare programme tribal communities also made themselves conscious about their own essential enlistments. Now tribals are engaged in struggle for survival.

They seek identity, autonomy, equality and empowerment.

They have become more vibrant with expectations and are moving outof their isolation on to paths of development in terms of adoption of new Farmtechnology.

Innovation

An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behaviour is concerned, whether or not an idea is 'Objectively' new as measured by the lapse of time since its first use or discovery. (Kalam A. 2006)

Adoption

Adoption means that a person does something differently than what they had previously performed. The key to adoption is that the person must perceive the idea behaviour, or product as new or innovation. it is through this that diffusion is possible.

Diffusion

Diffusion is the process by which an innovation is communicated through certain overtime among the members of a social system. (Bohlen, Joe M.-1957)

- **Adoption of Innovation** – Adoption of an innovation is an act which involves thought, decisions and action. In the process of adoption of an innovation an individual passes mainly through five stages viz. awareness, interest, evaluation, trial and adoption.

- **Adopter Categories** – There are five established adopter categories, and while the majority of the general population tends to fall inthe middle categories, it is still necessary to understand the characteristics of the target population when promoting an innovation. There are different adopter categories.

- **Innovator** – These are people who want to be the first to try the innovation. They are venturesome and interested in new ideas.

- **Early Adopters** – These are peopl who represent opinion leaders. The enjoy leadership roles, and embrac change opportunities.

- **Early Majority** – These people ar rarely leaders but they do adopt new ideas before the average person.

- **Late Majority** – These people are skeptical of change and will only adoptan innovation after it has been tried by the majority.

- **Laggard** – These people are bound by tradition and are very conservative.They are very skeptical of change and are the hardest group to bring on board.

Adoptional Behaviour

The importance of farmers adoption of new Farm technology has longbeen of interest to agricultural extension and economists. Several parameters have been identified as influencing the adoption behaviour of farmers from qualitative and quantitative models for the exploration of the subject. Social scientists investigating farmers adoption behaviour has accumulated considerable evidence showing that demographic variables technology technology characteristics, infor-mation sources knowledge, awareness attitude and group influence affect adoption behaviour. (Chaudhari M.C.& Panjabi + 2005)

Technologies are promoted to increase yields and incomes, save time, improve food and nutritional, security, health status and even empower women. The technology adoption leads to many farm technology even for those that are promoted for women.

Tribal characteristics

The important characteristics of a tribal are Definite Territory, Common Language, Blood Relationship, Endogamy, Common name, Political organization, Sense of Unity, Common Dialect, Protection Awareness, Common Culture, Distinct Political Organization, Egalitarian Value. etc.

Adoption of Technology

Technology in a limited aspect has been understood as applying scientific knowledge to industrial process. In a broader sense, technology means application of science to practical aim of life. It refers to the transformation of scientific laws into machines, tools, mechanical devices, instruments, innovations procedure and techniques to attain tangible ends or manipulative environment for practical purposes." (Nabih M.: 1997)

Based on the above definition, we can say that, technology adoption has a very important role in human life where new ideas and techniques can be learned and used in our life. People participate in this process and adopt new ideas or techniques and can improve their progress.

Technology adoption can be said as a process that begins with awareness of the techniques and progresses through a series of steps that end in appropriate and effective usage of the technology.

Farm Technology

Technology has played a big role in developing the agricultural industry. Farm technology is the collection of techniques, skill, method and processes used in the production of goods and services or in the accomplishment of objectives, such as scientific investigation.

Agricultural technology refers to technology for use of Machines on farmsto help with farming. Agriculture is the art and science of crop and livestock production.

Human beings are addicted to technology. It plays an important role in every person's life. Whether in the field of education, health, agriculture & communication,technology changes the reality of life, saves time and saves labor.

Objective of the Study

The study is being undertaken with the following objectives.

1. To study educational, social and economic-status of the selected respondent.
2. To identify the sources of motivation that led the respondents to adoptTech-nologies.

3. To study the problems and difficulties faced by the tribal women in adopting new technologies.

Significance

The government and NGOs efforts in the field of tribal development have in many cases not been successful, The reason being lack of knowledgeof the adoptional behaviors of tribal's. The conclusions drawn from the studycan be of importance to policy makers in the government, NGO and university departments engaged in the field of tribal development.

Hypothesis

Higher socio economic level, educational levels and awareness and easy access to technology are the adoptional factors of innovations among tribal's woman.

Methodology

The present study was conducted in five tribal villages which are Kesori Navegaon bandh, Adarsh Dhabetekadi Mahagaon, Gothan-gaon of Arjuni Morgaon block in Gondia District. Thirty respondents were taken under consideration from 5 areas, making a total of 150 samples. Convenience sampling was used in which only those people who have adopted Farm technology were selected. Survey method was used to collect data. Interviewschedule was the tool used to collect data, which was further analyzed with the help of percentage method.

Result

The following table reveals the socio-economic status of respon-dents.

Table : 1
Socio-Economic Status

Sr. No	Particulars		n=150
1.	**Age of Respondents**		
	Age Group	No.of Respondents	Percent
	Less than 20 years	30	20.00%
	21 – 30 yeas	60	40.00%
	31 – 40 years	40	26.67%
	41 – 50 years	10	6.67%
	51 and above	10	6.67%

Sr. No	Particulars		n=150
2.	**Educational Level of The Respondents**		
	Level	No.of Respondents	Percent
	Illiterate	20	13.33%
	Primary	20	13.33%
	Middle School	50	33.33%
	Graduate	30	20.00%
	Post Graduate	30	20.00%
3	**Monthly Income of Respondents**		
	Level of income	No. of Respondents	Percent
	Less than 2000/-	20	13.33%
	2001 – 4000	40	26.67%
	4001 – 6000	30	20.00%
	6001 and above	60	40.00%
4.	**Participation of Respondents in Social events/festivals in community**		
	Activities	No. of Respondents	Percent
	Haldi Kumkum	40	26.67%
	Mahila Bachat Gat	60	40.00%
	Mahila Melava	30	20.00%
	Mahila Bhajan Mandal	20	13.33%
5.	**Live Stock Particulars of Respondents**		
	Category of Animal	No. of Animal	Percent
	Cow	100	66.67%
	Buffaloes	10	6.67%
	Goats	20	13.33%
	Bullocks	10	6.67%
	Hen	10	6.67%

It is revealed from Table 1 that 40% of respondents belonged to 21-30years of age followed by 31-40 years (26.67%). Maximum (33.33%) respondents have completed their education till middle school. Maximum (40%) of respondents obtained monthly income of Rs.6001 & above. (40%) of respondents were participated in Mahila Bachat Gat, a social get together of women. Haldi Kumkum, Mahila Bhajan Mandal, Maila Melava are also social occasions where they come together. Maximum (66.67%) ofrespondents had cows.

The following table revealed the responses regarding discussions to adopt technology

Table : 2
Responses regarding discussions to adopt technology

n = 150

Responses	No. of respondents	Percent
Family Members	20	13.33%
Friends	30	20.00%
Extension worker	100	66.67%

Maximum (66.67%) of respondents consulted with Extension workers. The following table revealed the motivation for technology

Table : 3
Motivation for Technology

n =

Responses	No. of respondents	Perce
Extension worker	60	40.00
Media	40	26.67
Experts	20	13.33
Experienced neighbours		

Maximum (40%) responde received guidance from extensi workers and (26.67%) of respond from Media.

The following table revealed t difficulties in accepting thistechnolog

Table : 4
Difficulties in Accepting this technology

n=1

Difficulties	No. of respondents	Percen
Negative thoughts	20	13.33
Incomplete guidance to people	30	20.00
Lack of Knowledge	100	66.67

Maximum (66.67%) of respond difficulties were lack of knowle about technology.

Conclusion

Majority of the respondents were educated and maximum respondents earned an income of rupees 6001 & above per month and regarding exposure to technology they received from extension workers and media.

Since most of the respondents were active socially and economically strong; it can be conveniently concluded that they belong to the 'Innovator category'.

Inference

Majority of the respondents of the study, "Adopter categories of TribalsIn Adopting Farm Technology" were from the innovator category because they exhibited characteristics of innovators like belonging to a higher socio-economic status, being educated, & socially active willingness to adopt new ideas.

Hypothesis

The hypothesis, "higher Socio economic and educational level and awareness and easy access to technology are the adoption factors of innovations among tribal women" is found to be true in the study and therefore stands accepted.

References

1. Kalam Abdul (APJ), "Innovation is the key Yojana - A Journal of rural development", Published by Umakant Mishra Director, Publication Division, Ministry of I & B, Govt. of India, Suchana Bhawan New Delhi 110064, Feb. 2006, Vol.50-1, pp.2-3,
2. Barotia P.; "Adaptation by improved animal Husbandry practices by the tribal women promoted under NAIP" Raj Journal Extension Education PP-20-21
3. Bohlen, Joe M : "The Diffusion process" (Special Report No. 18, Agriculture Extension Service Lower State College.) May 1957 PP 56-77
4. Bsanyte J, Salickalite R., "Successful diffusion and Adoption of Innovation as a Means to increase competitiveness of Enterpises", Kauno Technolgies Univers-itetas, K.Donducioing 73, Lt.440 Kaunas, Feb.2008, Vol.No.1(56).
5. Choudhari M.C.& Panjabi : "Adoption behaviour of tribal and non-tribal farmers regarding improved social forestry practices", Journal of Rural India, Vol.XXXIX,No.3,Pp.140-141, July 2005
6. Nabih Mohamed I., "Conceptual Issues in the study of Innovation 'Adoption Behaviour' Advances in Consumer Research", 1997, Volume 24, p.14.
7. Gupta S.V., "Literacy and Technology for Rural Development – Mutual Relationship" Kurukshetra – A Journal on Rural Development, October 2001(Annual Issue), p.28
8. Tribes of India – www.ecoindia.com

Address for correspondence
email : nitagupta169@gmail.com

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Unveiling The Spiritual Odyssey: Women's Quest For Identity And Enlightenment In The Novels Of Ruth Prawer Jhabvala

Rakesh Y Meshram
Officiating Principal and Assistant Professor
Saibaba Arts and Science College Parseoni dist Nagpur

Abstract: *Ruth Prawer Jhabvala, the acclaimed novelist and screenwriter, is known for her insightful exploration of complex human relationships and cultural clashes. Born in Germany, raised in England, and eventually settling in India, Jhabvala's diverse background deeply influenced her works. One recurring theme found in her novels is the quest for spiritual identity. Through the journey of her character, Jhabvala delves into the intricate layers of human existence, examining the tension between Eastern and Western values, the search for meaning and purpose, and the complexities of spiritual awakening. This research paper aims to analyze Jhabvala's novels in the context of the quest for spiritual identity, exploring the struggle of characters, their encounters with different belief systems, and the ultimate realization of self-discovery and enlightenment.*

Keywords: Identity, India, spiritual, women, traditional, religion, human, characters, novels.

Introduction: Ruth Prawer Jhabvala was an exceptional writer and screenwriter known for her captivating exploration of human relationships and cultural complexities. Born on May 7, 1927, in Cologne, Germany, Jhabvala went on to become a celebrated author with Indian-British roots. Her personal background and storytelling prowess shaped a prolific career that spanned over five decades.Ruth Prawer Jhabvala's unique perspective as an immigrant, coupled with her profound understanding of the human condition, allowed her to craft compelling narratives exploring universal themes of love, cultural clashes, and the search for identity. Her life and works continue to inspire readers and film enthusiasts, leaving an enduring legacy in the realms of literature and cinema. Ruth Prawer Jhabvala's literary contributions have garnered critical acclaim, with her novels serving as windows into the interplay of cultures, social dynamics, and existential dilemmas. Amidst the various themes explored in her works, the quest for spiritual identity emerges as a central motif. Jhabvala deftly weaves narratives that delve into the profound search for meaning and the clash between traditional Eastern philosophies and Western ideologies.

Peeping In:

In Jhabvala's novels, women find themselves caught in the restrictive webs of societal norms and expectations. They grapple with gendered roles and the limitations imposed upon them, often leading to a sense of confinement. In "Heat and Dust", the protagonist Olivia is entrapped in a loveless marriage, compelled to adhere to the rigid expectations of British colonial society in India. Similarly, in "The Householder", Prem's wife, Indu, experiences a lack of autonomy within the confines of traditional Indian society.

Jhabvala's female characters frequently confront the weight of cultural traditions and societal pressures. In "A New Dominion", Shanti battles against her orthodox upbringing and societal constraints as she navigates her artistic ambitions. The novel "Esmond in India" portrays the predicament of Englishwomen in India, who are simultaneously viewed as outsiders and exoticized objects by both Indian and British societies.

Identity formation and the quest for independence: These are the recurring themes in Jhabvala's works. Her female characters confront a struggle to reconcile their personal desires and societal expectations, often leading to internal conflicts. In "The Nature of Passion",

Monisha grapples with her Indian heritage and Western upbringing, struggling to establish her own identity amidst conflicting cultural influences.

Jhabvala's exploration of identity also encompasses the immigrant experience. In "In Search of Love and Beauty", Rosa, an immigrant from Eastern Europe, faces the predicament of assimilating into a foreign culture while preserving her individuality. The protagonist of "Three Continents", Amita, must navigate the cultural divide between her Indian background and the Western society she encounters, highlighting the complexities faced by women of multicultural backgrounds.

Jhabvala presents intricate relationships between women and their partners, families, and friends, showcasing the dynamics that shape their predicament. In "Heat and Dust", the parallel narratives of Olivia and Anne, set in different time periods, highlight the complexities of female relationships across generations. The mother-daughter dynamic in "The Householder" further illustrates the interplay between love, duty, and sacrifice.

Jhabvala also examines the power dynamics within marriages and the struggles for agency. In "Get Ready for Battle", Leela navigates a marriage marked by societal expectations and her husband's domineering nature. The novel "Shards of Memory" explores the predicament of Tara, who grapples with her husband's infidelity and her own emotional journey.

Cultural Clashes and the Search for Meaning: Jhabvala's characters often find themselves straddling the line between Eastern and Western cultures, resulting in a profound quest for meaning and purpose. Through examples from novels such as "Heat and Dust" and "A Backward Place",one can explore how characters like Olivia and Jane embark on journeys that expose them to contrasting belief systems, forcing them to confront their own identities and question their place in the world.

Jhabvala's works often feature characters caught between different cultural worlds, grappling with their own spiritual identity. Through her works, she explores the tensions between Eastern and Western cultures, addressing the clash between traditional values and modernity. Through her characters, Jhabvala portrays the internal struggle to reconcile conflicting belief systems and find a sense of spiritual grounding.

Exploring Eastern Philosophies: Jhabvala's novels present an intricate tapestry of Eastern philosophies, delving into spiritual practices such as Hinduism, Buddhism, and Sufism. By analyzing characters like Hari Kumar in "The Jewel in the Crown" and Ravi in "In Search of Love and Beauty", we will examine the protagonists' encounters with these belief systems and how they grapple with their own spiritual awakening, highlighting the conflicts and synergies that arise.

Religion and tradition play significant roles in Jhabvala's novels, shaping the spiritual identities of characters. In "Esmond in India" and "Shards of Memory", she explores the impact of Hinduism, Islam, and Christianity on individuals' lives, highlighting the search for meaning within religious frameworks. Jhabvala delves into the rituals, customs, and practices that shape spiritual journeys of her characters, emphasizing the intricate connections between culture, religion, and personal identity.

Western Ideologies and Existential Crises: In addition to Eastern philosophies, Jhabvala's characters are also influenced by Western ideologies. Through works such as "A Stronger Climate" and "Shards of Memory", she explored how characters like Anne and Siegfried navigate the clash between modernity and tradition, materialism and spirituality, and the resulting existential crises they experience in their pursuit of spiritual identity.

Jhabvala's characters often experience disillusionment with their surroundings, leading them to embark on a quest for transcendence. In "In Search of Love and Beauty" and "A Backward Place", she portrays individuals seeking something beyond their immediate reality, a higher purpose or spiritual awakening. Jhabvala skillfully presents the yearning for connection with

the divine, the search for beauty in a world marred by disillusionment, and the transformative power of these quests.

Women's Search for Self-Discovery: Jhabvala's female characters often find themselves at the center of the quest for spiritual identity. Focusing on the novels like "Esmond in India" and "East into Upper East",one can examine how characters like Sita and Harriet challenge societal norms, negotiate their identities, and seek spiritual fulfillment within the constraints of their gender and cultural expectations.

Jhabvala explores the profound influence of love and relationships on the spiritual journeys of characters. In "The Householder" and "Heat and Dust", she depicts the transformative power of romantic relationships and the spiritual growth they can catalyze. Through the exploration of love, intimacy, and connection, Jhabvala delves into the depths of human experience, highlighting the potential for personal and spiritual evolution.

The Intersection of Identity and Place: Place, often a significant factor in Jhabvala's novels, becomes an integral part of the characters' spiritual exploration. Whether it is the Indian subcontinent, Europe, or the United States, Jhabvala's characters are profoundly influenced by the environments in which they find themselves. Through vivid descriptions of landscapes and cultures, Jhabvala captures the interplay between physical surroundings and the formation of spiritual identity.

The Realization of Self and Enlightenment: Throughout Jhabvala's novels, characters undergo transformative experiences that culminate in self-realization and spiritual enlightenment. By examining the journeys of characters like Sarah in "Three Continents" and Monika in "A Lovesong for India", this section will explore the ultimate outcomes of the quest for spiritual identity and the profound impact it has on the characters' lives.

Jhabvala's characters frequently face internal conflicts that drive them towards self-realization. In "A Stronger Climate" and "Out of India", she examines the restlessness and inner turmoil experienced by individuals yearning for spiritual fulfillment. Jhabvala delves into the depths of their psyche, portraying their struggles, self-doubt, and eventual breakthroughs, illustrating the transformative power of self-discovery and self-acceptance.

Conclusion:

Ruth Prawer Jhabvala's novels intricately explore the quest for spiritual identity, presenting a rich tapestry of cultural clashes, existential crises, and personal transformations. Through the journey of her characters, Jhabvala illuminates the complexities of the human experience and the universal search for meaning and purpose.

By weaving together Eastern and Western ideologies, Jhabvala offers a nuanced perspective on spiritual awakening and self-discovery. Her novels serve as poignant reminders that the quest for spiritual identity is not confined to any particular culture or geography but is a deeply human endeavour that transcends boundaries.

Throughout her body of work, Ruth Prawer Jhabvala invites readers to embark on a spiritual odyssey alongside her characters. As we explore the intricate layers of human existence, the tensions between Eastern and Western values, and the complexities of spiritual awakening, we gain a deeper understanding of the universal quest for identity and enlightenment. Jhabvala's insightful exploration of women's struggles within societal structures, cultural expectations, and personal relationships sheds light on the multifaceted challenges they face on their spiritual journeys.

In the nutshell, Ruth Prawer Jhabvala's novels provide a compelling exploration of women's quest for identity and enlightenment. Through her perceptive portrayals of complex characters and intricate social dynamics, Jhabvala delves into the challenges women encounter as they navigate cultural clashes, societal norms, and personal relationships. Her works illuminate the search for meaning and purpose, the tensions between Eastern and Western values, and the

transformative power of self-discovery and spiritual awakening. By delving into the spiritual odyssey of women in her novels, Jhabvala offers profound insights into the human condition and the universal quest for identity and enlightenment.

Works Cited:

Bhatnagar, O.P. "Commonwealth Literature: Genesis and Bearings", *Indian Readings in commonwealth Literature*. New Delhi: Sterling Publications, 1985. Print.

Crane, Ralph J. *Ruth Prawer Jhabvala*. New York: Twayne, 1992. Print.

Hayball, Connic. "Ruth Prawer Jhabvala's India", *The Journal of Indian Writing in English*, 9, No.2. July 1981.

Jhabvala, Ruth Prawer. *The Nature of Passion*. London: George Allen & Unwin Ltd. 1956. Print.

---. *Esmond in India*. London: John Murray Publishers Ltd, 1978. Print.

---. *The Householder*. London: John Murray Publishers Ltd, 1973. Print.

---. *Get Ready for Battle*. USA: Penguin Books, 1984. Print.

---. *A Backward Place*. London: John Murray Publishers Ltd., 1965. Print.

---. *A New Dominion*. London: Granada Publishing Ltd., 1972. Print.

---. *Heat and Dust*. London: Futural Publications, 1984. Print.

---. *A Stronger Climate*: Nine Stories. London: Murray, 1968; New York: Norton, 1968. Print.

---. *An Experience of India*. London: Murray, 1971; New York: Norton, 1972. Print.

---. *In Search of Love and Beauty*. London: Murray, 1983; New York: Morrow, 1983. Print.

Meera Bai, K. "Women's Voices", *The Novels of Indian Women writers*. Prestige Books, 1976.

Parameswaran, Uma. *Representative Indo-English Novelists*. New Delhi: Vikas Publishing House, 1976. Print.

Prasad, Amarnath. S.K. Paul.*Feminism in Indian Writing in English*(1st Edition). New Delhi: Sarup & Sons, 2006.

Singh, R.S. *Indian Novel in English*. Delhi: Arnold-Heinemann, 1977. Print.

Shirwadkar, Meena. *Image of Women in the Indo-Anglian Novel*. New Delhi: Sterling Publishers, 1979. Print

Varghese, Paul C. "A Note on Esmond in India", *Journal of Indian Writing in English*, July 1976. pp. 33-7.

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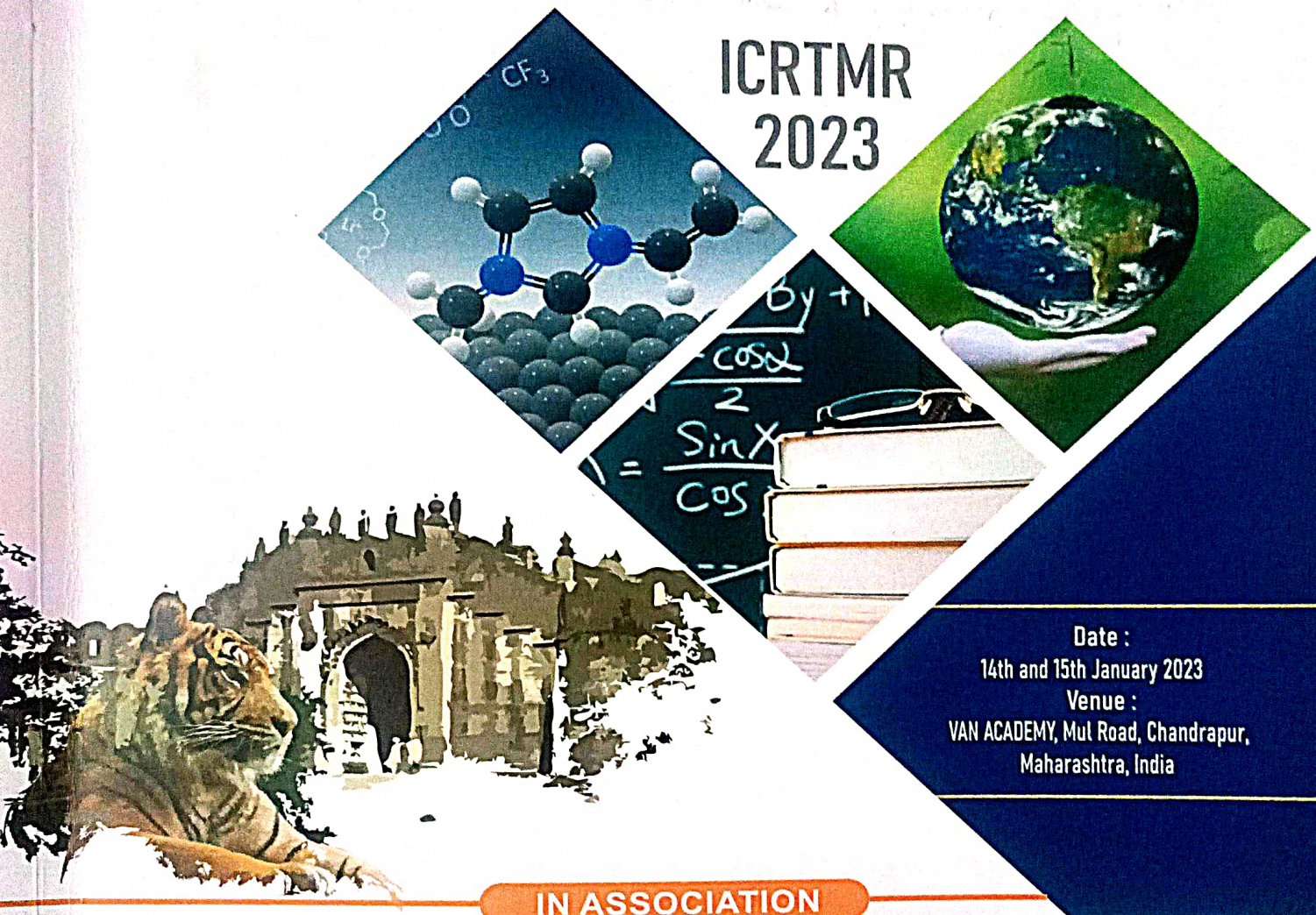

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ASSESSING THE WATER QUALITY INDEX (WQI) OF LOHARA VILLAG CHANDRAPUR DISTRICT, CENTRAL INDIA

NazninTabassum A.J. Kazi[1] and Mahendra G. Thakare[2]

1. IHLRSS in Environmental Science, SardarPatelMahavidyalaya, Chandrapur. Email Id :-nazninkazi82@gmail.com,
2. Department of Environmental Science, Dr. Khatri Mahavidyalaya, Tukum, Chandrapur

Abstract : Water quality index alters the complex water analysis data into single digit that present the ov quality of water based on the parameters at that particular place and time. The groundwater samples collected during the three seasons from the five sites of Lohara village, Chandrapur district. Analysis of w parameters were carried out in the Institute of Higher Learning, Research and Specialized Studie Environmental Science, Sardar Patel Mahavidyalaya, Chandrapur. For the endurance of any species on earth the most essential necessity is water. This requirement is fulfilled through surface and groundwate India a major portion of population i.e. approximately 80% depends on the groundwater and is considere one of the major sources for various purposes. The present study focus on the physical and chem parameters of the groundwater of Lohara village located in Chandrapur District. The samples were colle from the five different sites during the three seasons and their physical and chemical parameters analyzed. On the basis of the results, the water quality index was determined. In water quality index, v below 25 indicates the water quality as excellent, value between 26-50 represent good water quality, an 51-75 indicates poor water quality, very poor water quality values exist between 76-100, while above value in the water quality index shows that the water is unsuitable for drinking purpose. It is concluded tha seasonal variation slightly influenced the physico-chemical characteristics of study area. According to Water quality Index, it is revealed that in all the three seasons that are summer, monsoon and winter, the w quality was found to be 103.29, 97.47 and 106.46 respectively indicating in summer and winter groundwater was unsuitable for drinking while in monsoon the quality of groundwater was very poo Lohara village, Chandrapur district.

Keywords: Water Quality Index, Groundwater, Seasons variation, Lohara village, Chandrapur district.

IMPACT OF BIOGAS TECHNOLOGY ON SOCIO-ECONOMIC EMPOWERMENT OF TRIBAL WOMEN

Neetadevi K. Gupta

Research Scholar, Research Student, P.G.T.D.Home Science, R.T.M.N.U.Nagpur
Email Id :-nitagupta169@gmail.com.

Abstract : Tribal people constitute 8.6 percent of India's total population, about 104 million people accor to the 2011 Census (68 million people according to the 1991 Census). Due to welfare programmes t communities made themselves conscious about their own existence. They have become more vibrant with experience and are moving out of their isolation on to paths of development in terms of adoption of Bi technology. The study was conducted in Navegaon Bandh of Block of Arjuni Morgaon in Gondia distri Maharashtra State. 30 women were selected by convenience sampling techniques. Data was gathered by tool interview schedule through survey method and analyzed by percentages. Respondents had higher so economic, awareness and women empowerment through Biogas technology.

Keywords: Socio-Economic Status, Tribal People, Biogas technology, Adoption of Innovation, Women Empowerment.

INTERNATIONAL CONFERENCE
ON RECENT TRENDS IN MULTI-DISCIPLINARY RESEARCH

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ICRTMR 2023

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Environmental Impacts of Coal-Mines of Maharashtra State: A Study of Geography

Y.S.Nagarale*

Department of Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, India

Research Article

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***For Correspondence:** Y.S.Nagarale, Department of Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, india

E-mail: yogendra01nagarale@gmail.com

Keywords: Coalmines; Environment; Pollution; Land degradation

ABSTRACT

Coal has many important uses worldwide. The most significant uses of coal are in electricity generation, steel production, cement manufacturing and as a liquid fuel. Steam coal is also known as thermal coal. It is mainly used in power generation. Coal plays a vital role in electricity generation worldwide. Coal-fired power plants currently fuel 38% of global electricity and, in some countries; an even higher percentage. India is the third largest producer of coal in the world. Furthermore, non-coking coal reserves make up about 85% while coking coal reserves are the remaining 15%. The move broke the monopoly over commercial mining that state owned Coal India has enjoyed since nationalisation in 1973.Yavatmal, Chandrapur and Nagpur districts of Vidarbha in Maharashtra are famous for coal mines. Moving the land of Vidarbha, coal mines are being replaced. In the last ten years, this new district of Vidarbha has created new colonies and is being reformed. The coal mines have resulted in Environmental factors. Coalgamation affects the area of land, forests, humans, water and agriculture. The coal mines cause pollution in the environment. Vidarbha coal is a kind of bituminous coal Large quantities of thermal power plants have been created in the districts of Chandrapur and Nagpur, due to the large number of coal stocks in Vidarbha. The result of the coal mines is sustainable for Vidarbha. The coal mines and environment in the district are damaged.

INTRODUCTION

Coal is a major energy resource in India. Coal is used in the world to produce electricity. 76% of electricity in India is due to coal-based thermal power plants. Coal is a traditional energy source, which has been built on Earth before millions of years ago. It is estimated that India will provide coal to the centuries coming up. There is a coal mine in which coal stocks are found. Coal mining in India is in the possession of the Coal Ministry of the Government of India. Coal India Limited is a Government undertaking Company and it is situated in different directions of India. Yavatmal, Nagpur and Chandrapur district in Vidarbha, Maharashtra. These coalmines are headed by Western Coalfield Limited. Coal is excavated from the coal mines in Vidarbha region, Western Coal Field Limited. Increasing industrialization: Increasing coal mines cause environmental and social problems. If there is a coal mines in a district, then there is loss of adulthood and Environment. Coal mines in the area of coal reservoirs are influenced by influencing life. Due to the increasing impact of coal mining, the transfer of agricultural land to coal fields was in coal mining [1]. The environment is affected by various factors. Many problems are being generated by the use of coal and excessive use of coal for industrial purposes. The environment is affected by various factors. Many problems arising from the overuse of power generation and the use of coal for industrial production. India is a developing country and it is not possible to impose ban on coal in this country. It is necessary to limit the use of coal and use other resources as a substitute for coal, due to the expansion of coal mines in Chandrapur, Nagpur and Yavatmal districts in Vidarbha, it is necessary to study the consequences of environmental impact [2].

Maharashtra is an important state in India. The Maharashtra State is on the west side of India. In the Maharashtra state of Vidarbha, there is large number of coal reserves of Gondwana period. It is a charcoal container in Yavatmal, Nagpur and Chandrapur districts in the valley of the Wardha River and in the Valley of Kanhan River. The stock of coal is in the north east of Vidarbha in Maharashtra. This coal area is found between 200 North latitude to 210 north latitude and 780 east longitudes to 790 east longitudes [3]. The district of Vidarbha finds 5000 million tonnes of coal reserves. Vidarbha under Western Coalfields Limited, Indian Miniratna company, Wani North Area and Wani Area in Wani taluka, Chandrapur Area, Majri Area in Chandrapur district and Nagpur area and Umred area in Nagpur district. In Chandrapur district Chandrapur, Ballarpur, Warora , Majari, and Ghuggus have created coal mines. In Nagpur district, coal mines are found in Kamathi, Umred and Parasivani talukas. Due to the high quality coal found in Wani taluka in Yavatmal district, Wani city is called 'Black Diamond City'. Chandrapur city is called 'Black Gold City'. In this district of Vidarbha, coal is excavated from many open coal mines and underground coal mines.

Objectives

The main objective of this research study is to study the coal mines in Vidarbha, study the impact of coal mines on the environment and to study the coal mining pollution.

MATERIALS AND METHODS

The study of information collection and research methodology is based on Primary and secondary sources of information. The primary information is collected from various coal fields in Vidarbha. Coal mining in the coal field has been monitored to study the impact of environment and human settlement [4]. Some information is collected through interviews and observations. Secondary information collected for the magazine is from Western Coalfield

Limited's Wani Area, Wani North Area, Chandrapur Area Ballarpur Area, Majri Area, Nagpur Area and Umred Area. Information is also obtained from Nagpur, Chandrapur and Yavatmal District Collector office, Gram Panchayat office and other government offices. Information has been collected from some of the most important sites on the basis of computer support. Through field monitoring and statistical method, it is used in an inspection way to analyze information collected. The computer has been taken to analyze the statistical data, which has created various tables and graphs [5].

Analysis

According to the analysis, coal is extracted from several coal mines of Western Coalfield Limited according to the coal field in Yavatmal, Nagpur and Chandrapur districts.

There are two coal fields in Wani taluka and Wani North area in Wani taluka in Yavatmal district. In this, under Wani Area, 1) Kolgaon (OC) (2) Mungoli (OC) 3) Niuljai (OC) are coal mines. Under Wani North Area (1) Bhandewada (UG) (2) Ghonsa (OC) (3) Kolarpimpari (OC) (4) Junad (OC) coal blocks come [6].

Under Ballarpur area

1) Ballarpur (OC and UG) 2) Saasti(UG and OC) 3) Pauni(OC) are coal mines.

Under Chandrapur area

1) Durgapur (UG and OC) 2) Padampur (OC) 3) Nandgaon (UG) 4) Mana (UG) 5) Bhatadi (OC) are coal mines.

Under Majri area

1)Majri (OC and UG)2) Yekona (OC) are coal mines.Nagpur district has two coal blocks in the Nagpur area and Umred area. Under the Nagpur region,

1) Adasa (UG)2) Patansavangi (UG) 3) Savner (UG) 4) Sillevera (UG) 5) Bhanegaon (OC)

6) Gondegaon (OC) 7) Kamathi (OC) Shingori (OC) are coal mines.

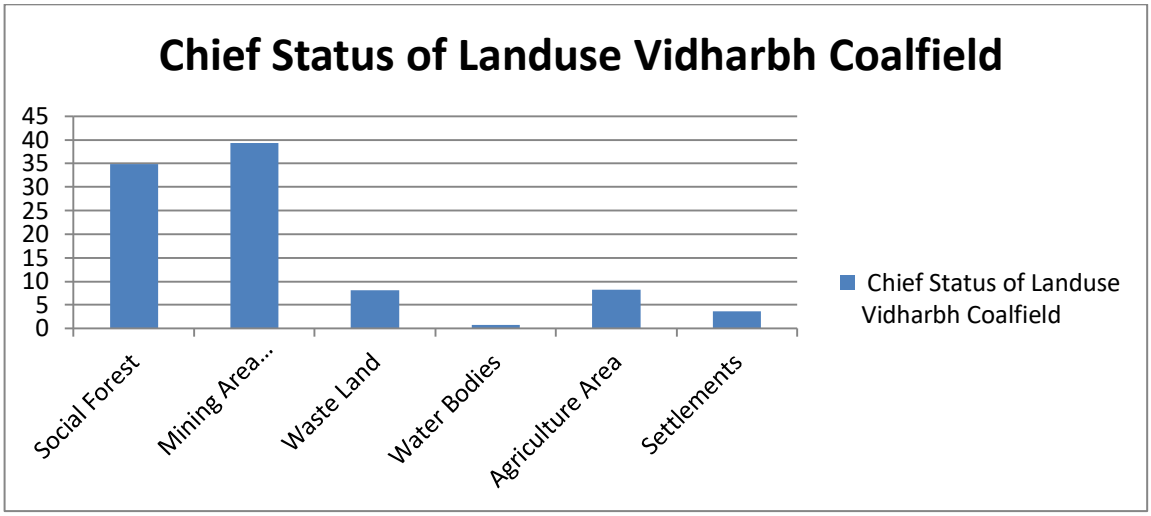
Under Umred area

1) Murpur (UG) 2)Makardhokada (OC) 3) Umred (OC) are coal mines.

Chandrapur district

There are three coal fields of WCL in Chandrapur district. Ballarpur Area, Chandrapur Area, and Majri.

Figure 1. The total land deployment in Vidarbha coal mining areas. Note: (■) Chief status of Landuse Vidharbh Coalfield



Shows that the total land deployment in Vidarbha coal mining area was studied in the following areas: Yavatmal, Nagpur and Chandpur districts under Western Coalfield Limited. Top 10 coal mines are 39.32 Sq.KM. The total area covered by the kilometer is 41.39% of the total land use area [7]. The area under the social forest is 34.89 square kilometers and 36.72% area. The area of fallow land is 8.10 square kilometers and is 8.35%. The area of water bodies in the coal mining area is 0.81 square kilometers and the area of water bodies are 0.85%.

The area under agriculture in the coal mining area is 8.22% square kilometers out of 8.65% area. The area under human colonization is 3.67 square kilometers out of 3.86% area. In Vidarbha, the number one area in the total land use in the coal mining area is 41.39%, which is covered by coal mining. The area under the second land utilization area is below the social forest, which is 36.72%. Since Padmapur, Durgapur, Umred, Majari and Ghuggus are the main colonial areas, the area of agriculture is very negligible. The third largest area is 8.65% under agriculture. With coal being the largest land occupation, the major impact of coal mining is on forests, agriculture and on humans [8].

A study shows that bituminous coal is found in Yavatmal, Chandrapur and Nagpur districts in Vidarbha. The bituminous type of coal is found in 50 to 75 percent of the coal. Coal grading in Yavatmal, Nagpur and Chandrapur districts of Vidarbha is between G8 and G 11. The coal field in Vidarbha is monitored in three ways before coal mining. 1) Pre Operational Phase - In the present scenario, the land area in the coal fields. Look at the condition of human colonization. Look at the local ecosystem. These three components are essential for the production of mines.

Operational phase is overburden dumps are created by destroying the surface of the open coal mine while producing coal from the coal mine. The coal is removed by blasting the groundwater while excavating the coal in the underground coal mine [9].

Post-Operational phase is the coal is removed from the open coal mine, the pier is formed and the surface is unusable.

Coal mines produced in the coal fields of Yavatmal, Chandrapur and Nagpur districts in Vidarbha have a serious impact on the environment. Due to the increase and expansion of coal mines, the impact of coal mines on environmental aesthetics has been shown to be real [10].

Land Degradation in the Coalfield area of Yavatmal, Chandrapur and Nagpur districts of Vidarbha, large land is used in coal mining. About 15 sq km in Yavatmal district, 20 sq km in Chandrapur district and 20 sq in Nagpur district. The kilometer of land has been used for coal mining. The open caste coal mines are high in this district. The underground coal mine is low. Open coal mines have created a large hill-like overburden dump in the mining area.

Artificial hills have been created in the coal field. This is causing land degradation and soil errosion in the mine area (Table 1).

Table 1. Overburden Dumping and Height of OB in Coalfields.

Coalfield area	No.of Overburden dump	Height of OB dump (min .and max.)
Wani area	9	30 Meter to 65 Meter
Wani north area	10	40meter to 60 Meter
Nagpur area	8	30 meter to 60 Meter
Under area	4	25 meter to 65 meter
Chandrapur area	8	30 meter to 65 meter
Ballarpur area	6	25 meter to 50 meter
Majri area	4	20 meter to 55 meter

Source-western coalfield India

Overburden dump is causing landslide. The slopes and soil in this layer are obstructed by traffic coming to the main road and are at risk of major accidents. There are landslides in the Wani and Chandrapur areas. Human colonies near the coal mines have also been found in the wrecks and the Chandrapur area. Open coal mines are creating surface mines and creating large wells.

Water impacts

The valley of the Wardha River in Vidarbha is famous for the river valley and the Kanhan river basin for coal mining. The highest number of coal mines has been created in the valley of the Wardha river. Yavatmal, Chandrapur district shows the formation of a coal mine on the banks of the river Wardha.

Coal mines have been created in Nagpur, Kamthi along the banks of the Kanhan River. The area of water bodies in Vidarbha is around 1.5 square kilometers around the coal mines. The coal mines Kamthi, Majari, Ghugus, Niljai are large by extension and the Wardha river and Kanhan river are used for the coal mines.

Coal mining is created along the banks of the river because of the need for water for coal mining. Coal mining has been affected due to the formation of coal mines along the banks of the Wardha and Kanhan rivers. Coal mines have obstructed the character of the river Wardha in the Wani and Chandrapur coal fields (Table 2).

Table 2. Toxic trace elements of coalfields.

Sr. No.	Elements	Wani coalfields	Chandrapur coalfields	Nagpur coalfields
1	Fe	5.43-13.50	4.38-13.30	5.16-14.98
2	Mn	0.138-0.500	0.130-0.498	0.150-0.901
3	Pb	0.139-5.91	0.136-0.589	0.130-0.718
4	Cd	0.028-0.067	0.28-0.67	0.21-0.61
5	Cu	0.289-0.490	0.289-0.480	0.302-0.631
6	Zn	1.36-1.57	1.32-1.52	0.823-1.009

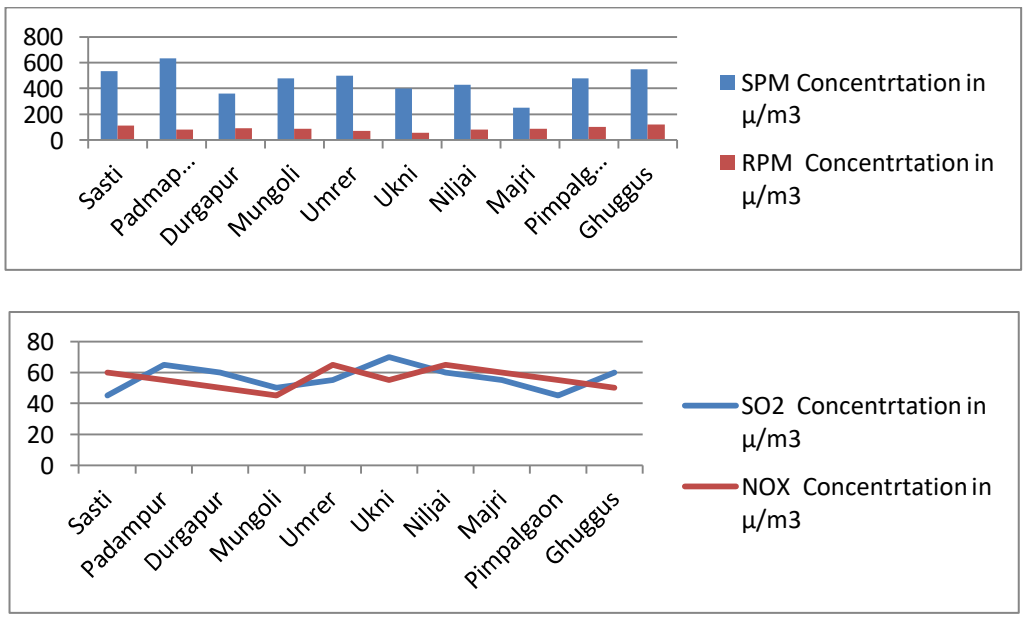
Coal mining water is also released into the river. The release of coal mine water into Wardha and Kanhan rivers has increased the pollution of the river.Hazardous pollutants like lead, zinc, arsenic, and cadmium are found in coal mine water in Chandrapur, Wani, Nagpur coal fields in Vidarbha.

Grees and oils are found in the water due to the release of mineral water into the river. In the Chandrapur forest area, underground coal mines, oil and grease are found poisonous, they are dying in the ground with rain water and the fish in the river have also been affected. The river Wardha and the kanhan river are polluted with water.

Air pollution

Coal is the main electric source. In the coal field, open coal mines appear to be affecting the environment. There is a high percentage of opencast coal mines in Wani and Chandrapur coal area in Vidarbha. Open coal mining is directly related to atmospheric ventilation. Therefore, ash and coal are mixed with coal ash in the coal mine. Much poisonous air mixes and pollutes the air due to the fire in the mine. The ongoing process in the coal mine pollutes the atmosphere. Pollution in coal mines is high in winter.

Figure 2. Air pollution occurs in the atmosphere of wani. Note: (■) SPM Concentration in μ/m³; (■) RPM Concentration in μ/m³; (—) SO_2 Concentration in μ/m³; (—) NOX Concentration in μ/m³



Air pollution occurs in the atmosphere of Wani, Chandrapur, Nagpur area in Vidarbha, in the atmosphere like coal Sulfur dioxide Nitrogen oxide Suspended Particulate Matter (SPM) and Respirable Particulate Matter (RPM) carbon monoxide. In Vidarbha coal field, the atmosphere is found to be polluted from ten to fifteen square kilometers. The proportion of SPM and RPM in Vidarbha coal area is higher than the permissible limit of Central Pollution Control Board. This has affected human health, and people living in coal area colonies have been diagnosed with various respiratory illnesses.

Noise pollution

Noise pollution in the coal mines is recognized as a threat to human health. The drilling and blasting of open and underground coal mines in Vidarbha coal field produces a great deal of noise. Drilling and blasting begins in the coal mine overnight (Table 3).

Table 3. Noise pollution of Coalfields.

Coalfield area	Underground coalmines	Opencast coalmines
Wani	80 DB to 170 DB	70 DB to 155 DB
Chandrapur	80 DB to 165 DB	75 DB to 160 DB
Nagpur	70 DB to 168 DB	80 DB to 150 DB

Sources-coal mining & planning survey

This results in noise pollution that affects the surrounding human colonies. Coal mines in Wani, Chandrapur and Nagpur area in Vidarbha have been created at human settlement [11].

Coal mining uses drilling and blasting to break ground layers. Blasting creates noise in the surrounding area and spreads far and wide. Likewise, the volume of heavy machines used in coal mining is loud. This noise causes many problems. Blasting is more widely used in underground coal mines. In Chandrapur Nagpur area. There are many underground coal mines. Since there is a lot of drilling and blasting going on there, certain assumptions have been formed.

DISCUSSION

Mining in coal mining has led to an increase in suspended particulate matter SPM and respiratory particulate matter RPM in atmospheric air .The levels of sulfur dioxide and nitrogen oxide are increasing in the air. Air is polluted in the coal field, causing human respiratory and various diseases. Drilling and blasting in coal mines are causing noise pollution. Coal area in Yavatmal, Chandrapur and Nagpur districts of Vidarbha is destroying environmental beauty by affecting environmental factors.

While studying some coal mines in Chandrapur and Nagpur districts, their volume is on average 170 decibels. The volume of open coal mines is on average 155 to 160 decibels. The noise in the coal mines has far reaching implications. The underground coal mines are also blocked at night. This makes it difficult for the residents of the colonized area to fall asleep. Noise pollution has a serious impact on humanity. People in the region are suffering from hearing and mental illness.

CONCLUSION

Conclusions of this study, which is that the coal mine under Western Coalfield Limited in Vidarbha is found to be expanding and expanding. The environmental impacts of coal mining are very serious. Coal mining in the coal fields of Yavatmal, Chandrapur and Nagpur districts has transformed a large amount of land into a coal mine. Due to the open coal mines, the surface has been mined and a significant breach has been formed.

Overburden dumping has been created near the coal mine. Overburden dumping landslides can cause major accidents in this area. Land degradation and soil errosion are occurring in Wani, Nagpur and Chandrapur coal fields. Coal mines in Vidarbha have been affected by the flow of the river due to the construction of the river Wardha and Kanhan. The waters of the Wardha and Kanhan rivers are polluted and the river water is mixing chemicals with many coal mines.

REFERENCE

1. Goswami S. Clean coal initiatives in India. European Researcher. 2014;81:502.
2. Goswami S. Coal mining, environment and contemporary Indian society. GJHSS. 2013;13:17-26.
3. Ghose KM. Effect of opencast mining on soil fertility. J Sci Ind Res. 2004;60:786-797.
4. Ghose MK. Air Pollution due to opencast coal mining and its control in India context. Int J Environ Stud. 2010;58:30.
5. Ghose M. Pollution due to air horne dust particles in coal mining, its monitoring and abatement measures. Min etech.1989;91-95.
6. Mishra PP. Impact of Mining on Agricultural Productivity: A Case Study Of The Indian State Of Odisha. South Asia Econ J. 2008;9:337-350.
7. Singh P. Impact of coal mining and industrial activities on land use pattern in angul-talcher region of Odisha, India. Int J Eng Sci Technol. 2010;2:7771-7784.
8. Saha S, et al. Under-mining health: environmental justice and mining in India. Health Place. 2011;17:140-148.
9. Sinha S. Characterization of haul road in Indian opencast iron ore mine. Atmos Environ. 1997;31:2809-2814.
10. Bell S. Coal, Injustice and environmental destruction: introduction to the special issue on coal and the environment. Organ Environ. 2012;25:359-367.
11. Machol B. Economic value of US fossil fuel electricity health impacts. Environ Int. 2013;52:75-80.

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सृजनश्री न्यास
आजाद नगर, बिन्दकी, जनपद–फतेहपुर,
उ0प्र0–212635
ई–मेल : aalochan.p@gmail.com

मुद्रण :– जय ग्राफिक्स एण्ड कान्सट्रक्सन,
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सदस्यता शुल्क	एक अंक	वार्षिक	आजीवन
व्यक्तिगत	300	1200	10,000
संस्थागत	400	1500	15,000

CONTENTS

Environmental impacts of Coal-Mines in Vidarbha Region of Maharashtra: A Geographical study

Dr.Y. S. Nagarale*

Abstract :- Coal has many important uses worldwide. Coal plays a vital role in electricity generation worldwide. India is the third largest producer of Coal in the world. Yavatmal, Chandrapur and Nagpur Districts of Vidarbha in Maharashtra are famous for Coal Mines. Moving the Land of Vidarbha, Coal Mines are being replaced. In the last ten years, this new District of Vidarbha has created new colonies and is being reformed. Coalgamation affects the area of Land, forests, humans, water and agriculture. The Coal Mines cause pollution in the Environment. Vidarbha Coal is a kind of bituminous Coal Large quantities of thermal power plants have been created in the Districts of Chandrapur and Nagpur, due to the large number of Coal stocks in Vidarbha. The Coal Mines and Environment in the District are damaged.

Keywords- Coal Mines, Environment, Pollution, Land Degradation.

Coal Mines are headed by Western Coalfield Limited. Coal is excavated from the Coal Mines in Vidarbha region, Western Coal Field Limited. Increasing industrialization: Increasing Coal Mines cause Environmental and social problems. Coal Mines in the area of Coal reservoirs are influenced by influencing life. Due to the increasing impact of Coal mining, the transfer of agricultural Land to Coal fields was in Coal mining. The Environment is affected by various factors. The Environment is affected by various factors. Due to expansion of Coal Mines in Chandrapur, Nagpur and Yavatmal Districts in Vidarbha, it is necessary to study the consequences of E nvironmental impact.

Study Area :- The Maharashtra State is on the west side of India. In Maharashtra state of Vidarbha, there are large number of Coal reserve of Gondwana period. It is a charCoal container in Yavatmal, Nagpur and Chandrapur Districts in the valley of Wardha and Kanhan river. The stock of Coal in the north East of Vidarbha in Maharashtra. This Coal area is found between 20'North latitude to 21' north latitude and 78' East longitude to 79' East longitude. The District of Vidarbha finds 5000 million tonnes of Coal reserve. In Chandrapur District Chandrapur, Ballarpur, Warora, Majari, and Ghuggus have created Coal Mines. In Nagpur District, Coal Mines are found in Kamathi, Umred and Parsivani Talukas. Due to the high-quality Coal found in Wani Taluka in Yavatmal District, Wani city is called 'Black Diamond City'. Chandrapur city is called 'Black Gold City'. In this District of Vidarbha, Coal is excavated from many Open Coal Mines and Underground Coal Mines.

Objectives :- The main objective of this research study is to study the Coal Mines in Vidarbha, study the impact of Coal Mines on the Environment and to study the Coal mining pollution.

Database and Methodology :- The primary information is collected from various Coal fields in Vidarbha. Coal mining in the Coal field has been monitored to study the impact of Environment and human settlement. Some information is collected through interviews and observations. Secondary information collected for the magazine is from Western Coalfield Limited's Wani Area, Wani North Area, Chandrapur Area Ballarpur Area, Majri Area, Nagpur Area and Umred Area. Information has been collected from some of the most important sites on the basis of computer support. Through field monitoring and statistical method, it is used in an inspection way to analyse information collected. The computer has been taken to analyse the statistical data, which has created various tables and graphs.

Analysi ;- According to the analysis, Coal is extracted from several Coal Mines of Western Coalfield Limited according to the Coal field in Yavatmal, Nagpur and Chandrapur Districts. There are various Coalfields are as the table...

*** Assistant Professor & HOD Geography, Saibaba Arts and Science College, Parseoni, Dist. Nagpur,Maharashtra. Affiliation-Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.**

Source: - www.westernCoal.nic.in

	Sasti		Padmapur		Durgapur		Mungoli		Umrer		Ukni		Niljai		Majri		Pimpalgaon		Ghuggus		Total	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Total Social Forest	4.86	38.3	2.50	34.06	3.89	43.18	2.75	34.90	5.31	56.19	3.15	33.87	3.54	23.14	3.91	43.20	2.06	41.87	2.92	28.63	34.89	36.72
Total Area of Mining Operations	3.50	27.58	4.35	59.26	4.27	48.09	3.91	49.62	3.35	35.45	4.33	46.56	5.82	38.04	4.18	46.19	2.08	42.28	3.53	36.61	39.32	41.39
Total Waste Land	0.58	4.57	0.25	3.41	0.29	3.27	0.82	10.41	0.12	1.27	0.57	6.13	1.76	11.50	0.52	5.75	0.36	7.32	2.83	27.75	8.10	8.53
Total Water bodies	0.22	1.73	0.08	1.09	0.00	0.00	0.00	0.00	0.38	4.02	0.00	.0.00	0.00	0.00	0.10	1.10	0.00	0.00	0.03	0.29	0.81	0.85
Total Agriculture Area	3.20	25.22	0.00	0.00	0.00	0.00	0.27	3.43	0.00	0.00	0.90	9.68	3.62	23.66	0.00	0.00	0.23	4.67	0.00	0.00	8.22	8.65
Total Settlements	0.33	2.60	0.16	2.18	0.43	4.84	0.13	1.65	0.29	3.07	0.35	3.76	0.56	3.66	0.34	3.76	0.19	3.86	0.89	8.73	3.67	3.86
Grand Total	12.69	100	7.34	100	8.88	100	7.88	100	9.45	100	9.30	100	15.30	100	9.05	100	4.92	100	10.20	100	95.01	100

Graph No.1

Environmental impacts of Coal-Mines in Vidarbha Region of Maharashtra: A Geographical study

Dr.Y. S. Nagarale*

Abstract :- Coal has many important uses worldwide. Coal plays a vital role in electricity generation worldwide. India is the third largest producer of Coal in the world. Yavatmal, Chandrapur and Nagpur Districts of Vidarbha in Maharashtra are famous for Coal Mines. Moving the Land of Vidarbha, Coal Mines are being replaced. In the last ten years, this new District of Vidarbha has created new colonies and is being reformed. Coalgamation affects the area of Land, forests, humans, water and agriculture. The Coal Mines cause pollution in the Environment. Vidarbha Coal is a kind of bituminous Coal Large quantities of thermal power plants have been created in the Districts of Chandrapur and Nagpur, due to the large number of Coal stocks in Vidarbha. The Coal Mines and Environment in the District are damaged.

Keywords- Coal Mines, Environment, Pollution, Land Degradation.

Coal Mines are headed by Western Coalfield Limited. Coal is excavated from the Coal Mines in Vidarbha region. Western Coal Field Limited. Increasing industrialization: Increasing Coal Mines cause Environmental and social problems. Coal Mines in the area of Coal reservoirs are influenced by influencing life. Due to the increasing impact of Coal mining, the transfer of agricultural Land to Coal fields was in Coal mining. The Environment is affected by various factors. The Environment is affected by various factors. Due to expansion of Coal Mines in Chandrapur, Nagpur and Yavatmal Districts in Vidarbha, it is necessary to study the consequences of E nvironmental impact.

Study Area :- The Maharashtra State is on the west side of India. In Maharashtra state of Vidarbha, there are large number of Coal reserve of Gondwana period. It is a charCoal container in Yavatmal, Nagpur and Chandrapur Districts in the valley of Wardha and Kanhan river. The stock of Coal in the north East of Vidarbha in Maharashtra. This Coal area is found between 20°North latitude to 21° north latitude and 78° East longitude to 79° East longitude. The District of Vidarbha finds 5000 million tonnes of Coal reserve. In Chandrapur District Chandrapur, Ballarpur, Warora, Majari, and Ghuggus have created Coal Mines. In Nagpur District, Coal Mines are found in Kamathi, Umred and Parsivani Talukas. Due to the high-quality Coal found in Wani Taluka in Yavatmal District, Wani city is called 'Black Diamond City'. Chandrapur city is called 'Black Gold City'. In this District of Vidarbha, Coal is excavated from many Open Coal Mines and Underground Coal Mines.

Objectives :- The main objective of this research study is to study the Coal Mines in Vidarbha, study the impact of Coal Mines on the Environment and to study the Coal mining pollution.

Database and Methodology :- The primary information is collected from various Coal fields in Vidarbha. Coal mining in the Coal field has been monitored to study the impact of Environment and human settlement. Some information is collected through interviews and observations. Secondary information collected for the magazine is from Western Coalfield Limited's Wani Area, Wani North Area, Chandrapur Area Ballarpur Area, Majri Area, Nagpur Area and Umred Area. Information has been collected from some of the most important sites on the basis of computer support. Through field monitoring and statistical method, it is used in an inspection way to analyse information collected. The computer has been taken to analyse the statistical data, which has created various tables and graphs.

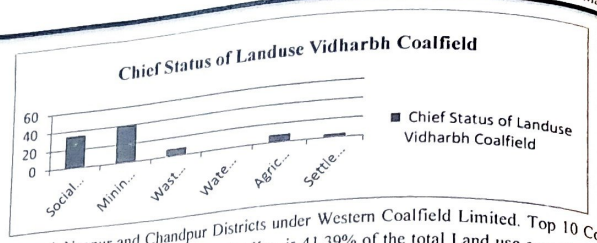
Analysi ;- According to the analysis, Coal is extracted from several Coal Mines of Western Coalfield Limited according to the Coal field in Yavatmal, Nagpur and Chandrapur Districts. There are various Coalfields are as the table...

* Assistant Professor & HOD Geography, Saibaba Arts and Science College, Parseoni, Dist. Nagpur,Maharashtra. Affiliation

Source: - www.westernCoal.nic.in

	Sasti		Padmapur		Durgapur		Mungoli		Umrer		Ukni		Niljai		Majri		Pimpalgaon		Ghuggus		Total	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Total Social Forest	4.86	38.3	2.50	34.06	3.89	43.18	2.75	34.90	5.31	56.19	3.15	33.87	3.54	23.14	3.91	43.20	2.06	41.87	2.92	28.63	34.89	36.72
Total Area of Mining Operations	3.50	27.58	4.35	59.26	4.27	48.09	3.91	49.62	3.35	35.445	4.33	46.56	5.82	38.04	4.18	46.19	2.08	42.28	3.53	36.61	39.32	41.39
Total Waste Land	0.58	4.57	0.25	3.41	0.29	3.27	0.82	10.41	0.12	1.27	0.57	6.13	1.76	11.50	0.52	5.75	0.36	7.32	2.83	27.75	8.10	8.53
Total Water bodies	0.22	1.73	0.08	1.09	0.00	0.00	0.00	0.00	0.38	4.02	0.00	0.00	0.00	0.00	0.10	1.10	0.00	0.00	0.03	0.29	0.81	0.85
Total Agriculture Area	3.20	25.22	0.00	0.00	0.00	0.00	0.27	3.43	0.00	0.00	0.90	9.68	3.62	23.66	0.00	0.00	0.23	4.67	0.00	0.00	8.22	8.65
Total Settlements	0.33	2.60	0.16	2.18	0.43	4.84	0.13	1.65	0.29	3.07	0.35	3.76	0.56	3.66	0.34	3.76	0.19	3.86	0.89	8.73	3.67	3.86
Grand Total	12.69	100	7.34	100	8.88	100	7.88	100	9.45	100	9.30	100	15.30	100	9.05	100	4.92	100	10.20	100	95.01	100

Graph No.1



Yavatmal, Nagpur and Chandpur Districts under Western Coalfield Limited. Top 10 Coal Mines are 39.32 Sq.Km. The total area covered by the Km. is 41.39% of the total Land use area.The area under the social forest is 34.89 Sq. Km. and 36.72% area. The area under agriculture in the Coal mining area is 8.22% Sq.Km.out of 8.65% area. The area under human colonization is 3.67 Sq. Km. out of 3.86% area in Vidarbha, the number Land use in the Coal mining area is 41.39%, which is covered by Coal mining. The area under the second Land utilization area is below the social forest, which is 36.72%. The third largest area is 8.65% under agriculture. .A study of shows that bituminous Coal is found in Vidarbha.

1) Land Degradation: - In the Coalfield area of Vidarbha, large Land is used in Coal mining. About 15 sq. km in Yavatmal District, 20 sq. km in Chandrapur District and 20 sq. in Nagpur District. The Km.of Land has been used for Coal mining. The open caste Coal Mines are high in this District. The underground Coal mine is low. Open Coal Mines have created a large hill-like overburden dump in the mining area. Artificial hills have been created in the Coal field.

Table No.2, Overburden Dumping and Height of OB in Coalfields

Coalfield Area	No. of Overburden Dump	Height of OB Dump (Min.& Max.)
Wani Area	09	30 Meter to 65 Meter
Wani North Area	10	40meter to 60 Meter
Nagpur Area	08	30 meters to 60 Meter
Under Area	04	25 meters to 65 meters
Chandrapur Area	08	30 meters to 65 meters
Ballarpur Area	06	25 meters to 50 meters
Majri Area	04	20 meters to 55 meters

Source-Western Coalfield India

2) Overburden dump is causing Landslide.. There are Landslides in the Wani and Chandrapur areas. Human colonies near the Coal Mines have also been found in the wrecks and the Chandrapur area .Open Coal Mines are creating surface Mines and creating large wells.

Water Impacts :- Wardha river in Vidarbha is famous river valley and the Kanhan river basin for Coal mining. The highest number of Coal Mines has been created in the valley of the Wardha river. Wardha river and Kanhan river are used for the Coal Mines. Coal mining has been affected due to the formation of Coal Mines along the banks of the Wardha and Kanhan rivers. Coal Mines have obstructed the character of the river Wardha in the Wani and Chandrapur Coal fields.

Table No.3, Toxic Trace Elements of Coalfields

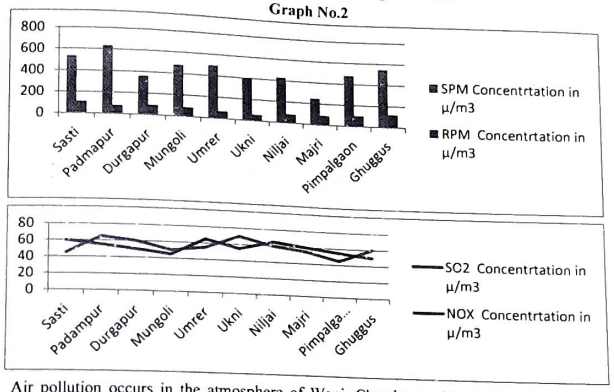
Sr. No.	Elements	Wani Coalfields	Chandrapur Coalfields	Nagpur Coalfields
1	Fe	5.43-13.50	4.38-13.30	5.16-14.98
2	Mn	0.138-.500	0.130-.498	0.150-0.901
3	Pb	0.139-5.91	0.136-.589	0.130-.718
4	Cd	0.028-.067	0.28-0.67	0.21-0.61
5	Cu	0.289-.490	0.289-.480	0.302-.631
6	Zn	1.36-1.57	1.32-1.52	0.823-1.009

Sources-Coal mining & planning survey :- Coal mining water is also released into the river. The release

of Coal mine water into Wardha and Kanhan rivers has increased the pollution of the river.Hazardous pollutants like lead, zinc, arsenic, and cadmium are found in Coal mine water in Chandrapur, Wani, Nagpur Coal fields in Vidarbha. Grees and oils are found in the water due to the release of mineral water into the river. In the Chandrapur forest area, underground Coal Mines, oil and grease are found poisonous, they are dying in the ground with rain water and the fish in the river have also been affected. The river Wardha and the kanhan river are polluted with water.

Air pollution :- There is a high percentage of opencast Coal Mines in Vidarbha. Open Coal mining is directly related to atmospheric ventilation.Therefore, ash and Coal are mixed with Coal ash in the Coal mine. Many poisonous air mixes and pollutes the air due to the fire in the mine.The ongoing process in the Coal mine pollutes the atmosphere. Pollution in Coal Mines is high in winter.

Graph No.2



Air pollution occurs in the atmosphere of Wani, Chandrapur, Nagpur area in Vidarbha, in the atmosphere like Coal sulfur dioxide nitrogen oxide Suspended Particulate Matter (SPM) and Respirable Particulate Matter (RPM) Carbon Monoxide. In Vidarbha Coal field, the atmosphere is found to be polluted from 10 to 15 Sq.Km. This has affected human health, and people living in Coal area colonies have been diagnosed with various respiratory illnesses.

Noise pollution :- Noise pollution in the Coal Mines is recognized as a threat to human health. The drilling and blasting of open and underground Coal Mines in Vidarbha Coal field produces a great deal of noise. Drilling and blasting begin in the Coal mine overnight.

Table No.4 : Noise pollution of Coalfields

Coalfield Area	Underground CoalMines	Opencast CoalMines
Wani	80 DB to 170 DB	70 DB to 155 DB
Chandrapur	80 DB to 165 DB	75 DB to 160 DB
Nagpur	70 DB to 168 DB	80 DB to 150 DB

Sources-Coal mining & planning survey

This results in noise pollution that affects the surrounding human colonies. Coal Mines in Wani, Chandrapur and Nagpur area in Vidarbha have been created at human settlement.

Coal mining uses drilling and blasting to break ground layers. Blasting creates noise in the surrounding area and spreads far and wide. Likewise, the volume of heavy machines used in Coal mining is loud. This noise causes many problems. Blasting is more widely used in underground Coal Mines. In Chandrapur Nagpur area, underground Coal Mines are high.

Conclusion :- The Environmental impacts of Coal mining are very serious. Coal mining in the Coal fields of Yavatmal, Chandrapur and Nagpur Districts has transformed a large amount of Land into a Coal mine. Overburden dumping has been created near the Coal mine. Overburden dumping Landslides can cause

major accidents in this area. Land degradation and soil erosion are occurring in Wani, Nagpur ... Chandrapur Coal fields. Coal Mines in Vidarbha have been affected by the flow of the river due to ... construction of the river Wardha and Kanhan. The waters of the Wardha and Kanhan rivers are pollut... and the river water is mixing chemicals with many Coal Mines. Mining in Coal mining has led to ... increase SPM and RPM in atmospheric air. The levels of sulphur dioxide and nitrogen oxide are increas... in the air. Air is polluted in the Coal field, causing human respiratory and various diseases. Drilling ... blasting in Coal Mines are causing noise pollution. Coal area in Vidarbha is destroying Environme... beauty by affecting Environmental factors. The volume of open Coal Mines is on average 155 to 1... decibels. The noise in the Coal Mines has far reaching implications. The underground Coal Mines are ... blocked at night. Noise pollution has a serious impact on humanity. People in the region are suffering fr... hearing and mental illness.

Reference :-

1. www.westernCoal.in
2. www.economicsdiscussion.net
3. www.Coalindia.in
4. Goswami, S., (2014). Clean Coal Initiatives in India‖, European Researcher, Vol.81, No.8-2, pp.1502.
5. Goswami, S., (2013). Coal Mining, Environment and Contemporary Indian Society, Global Journal of Human S... Science. 13: 6:17-26.
6. Ghose, K.M. (2004). Effect of opencast mining on soil fertility‖ Centre o f mining Environment, I.S.M, Dhanbad, In... Journal of Scientific & Industrial Research Vol. 60, October 200 I, pp 786-797.
7. Mishra, P., P., and Pujari,A.,K., (2008)., Impact of Mining on Agricultural Productivity: A case study of the Indian ... of Odisha.‖ South Asia Economic Journal 9(2): 337-350.
8. Murty, M., N., S., C., Gulati, and Banerjee,A.,(2003). Health Benefits from Urban Air Pollution Abatement in the In... Subcontinent‖. Working Paper no. 236, Institute of Economic Growth, Delhi. Accessed online ... http://icgindia.org/upload/pdf/wp236.pdf on 4th January 2017.
9. Saha, Shubhayu, Subhrendu, K., Pattanayak, Erin, O., Sills, and Ashok,K., Singha,(2011). Under-mining heal... Environmental justice and mining in India. Health & Place 17 (1): 140–148.
10. Sinha, S. and S., P., Banerjee, (1997). Characterization of haul road in Indian opencast iron ore mine. Atmospher... Environment 31 (17): 2809-2814.
11. Pathak, Gopal, Kirti, Avishek, and A., K., Gorai, (2007). Environmental and Social Impacts of Coal Mining and ... Management Practices in India. First International Conference on Managing the Social and Environmental Consequences of Coal Mining in India, Organized by Australian National University, New Delhi, November, 19-21.
12. Bell, S. Elizabeth,and Richard, York,(2012). Coal, Injustice and Environmental Destruction: Introduction to the Special Issue on Coal and the Environment. Organization and Environment. 25(4): 359-367.
13. Machol, B, Rizk, S., (2013). Economic value of U.S. fossil fuel electricity health impacts. Environ, Int. eb; 52:75-80
14. Nagarale, Yogendra S., And Lanjewar,Dr.,H.,D.,(2017)."Kalya Hiryache Shahar" Wani Kolsa Kshetratil Vahuk... Bhogolik Abhyas,Aayushi International Interdisciplinary Research Journal (AIIRJ),Vol.,IV.,Issue-XII,341-345.