



**Proceedings of the
NAAC Sponsored
One-day National Seminar
on**



**QUALITY ASSURANCE
IN THE AGE OF
INFORMATION
EXPLOSION**



**Organized by
Internal Quality Assurance Cell,
Brahmananda Keshab Chandra College
(NAAC Accredited Govt. Sponsored Degree College for UG and PG)
111/2 B.T.Road, Bon-Hooghly, Kolkata700108**

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July 25, 2019

Message

With immense pleasure I write this note for the Proceedings that will be published to record in print the various discussion and deliberation of the NAAC – sponsored One-day National Seminar on "Quality Assurance in the Age of Information Explosion" held at the Brahmananda Keshab Chandra College, one of the affiliated colleges of the university, on July 5, 2019. The Seminar was organized by the Internal Quality Assurance Cell of the College where I was present as a Guest and presented my views.

- Fishing out appropriate information from a large amount of data is an important field of study already. The Seminar attempts to collate cutting edge information from the area and put together ideas in the form of a compendium.

I wish the endeavour all success.

I take the opportunity to thank profusely the Coordinator of the Internal Quality assurance Cell of the college Dr. Aparajita Nag, and also the Principal of the college and other distinguished members for doing a very good job.

Basab Chaudhuri

25/07/2019

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Message from President of Governing Body

I am extremely glad to know that BKC College is publishing the proceedings of the NAAC sponsored One day National Seminar on "Quality Assurance in the age of Information Explosion" organized by the IQAC of the College on 5th of July, 2019.

Information explosion in almost all spheres of expanding activities in the modern technology dominated human civilization. There have been tremendous developments in the computer technology, these were five generational changes from the mid 19th century to the first quarter of the 20th century. Some of us at the Indian Statistical Institute under the guidance of Professor P.C. Mahalanobis were destined to develop the first digital circuits in India – an Electronic Random Number Generator, that helped statistical data processing. The first two imported digital computers in India were used in ISI, namely HEC-ZM (Honerith Electronic Computer-model ZM) from UK and URAL-1 from the then Soviet Union (both first generation computers).

The Computer Science Division of ISI (of which I was Senior Research Engineer and Head) in collaboration with the newly started Computer Science Division of Jadavpur University developed the first Digital Computer in India- namely ISI-JU-1. From 1960 to 1990 there had been fundamental changes in data- processing science and technology in India. The first two generations machines were data processing machines. In my view data when processed for application becomes information which after processing becomes knowledge for the benefit or otherwise of the society. Most of us in the Information Technology (IT) community in the world transformed the systems with exploded information and resulted into Knowledge based Computing System or KBCS which were Fifth Generation Computing Systems.

In 1980 the International Federation of Information Processing (IFIP) organized its eighth World Congress at Tokyo in which I was deputed as leader of the team representing Computer Society of India (CSI) and Government of India, in which Japan demonstrated its KBCS/FGCS model-proposed structure.

After coming back, I presented my detailed understanding of the world views and a scheme for Indian project (multinational) for FGCS/KBCS to the then DOE, DST, CSIR, Institutes under Government of India, with a proposed collaboration group comprising of ISI, TIFR and some of the IITs. I was the National Coordinator and Dr. N. Seshagiri was the chairman.

Consequently, Department of Electronics, Government of India with financial support from the World Bank, and with collaboration of some IT industries and some selected laboratories of the Ministry of Defence launched FGCS/KBCS Project. The impact of the FGCS/KBCS programme was largely responsible in making India at par with advanced countries like USA and Europe.

Although Information Technology (IT) and the resulting explosion has become ubiquitous at home, at office and market- the industry is not yet in its final stage. One of the emerging methodology is Cloud Computing- a latest IT innovation.

I hope the IQAC Cell of BKC College along with ISI will try to elaborate the idea of cloud computing in relation to information explosion as it represents a paradigm shift for work and business in some future seminar.

- Prof. Dwijesh Dutta Majumder
Emeritus Scientist, Indian Statistical Institute



BRAHMANANDA KESHAB CHANDRA COLLEGE

(NAAC ACCREDITED GOVT. SPONSORED DEGREE COLLEGE FOR UG & PG)

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Ref.

Date

From the Principal's desk

Brahmananda Keshab Chandra College is a NAAC Accredited Government Sponsored Degree college for UG and PG courses, in the district of North 24 Parganas (now included in the district of Kolkata), West Bengal, affiliated to the West Bengal State University since 2008 (previously affiliated to Calcutta University). The college was established in 1956 in the northern fringes of Kolkata, with an aim to impart education mainly to the refugees rehabilitated in the neighbourhood. Since then the college has left a mark in the scenario of higher education which is quiet evident from the research output and the eminent Alumni of the Institution.

However to maintain the standard of education in the Institution, it is noteworthy to address the present context of the free availability of information which is being used, misused and shared at electronic speed and the challenges of society in managing the impact of information. Hence we felt the need to deliberate on issues of quality assurance through management of information and knowledge. The Internal Quality Assurance Cell (IQAC), Brahma Chandra College has therefore organized a NAAC sponsored One Day National Seminar on "Quality Assurance in the Age of Information Explosion" on the 5th of July, 2019. I am thankful to NAAC for sanctioning financial assistance of Rs. 75,000/- (vide letter no. NAAC/Seminar/SS_DR/2019 dated 21-03-2019).

I express my sincere gratitude to all the speakers who were from various spheres and have deliberated in a lucid manner on issues of Quality assurance related to societal progress. My special thanks to the IQAC team who in assistance with all the stakeholders of this Institution could successfully organize this seminar. My best wishes to all the stakeholders of this Institution for their future endeavors.

- Prof. Papia Chakraborti
Principal

A Short Report on the Proceedings of the Seminar

- Dr. Swarup Manna
Assistant Professor in Chemistry
Jt. Convenor Seminar Organising Committee

Remarkable technological advancements in the twentieth century have contributed immensely to bring about social, cultural and economic changes in our society at a rapid pace. After entering the information age and graduating into digital age in the middle of twentieth century, we are now in the age of information explosion. With the free availability of vast mine of information capable of being used, misused and shared at electronic speed, the challenges of society in managing the impact of information has increased greatly. In this scenario, there is a need for educators to reorient their methodologies, to work out strategies to be capable of mining gold nuggets out of vast mine of data for proper use.

To address this issue the Internal Quality Assurance Cell (IQAC), Brahmananda Keshab Chandra College, Kolkata organized a NAAC sponsored one-day National Seminar on "Quality Assurance in the Age of Information Explosion" on the 5th of July 2019 in the College premises. The Guest of Honour of the Inaugural Session was Dr. Pratip Chowdhury, Former DPI, Government of West Bengal. The other dignitaries who graced the session were Professor Basab Chaudhuri, Vice Chancellor, West Bengal State University, Professor Dipti Prasad Mukhopadhyay, Deputy, Director, Indian Statistical Institute, Kolkata, Professor Ashis Kumar Chakraborty, Head and Professor, SQC and OR, Indian Statistical Institute, Kolkata and external member, IQAC Brahmananda Keshab Chandra College, Dr. Sandip Banerjee, Associate Professor, Indian Institute of Technology, Roorkee and Dr. Papia Chakrabarti, Principal, Brahmananda Keshab Chandra College. The session began with the ceremonial lighting of the lamp. Professor Basab Chaudhuri delivered the keynote lecture focusing the opportunities and challenges of information explosion.

Dr. Sandip Banerjee delivered the Special Lecture on use of Mathematical Modeling and concepts for the study of science and even social science. Dr. Parthasarathi Mukhopadhyay, Department of Library and Information Science, University of Kalyani spoke on proper and useful way of accessing open knowledge(online resources) for research. The next speaker before lunch was Prof Shitalkumar Chattopadhyay, Department of Chemistry, University of Kalyani. But he could not attend the seminar as he was indisposed.

In the post lunch session, Prof. Sudipti Banerjea, Department of Commerce, University of Calcutta spoke on the role and functions of IQAC for Quality Sustenance and Improvement. The final lecture, on Cyber Security, was delivered by Mr. Kuntal Sidharth & Mr. Alope Maji, Crime Cell, Lalbazar Cyber Security, Kolkata Police. A poster presentation, for which abstracts had been sought, was arranged as part of the Seminar. Participants presented posters on various aspects of the topic of the seminar. The Seminar ended with a formal vote of thanks delivered by the IQAC Coordinator, Dr. Aparajita Nag in the Valedictory session.

Activities of the Internal Quality Assurance Cell- A Brief Report

- Dr Aparajita Nag
Associate Professor of Physics & IQAC Coordinator
Brahmananda Keshab Chandra College

The Internal Quality Assurance Cell (IQAC) of Brahmananda Keshab Chandra College started its journey in May 2013 by a resolution taken by the Governing Body of the college. Since its inception, the IQAC has been operative and is working to meet the needs of the College with a view to improve available facilities for its stakeholders. The IQAC is well represented by teachers, non teaching staff, governing body members, external experts, alumni association member and student's union representative.

Dr Papia Chakraborti, the first Coordinator of IQAC gave emphasis on increasing the infrastructural resources of the college. Digital classrooms were set up for effective teaching learning process. Office Automation through LAN was taken up and library digitisation process was also started. The department of Botany with the IQAC started an Eco Club with an aim to prepare the Biodiversity Register of the college and the surrounding locality. A Computer literacy programme, compulsory for all students was started.

Dr. Aparajita Nag, Associate Professor of Physics was appointed the coordinator of the IQAC in August 2015. The main focus of the then IQAC was to provide leadership so that the College could get accreditation by the National Assessment and Accreditation Council (NAAC). All the stake holders of the college worked in unison under IQAC's guidance and the college got the accreditation on 1st December 2016.

The Diamond Jubilee of the college was celebrated among much fanfare on 31st July, 2016 with spontaneous participation of students, teaching and non-teaching staff, alumni and retired employees of the college. On that occasion IQAC introduced prizes, medals and certificates for the students who have performed well in academics and also extracurricular activities. A Special Prize was introduced named "Student of the Year", the prize money being generously donated by the Coordinators of the IQAC from their Honorarium. Mr Monmit Chakraborty, Ms Aishika Roy and Mr Subhajeet Dutta were selected for this prize by the IQAC team for the years 2016, 2017 and 2018. In 2018 Mr Arijit Talukdar was selected the Outstanding Sportsperson of the Year for being the National Savate Champion -2018.

To encourage innovative thinking among students and to enrich the existing curriculum the IQAC organised several workshops and seminars with the help of other wings of the college:

- An Entrepreneurship awareness camp in association with the Enterprise Development Institute, IB-194, Sector-III, Saltlake, Kolkata-106 was held in the college premises from 16th to 18th February, 2017 to orient the students.
- A workshop titled "Education Bridging Inequalities" was held on 31st March, 2017 with the participation of students of secondary and higher secondary sections of some schools in the locality.
- A workshop on "News Writing" was held on 23rd November, 2017 for the benefits of the students of the Department of Journalism and Mass Communications.
- To get familiarized with the new system introduced by the University from the academic session 2018-19, a workshop on "Understanding of Choice based Credit System" was held on 8th December, 2017 with participation of teachers from other colleges.
- A "One day Workshop on Teaching Indian Classical Literature" was held in association with the Department of English on 18th May, 2018.
- A "Dengue Awareness Programme" was organized jointly with NSS at a slum in ward no 1 of Baranagar Municipality on 14th September, 2018 where mosquito nets donated by Berlia Fresh Foods & Beverages Pvt. Ltd., Siliguri were distributed among seventy five dwellers. In the first week of February, 2019 several outreach activities were carried out in that slum with the NSS which included drawing competition among children, distribution of educational kit, health camp and cultural function.
- "Career Fair-2019", the first of its kind in the college was organized in association with the Career Counseling and Placement Cell on 31st January, 2019. Several companies from varied fields participated in the fair which was well attended by our students as well as students from other colleges.

As a part of the Internal Academic Audit of the College, IQAC team visit all the departments (both UG and PG) including library from time to time and submit a report based on their observations and also give suggestions as far as practicable..

The IQAC gives utmost importance to collect Feedback from various stakeholders. Each year all the 3rd year students fill up a questionnaire to evaluate individual teacher. The data is analysed and action is taken based on the report. This year the fourth semester post graduate students of the department of Mathematics and Botany also gave feedback.

The second year students give feedback regarding infrastructural facilities, library and other amenities provided by the college. Feedback analysis of Guardians and Alumni is also done from time to time.

Another major task of IQAC is to scrutinise the papers and to provide guidance to teachers who apply for promotion before it is referred to the Governing Body. IQAC was also involved in the selection process of Guest lecturers in various subjects.

The IQAC plans to work further in all these areas so as to improve the overall academic atmosphere of the College. A One Week Workshop on Data Analytics has been planned in association with the SQC & OR Division, Indian Statistical Institute, Kolkata, from 9th to 15th July 2019. Let us remember the thoughts of our beloved President Dr APJ Abdul Kalam:

“Dream, Dream, Dream. Dreams transform into thoughts and thoughts result in action.”

SPECIAL LECTURE

Mathematical Models in Applied Sciences

- Dr. Sandip Banerjee
Associate Professor in Mathematics
Indian Institute of Technology, Roorkee

Mathematical modeling is an important aspect of the study of science and engineering. The importance of mathematical modeling in physics, chemistry, biology, economics, industry, and even social sciences cannot be ignored. The primary aim of my talk is to work towards creating awareness in the audience, of the concepts involved in mathematical modeling, so as to build a basic foundation in the subject. Since mathematical modeling involves a diverse range of skills and tools, I have focused on techniques that would be of particular interest to engineers, scientists and others who use models of discrete and continuous systems. I would like to draw attention to some factors which are of key importance for the rapid development and success of mathematical modeling in various applied sciences.

LECTURE 1

Open Access to Knowledge: The Future of Scholarly Communication

- Prof. Parthasarathi Mukhopadhyay
Department of Library and Information Science
Kalyani University, Kalyani
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Open Knowledge System is based on a set of principles and methodologies related to the production and distribution of knowledge objects in an open manner. Knowledge objects include Data (scientific, historical, geographic or otherwise), Contents (such as journal papers, reports, patent, books etc.) and General information (including information services). As per the definition given by Wikipedia, open knowledge object is free to use, reuse, and redistribute without legal, social or technological restriction. Open knowledge system can be considered as a superset of open data, open content, open access publishing and open learning resources. Open knowledge system is powered by open source software and open standards. The current system of subscription based scholarly communication limits, rather than expands the readership and availability of most scholarly research. At the same time scholarly output is also obscuring its institutional origins. Rounds of journal price increases and subsequent subscription cancellations act to reduce the audience further. Libraries and academic community in developing countries are worst affected. In view of the abovementioned facts and figures, Open Access Initiative (a society developed by academicians) and SPARC (a forum of librarians) jointly issued a policy document in 2003 seeking attention of the scholarly world. The major issues raised by this policy document are summarized as below –

- You know first-hand that scientists, researchers, academicians and scholars are not paid for their journal articles. In most cases, you must transfer copyright to a journal before it will publish your work. While you might receive royalties for your books and software, your compensation for journal articles is more abstract: your field advances and your career develops.
- If you're giving up your royalties and intellectual property rights, shouldn't readers be the beneficiaries? By removing price and permission barriers, open access makes your work easier to use. Open access serves your interests as the author and the interests of all potential readers. Another important point is to be taken into consideration here – most of the researches in India are publicly funded research.

- In the age of print, open access was physically and economically impossible. But thanks to the Internet in general and Web in particular, it's an emerging reality. Now, the tradition of producing journal articles without expectation of payment combined with electronic publishing offers an unprecedented public good: the free online availability of peer-reviewed scientific and scholarly journal articles.
- Think about what this kind of distribution will mean for the enlargement of your audience, the widespread sharing of knowledge, and the acceleration of research. Open-access archives and journals are both practical and lawful. Implementations around the world are proving that they surpass traditional subscription-based journals in their cost-effectiveness and service to science and scholarship.
- University Grants Commission (UGC), India (along with other major global educational agencies) recommended building up of Institutional Digital Repository for each UGC affiliated Universities in India at an early date.
- Open access knowledge objects are more visible. Steve Lawrence, a scientist at NEC Research Institute, analyzed nearly 120,000 computer science articles cited in a standard disciplinary bibliography. When he looked at articles with successively higher levels of impact or citations, he found successively higher percentages of open-access articles, and vice versa. He found the strength of this correlation steadily increased over a decade.

LECTURE 2

IQAC -A Mechanism for Quality Sustenance & Improvement

- Prof. Sudipti Banerjea

*Retd. Professor, Dept. of Commerce & Ex- Director, IQAC
University of Calcutta*

- Vision
- Mission
- Value Framework
- Why IQAC
- Introducing the Concept
- Objectives
- Strategies
- Function
- Role—Thinking Ahead
- Benefits
- Guidelines for Creation
- Composition
- Role of the Coordinator
- Operational Features
- Monitoring Mechanism
- Recent Changes in AQAR Submission
- Criterion-wise Analysis
- 1) Curricular Aspects (Key Indicators [4] & Qualitative Metrics [2])
- 2) Teaching-Learning and Evaluation (Key Indicators [6] & Qualitative Metrics [9])
- 3) Research, Innovations and Extension (Key Indicators [5] & Qualitative Metrics [2])
- 4) Infrastructure & Learning Resources (Key Indicators [4] & Qualitative Metrics [6])
- 5) Student Support and Progression (Key Indicators [4] & Qualitative Metrics [2])
- 6) Governance, leadership and Management (Key Indicators [5] & Qualitative Metrics [12])
- 7) Institutional Values and Best Practices (Key Indicators [9] & Qualitative Metrics [8])
- Overall Analysis based on Strengths (S) /Weaknesses (W)/ Opportunities (O)/ Challenges (C) [SWOC Analysis]
- Recommendations for Quality Enhancement of the Institution

EFFECTIVE DATA MANAGEMENT

- Dr. Usha Banerjee
Senior Scientific Officer
Indian Institute of Technology, Roorkee

An organization has to handle vast amounts of data, extract, retrieve, arrange and organise that data as per its needs. The problem of managing such vast volumes of data, sorting them into organized clusters for quick retrieval, using effective data retrieval techniques is one of the most important tasks for smooth running of an organization. An Institute of national importance that is over 170 years old has mammoth volumes of data to be handled-most of them manual and in physical forms that ran into tattered paper registers and records. When such data was to be retrieved for reports to be submitted to the Ministry or to other governmental agencies, huge efforts and manual labour were brought together and even after spending hours of effort, the result was inconsistent, redundant and non-cohesive data. The idea of implementing an Enterprise Resource Planning (ERP) software that would integrate all processes of the Institute spanning across three geographically different locations was conceived with the thought of bringing in recent advances in software and computing techniques in a bid to reduce labour needed for routine mundane tasks and hence increase the productivity of the Institute.

IIT Roorkee was established as The Roorkee College in 1847 AD as the First Engineering College in the British Empire. The College was renamed as The Thomason College of Civil Engineering in 1854. PanditJawaharLal Nehru, the first Prime Minister of India, presented the Charter in November 1949 elevating the erstwhile college to the First Engineering University of Independent India. On the 21st September 2001, the University was declared an institute of national importance, by passing a bill in the parliament, changing its status from University of Roorkee to Indian Institute of Technology Roorkee. IIT Roorkee is one of the biggest technical institutions in the country having the largest number of academic units. We have 21 academic departments covering engineering, applied sciences, humanities & social sciences, and management programs, several academic centers, centers of excellence, world class sports and recreational facilities spanning three campuses.

SAP was chosen as the product to be implemented after several rounds of discussions, brainstorming and approval processes. With the full scale deployment and implementation of the SAP Digital Solution, IITR will benefit from a common integrated

system across different functions and processes leading to the standardization of all processes and systems across the institute; enhanced monitoring of R&D activities, optimum utilization of the resources, procurement, and administrative processes to name a few.

Full scale implementation of SAP commenced. The biggest hurdle that we faced during the initial phases of the project was lack of documented processes. Being a government organization many of the processes followed were manual and repetitive and redundant. Each section/department/division/office had developed their own stand-alone legacy system that was taking care of their own software needs and hence data duplicity and redundancy was rampant. Each section/department also claimed the authenticity of their data which led to severe confusion and chaos. The first task in this project was to document all existing processes a term which in SAP project implementation parlance was called the "As-Is" process. The next step called as "To-be" process documented the processes of the Institute put in together with SAP best practices and modern methods of getting work done while following the norms and rules of the Institute. The To-be document was mutually signed by both parties and formed the basis of configuring the software.

SAP is a COTS (commercial off-the-shelf) product is one that is used "as-is." COTS products are designed to be easily installed and to interoperate with existing system components. The components needed configuration and further customization to ensure that they adhered to the norms of the Institute. Several layers of redundant processes that were running till then were refurbished, many approval levels in the legacy system were cut down in a bid to reduce time needed to complete any task etc.

The bigger challenge lay ahead, in migration of data. The historical data of the Institute ranged from the early 1900's till date and ran into millions of pages, many of them in very poor physical shape and almost not decipherable, soft formats of data that had no parity and data spanning across multiple legacy systems developed in multiple programming languages using multiple databases. It was first decided that only "clean data" would be migrated into SAP and thus what followed was a tedious process of first analyzing and then cleaning all these volumes of data.

Efforts were put in to convert the manual paper data into soft formats, excel templates were created and students, employees and anyone willing to earn a quick buck, were taken in to help the team convert all this manual data into soft forms. This process was performed under strict supervision of Institute staff and each set of data was checked for sanctity and correctness.

These soft templates of data were then programmatically uploaded into SAP using available data migration programs in SAP. The fundamental problem was how to quantify and finalize the data to be captured into the system. What should be the cut-over date and how to decide on how much data might be needed for reports to be generated in the future. The solution to these problems were then found out by ensuring that the historic data be retained in legacy stand-alone servers. And the new financial year data be captured into SAP. SAP has a strict policy of reporting, authorization, financial year closing etc. and Government rules and policies are mapped into the system making it easy for us to migrate data and take decisions accordingly.

Effective data management forms an integral part of managing any organization. In this age of quick information and data retrieval mechanisms, one has to be wise in choosing systems, which will deliver based upon one's needs. Change management forms an integral component of any major project. Change begins from the change in human behaviour, temperament and working methods. The role of senior management of any organization plays a pivotal role here in steering and hand holding employees to ensure a smooth yet steady change.

Quality of data, quality of processes, quality of people and quality of products is synergistic. They go hand-in-hand and each play an important role in the success and growth of any organization.

Webinar in the age of ICT

- Dr. Nabanita Sengupta¹ and Sanjib Kumar Gupta²

¹Assistant Professor of English, Member of IQAC, Sarsuna College

²Assistant Professor of Statistics, Member of IQAC, Sarsuna College

In the age of communication technology, resource sharing has become much easier. This has also led to an explosion of information often leading to a surfeit of data, opinions and resources on any given topic. Nevertheless, it has also made real time resource sharing a great possibility. Taking advantage of this aspect of communication technology, Sarsuna College had organised a two-day international webinar using the college ICT facilities. There were five collaborating universities who participated in the webinar - Department of Bangla, Rajshahi University; Centre for Comparative Literature, Visva-bharati; Centre for Applied Linguistics and Translation Studies, Hyderabad University; School of Education Studies, Ambedkar University and Department of Bengali, Vidyasagar University. Apart from these, two other colleges also participated as institution in the given webinar. The resource persons of the webinar participated from various parts of the world including overseas institutions like Murdoch University and the University of Chicago. We were honoured to have the eminent professor, Prof Dipesh Chakrabarty deliberate on 'Humanities in the age of big data' and then also engage in an animated post-lecture discussion with participants from all the locations. In India too, we had speakers from Pune, Delhi, Bangalore and Bolpur. Most of the resource persons from Kolkata were invited to the college though some did deliver the lectures from their respective institutions as well. The entire webinar was organised using software called Zoom.

The webinar was conducted completely online with the resource persons, paper presenters and audience situated in their respective locations. Mode of presentation was bilingual (English and Bengali) which also stressed upon the need for multilingual approach and survival of the vernaculars in this age of ICTs and technologically driven education. The papers and the presentations (ppts, pdf, etc.) were accepted in advance from the presenters and kept with the host institution for any last minute exigencies and back up. Call for papers, registration, selected abstracts and the final schedule were published time to time in the college website and in the online event page created. Several demo sessions had been organised with the resource persons and remote participants to familiarise with the technological aspect of the webinar. One of the greatest advantages of organising this webinar was that participants in all the centres could engage in a live interaction with the resource persons.

It gave a wider access in terms of location and number of participants. Screen sharing, in-built video recording and a simultaneous access to a number of remote users made zoom an ideal platform for conducting the webinar. Webinars can be an answer to the future of conferences as it involves less hassles, is more economically viable and also eco-friendly as it uses minimum resources. The only requirements for conducting such a webinar are a proper ICT enabled conference hall and a good network service provider. With such minimum requirements it is possible to organise world class lectures, workshops, conferences and much more with minimum resource utilization.

Integrating Open Education Concepts in Blended Learning with MOOCs

- Sumita Chatterjee

Asst. Professor, Dept. in Education

BHK Mahavidyalaya

Today's college students lead blended lives. We access our news online, we pay bills online, we communicate through e-mail and social networks. People with Internet access go first to the web for information. We access the world via smartphones; why not access education that way too?

At its simplest, blended learning courses are those in which a significant amount of seat time, that is, time spent in the classroom, is replaced with online activities that involve students in meeting course objectives. Educes, a non-profit organization whose mission is to promote the intelligent use of information technology in higher education, classifies courses based on the amount of time spent in each modality (Allen, Seaman, & Garrett, 2007). According to its classification scheme, blended courses have between 30% and 79% of activities online, face-to-face courses can include up to 29% of online activities, and fully online courses can include up to 20% of face-to-face activities.

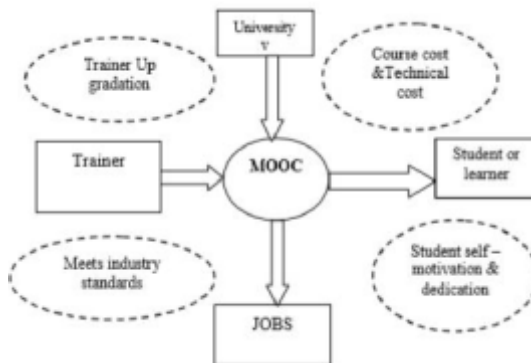
Blended Learning involves the integration of learning programs in various formats to achieve a common goal. Blended learning programs usually consists of a combination of lecture rooms and online programs. Blended learning could also be defined as the fusion of traditional face to face and online learning schemes to maximize the effectiveness of learning. In blended learning, the training program or course is broken into different sections and the most suitable sections are selected. The main aim is to take advantage of the best features of each method. Computer-based training and CD-ROMs are examples of media that could be used in a blended course.

A blended learning approach ensures that the learner is engaged and driving his or her individual learning experience. This approach also helps cater to the individual needs of the learner as most students have unique learning styles and a blended approach is more likely to cater to those needs than a traditional classroom teaching experience.

MOOCs stand for Massive Open Online Courses. The term "MOOC" was coined in 2008 by Canadian academician named David Cormier whereas first MOOC was taught by George Siemens and Stephen Downes in University of Manitoba, Canada where a class of 25 regular students was extended online to teach 1500 students. It is regarded as the buzzword in educational trends especially higher education. MOOC is known by different variants in the cyberspace –online courses, open courseware (OCWs), video lectures, online education, online studies, open educational resources etc. to name a few.

The MOOC philosophy is based on the premise that learning happens through network of connections. Various social networking tools like Facebook, GooglePlus, LinkedIn and micro blogging website like twitter along with many other blogging sites offer tremendous “share and learn” opportunities. MOOC is an extension of “Open Educational Resources” movement which contribute positively to all forms of classroom types available – Distance education, online learning and Traditional classroom session”. “Massive” means a few hundred thousand students can join it simultaneously. “Open” means it is openly accessible to anybody, anywhere, anytime 24x7x365 with the free use and reuse (with legitimate restrictions) of the source material. “Online” indicates that it is offered through the web. “Course” stands for a self-paced class, usually of 4-8 weeks, with students joining across the continents and interacting virtually and certificates or “statement of accomplishment” is awarded to the successful students after evaluation of exams online assignments either by auto grader or peer group. In a nutshell, MOOCs are the new medium of education through online teaching. Some experts term the MOOC as a disruptive technology i.e. the technology which demolishes the traditional structure of pedagogy and creates a new platform of learning something that fundamentally and changes the way we do things (Conole, 2013 & Christensen 1997), others call it a 'revolutionary supplement” in the diet of 'traditional pedagogy”.

University approved MOOC whether short term basic or long term advanced course can be taken by student. Universities can tie up with the industries. University designed MOOC can bridge the gap by providing the missing practical approach in the existing education sector. The factors which pose as challenges required to be taken into consideration along with implementation.



Framework for MOOC in India

(source)Prospects for Success of MOOC in Higher Education in India by Puja Devgun MCA, NMITD, Mumbai. International Journal of Information and Computation Technology. ISSN 0974-2239 Volume 3, Number 7 (2013), pp. 641-646

University approved MOOC: The Technical infrastructure needs to be upgraded in the universities.

Students enrolling to MOOC: Awareness of MOOC's needs to be spread appropriately using the social media sites, blogs along with traditional methods.

Evaluation Mechanism : MOOC's are student- focused. A strong assessment mechanism needs to be built up to justify the course objectives.

MOOC can provide the Indian students an edge required to compete in the global market. MOOCs represent a promising area for learning technology growth. As a new innovation, there are significant opportunities for pedagogical research, philosophical and theoretical development, design and facilitation adaptations, and implementations in varied contexts. To summarize, MOOCs are a great platform for higher education not just in India but all over the world but it comes with its pros and cons when it comes down to the future prospects of students that have passed out of MOOCs.

SOCIAL MEDIA AS A TOOL FOR EDUCATION

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The birth of the digital age opened the wide opportunity for users to explore varied kinds of information and get connected through the use of the internet. Traditional media (like newspapers and television) are today excluded as important publishing techniques, while activities have been taken over by social media. In these millennial days, social media opens wide opportunities for users in different fields depending on their desires and goals. Social networking sites allow the user to connect with other people of similar interests and background. Dissemination of information, entertainment and education through social media is one of the most advanced and modern ways of communication in the modern world. It provides us with rich resources of information and data that have the possible potential to improve the quality of instruction in education.

Connectivity or interactivity offered by social media is an enormous attribute that attracts today's young generation. As digital natives, who are born into a technological world utilize such technologies for their learning process, hence, they expect these technologies to be integrated into their formal education. Social media services such as social bookmarking, blogging, photo or video-sharing applications offer a new way of resource sharing and collaborative learning. These practices have the potential of increasing student motivation, providing new ways of supporting students and changing the nature of learning boundaries. Communication with teachers, a collaborative study with other groups or institutions, sharing of knowledge with the help of different resources, less frequency of accessibility and flexibility of access are few noted advantages of social media to be used as a tool in education. Not only students, but social networking also gains popularity among teachers. Sharing and discussion enhances their teaching process.

Modern education is more technical and social as compared to the traditional education. Nowadays, study materials are easily available on social websites. Students can find their desired notes by using social media technology which leads to their success in study preparation. Literature tells us that the adoption of social media could be beneficial for education and a step up in the technology-enhanced learning paradigm.

Social media is ideal for opting new ideas and take lessons using the various available internet tools and features:

- FACEBOOK : The instructor can effortlessly create a closed or an opened group to share information, ideas quizzes, questionnaires, materials, pictures, or even an entire page on a specific course or module. Both former and latter students can freely talk about various course-related issues, questions they might have, post mutually interesting information and generally things they want to share.
- WHATSAPP GROUP :Whatsapp provides a channel through which teachers can achieve faster and more seamless communication with their students. It acts as a facilitator of communication and a means of dispersing educational resources and information to students.
- GOOGLE PLUS : Google in no doubt, an uprising star for social learning. The social platform is same in the sense that students can find their friends and teachers, share pictures, post educational videos and make comments.
- TWITTER : In e-learning, it can be used as a backchannel to connect learning communities or smaller classrooms over a specific topic or event, to share highlights, make statements, upload pictures, etc
- YOUTUBE : This is an excellent resource for e-learning. It is free and can be used to support a class, while viewers can also rate the video's content and quality, as well as comment. These videos can be part of a course, but instructors can also use it to broadcast entire tutorials or teasers to attract the audience they want.
- LINKEDIN : It contains thousands of discussions, and groups in various languages, where instructors, educators and influencers share views, problems, developments and how-to tips.
- JSTOR : It is an online digital library of academic journals, e-books and primary sources.

Teachers facilitate students in classrooms by incorporating the medium into the classroom successfully. Infusing social media into everyday lessons in classrooms are possible with the help of:-

- Creating open line course(MOOC) on <https://www.coursera.org>, encourage students to share work socially.
- Facilitating guest speaker discussions(HASHTAGS) on <http://www.hashtags.org> during classroom discussions, encourage students to tweet questions to a guest speaker.

- Using free blogs on <https://www.blogger.com> provides materials to students to include in portfolios.
- Teachers foster skills by encouraging students to reach out to sources directly through <http://www.linkedin.com>.
- EDMODO helps to create a social digital classroom. On <https://www.edmodo.com> a teacher can vote, post assignments, create a class assignments calendar, and upload photos and messages to students.

Considering all the merits of use of social media it is wise to focus on its demerits too. All of the uses of social media in education have their controversies like;

- Since social media contains a variety of information, it is easy to get tempted to recreational purposes and neglect the true intention of learning.
- Information resources should be checked to avoid the risk of dealing with unscrupulous users.
- Social media is prone to social isolation.
- Social networking sites facilitate cyberbullying.
- Rapid changes in the technologies and user interfaces make one perplexed.
- The easy sharing of images and content creates opportunities for copyright violation and plagiarism.

Whatever may be the consequences, analysis of recent data shows an upward trend of the increasing role of social media in the use of Education. The increasing awareness and use of technology and social media have changed the method of teaching among students. Student interaction has increased due to various social media tools available. Rapid development in the field of social media has made education easier, interesting and practical.

ACADEMIC PIRATES OF THE WEB WORLD

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In the age of information boom in the web world, no one can deny that scholarly articles and e-books are still far beyond the purchasing power of a student or individual researchers and if he/she tried to reach that type of academic works from any remote part of the world, money is the biggest obstacle. So far to solve the problem there are pirate queens and kings in the web world with Robin Hood images. They believe in the words of Aaron Swartz that: *“information is power. But like all power, there are those who want to keep it for themselves. The world's entire scientific and cultural heritage, published over centuries in books and journals, is increasingly being digitized and locked up by a handful of private corporations.”*

Internet activist Aaron Swartz, as a guest on the Massachusetts Institute of Technology network downloaded academic journals from the digital library JSTOR. After that, Director of civil liberties at the Stanford Centre for Internet and Society, Jennifer Granick said: “While some people think Aaron went too far, there is no social consensus that what he did was a crime.” Swartz was charged with accessing MIT and JSTOR without authorization. Patrick E. Corbett, a professor at Thomas M. Cooley Law School and a former federal prosecutor who studies computer crimes said: “As much as his heart may have been in the right place,” Corbett adds, “Aaron Swartz appeared to be a guy who decided he didn't like a law and he was going to break it, rather than work with Congress to change the law.” Swartz had freed academic articles from its pay barrier. In January 2010 Swartz committed suicide in his New York Apartment.

Swartz's death put the question forward whether freeing academic articles from reputed companies should be judged in the same law which is used for judging several serious cybercrimes. So another computer hacker, Keith W. Downey's lawyer John Hamasaki said: “The idea that for downloading too many academic articles you could be facing decades in prison— that's absurd,” After the death of academic web pirate king Alexandra Elbakyan, a graduate student from Kazakhstan emerged as “Sciences pirate queen” with making SCI-HUB, an open-access website for science-related scholarly journal. She was accused and so absconded somewhere in Russia. SCI-HUB has 70,000,000 research papers that are “artificially restricted by copyright laws. The website is trying to break the

commercialisation of scientific articles and has already freed the economic wall of academic articles. Pirates in the web world have had the Robin Hood image developed for themselves among readers.

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SCOPE OF USING ICT FOR CHEMISTRY TEACHING

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Information and communication technology (ICT) is a process of integration of computers, software, telecommunications and audio-visual systems to enable users to create, store, access, transmit & manipulate information purposefully. In the age of development of technology and information explosions the role of information & communication technology [ICT] in teaching and learning is very promising. Although the extent of use and availability of ICT-Resources in advanced countries are more but India government has also initiated for ICT-Curricula, Courses for teachers/students. And also developed for showcasing and disseminating all educational e-resources including textbooks, audio, video, periodicals, and a variety of other digital resources through e-Pathshala and SWAYAM portals. ICT based learning playing significant role in science education in general and chemistry education in particular. But the problem lies on both the extent of availability and also the extent of use of ICT resources by chemistry teachers. In this article we have discussed some ICT-based virtual experimental demonstrations so that teachers & students of chemistry may be convinced in using ICT for better learning of chemistry.

In ICT based teaching processes, learners are found to engage more times with subject matter intensely & actively involved in the learning processes as they can make their discussions, plans and perform their actions also. Teachers only guide the whole process of learning and determine the actual learning happening to achieve quality learning. ICT based learning environment are found to play effective role in enhancing interest among learners of chemistry. Also computer/ internet based curriculum delivery system and judicious use of ICT resources of chemistry can modify classroom modules into virtual demonstration classes.

For today's classroom & students - the old Chinese proverb remains more appropriate;

Tell me, I'll forget.
Show me, I'll remember.
Involve me, I'll understand.

- Chinese Confucian philosopher Xunzi (312-230 BC)

Here in the Table-1, some important ICT-Resource & Tools with their Uses are discussed.

Table-1: Notable ICT-Resource & Tools with Purpose of Uses

| Name of ICT-Resource & Tools | Purpose of Use |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Basic Computer Software Such As Word Processing, Spread Sheet, Power Point | Lesson preparation & presentation |
| Multimedia projector | For varying instruction and Presentation. |
| Internet Facilities with Browser & E-mail | Accessing information & planning of chemistry instructions. |
| Ready-made programme in websites & Apps | For chemistry concept Learning through virtual demonstration. |
| Computers-desktop & Computer laptop | Independent Learning & during Instruction dissemination. |
| Tele conferencing / Video-recorder, etc. Browser Account/ Classroom Apps. | For teacher's interaction with students during instruction, Video-recording of lecture / demonstration & feedback. |
| Android Operated Smartphone with suitable Apps; e.g., Beaker & Chemist, etc. | For virtual demonstration of chemistry experiments and concepts. |

Use of suitable web-based materials and software also engage learners to meet their needs through accessing, retrieving & observing of specialized lecture notes, power-point presentations, virtual experimental demonstrations, etc. Using these materials can acquire chemistry knowledge through self learning and e-learning modes. Using Power-point presentation with suitable web-programs & android operated Smartphone as an effective ICT tools for chemistry teaching is worthwhile and economic also for virtual demonstration of laboratory experiments. For example, we can use the 'LiveChem' and /or 'beaker' apps with virtual demonstration of some popular experiments for clear understandings the basic concepts of chemistry. Below stated picture demonstrates the flame tests for two metals using beaker apps in Smartphone (Fig.-1).



Barium

Fig.1

Lithium

Students themselves also use their Smartphone for the some other suitable experiments available with the system for learning other concepts of chemistry. As a result students become interested to learn the concepts and develop skills through hands-on activity in actual laboratory classes. So, ICT-Resources & tools of chemistry teaching can be promoted to motivate and also to engage students in the subject with up-to-date learning materials. Thus chemistry learning becomes successful with learner centric environment & guided by teacher for quality learning.

An Open Window

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One might find hundreds of think-pieces on the internet discussing the detrimental effects of spending far too much time scrolling through social media feeds. Yet, far too often, we tend to forget how all of these platforms that connect far-flung corners the world in an intricate online web serve certain undeniable purposes. Take, for instance, my own experience with Facebook. An aeon ago, when I was still a schoolgirl, I had a dear friend. As we grew up, we grew away from each other. Time and circumstances carried us in different directions, and, as is perhaps the case with so many childhood friends, we lost touch. From time to time, I would find myself thinking of my friend, with whom I had shared so many happy memories of golden days, but I had all but resigned myself to never seeing her again.

Imagine my delight and astonishment upon being able to reconnect with her after decades, when I decided, on a whim, to try my hand at finding her on Facebook. I had little hope when I started out with my endeavour - having grown up in an age before computers became household names, I am still not quite adept at handling the internet. However, after a few minutes of laborious scrolling and squinting, I came across her Facebook profile. Surprisingly enough, even after thirty odd years of no contact, it only took a friend request and a single message for the two of us to fall into easy conversation and nostalgic reminiscence. And the rest, as they say, is history.

I suppose what I am attempting to highlight here is that social media, despite its myriad vices, thrives because of a rather simple reason. We humans crave connection. In an increasingly isolated world, a contraption that allows you to stay in touch with friends who live half the world away or to build new relationships that help combat that sense of isolation, becomes invaluable. I myself am not too reliant on social media but it is not hard to see or even understand where the appeal lies. To dismiss virtual connections as unreal or as inauthentic shadows of real human bonds would bespeak of a lack of judgement or of an obstinate ignorance of the fact that the times are changing, and with them, so are the rules of human socialisation.

While I only operate a Facebook account (which not only helps me stay on top of news concerning friends and family but also proves to be useful for keeping tabs on events happening in different parts of the world) my daughters operate accounts across multiple platforms.

When used correctly, and with discretion and good sense, these platforms become places where one learns to broaden one's horizons. Interacting with fellow users from different countries, cultures, ethnicities or backgrounds, learning a little bit about diverse points of view, finding common ground or mutual interests and engaging with various mind-sets and opinions goes a long way in teaching one about the ways of the world -and one's place in it.

Often, social media becomes a much-needed reminder of the power people could wield, should they decide to come together over a common cause. These days, as I'm sure we are all well aware, so many movements are conceived on online platforms as people raise their voices against injustices or strive to amend the wrongs in this world. At times, sensitive news articles that are deliberately suppressed by those in power find open outlets in social media platforms where users waste little time in disseminating information. Today, a single tweet or status update might have the potential to spark a revolution or to effect real, tangible change.

However, social media is also frequently criticized as a detriment to academic progress in the life of a student. What such criticisms fail to take into account is how easily social media becomes a platform wherefrom students and teachers alike may access and share academic information or communicate with one another. Furthermore, educators may easily make use of these platforms to upload live or recorded lectures, thereby keeping pace with changing modes of learning and absorbing information in the technological age. Social media not only facilitates connections between professors and their students but also provides ample space for collaborations, networking, sharing and generating knowledge and content.

With social media we have what is, by far, the fastest and easiest way of sharing our stories with the world. Whether they be stories of joy, of grief, of success, of survival or of rage, we now have at our fingertips a method to send them out into the world and to find comfort in sharing our experiences with the invisible multitude. Here, a budding entrepreneur might lay the foundations of a thriving online business. Indeed, social media is now an essential in terms of marketing strategies. When harnessed adequately, it provides easy access to customers, increases brand awareness and boosts sales. Furthermore, here, an online author might find numerous eager readers. Here, an academician might easily upload or access the latest articles published in their field. Here, a rookie group of young Korean musicians might scale previously insurmountable barriers of language and geography to find a veritable army of eager listeners. And, here, in the midst of this great, intangible web of connections, a lonely soul might find a kindred spirit. With over three billion users around the world accessing social media every month, one cannot categorize it as a simple passing trend. Today, social media stands as one of the fastest growing industries in this world, and it is hardly difficult to understand why and how it has changed not only the way we communicate with one another, but also how the world itself operates.

IMPORTANCE OF SOCIAL MEDIA AS TEACHING AID

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In this era of modern technology we all have chosen one or more scientific ways to express our self. Social Media is one such platform. The 'social' part refers to interacting with other people by sharing information with them and receiving information from them The 'media' part refers to an instrument of communication, like the internet. So Social Media can be defined as the online technology and methods by which people can share content, personal opinions, swap different perspectives and insights about issues and in general discuss the evolution of media. Social media comprises of several types, such as

1. Social Networking (Facebook, Google etc),
2. Micro blogging (Twitter),
3. Photo sharing (Instagram, Snapchat),
4. Video sharing (YouTube, Google Live),
5. Wikipedia, an online encyclopedia which provides information about any content in a go.

Some important benefits of social media are-

1. Social media is easily accessible and it's also the meeting point of today's internet savvy population.
2. Mostly younger generation, teenagers and middle aged people, form a major percentage of the total social media user population.
3. Social media opens possibilities of direct access to clients without any third party intervention.
4. Advertisement in social media is cost effective as compared to print, TV or other traditional media.
5. Social media also helps in search engine optimization and increase in rankings of company websites etc.

As a result of its reach and ease of accessibility, social media can be used as an important teaching aid. Social media has gained credibility over the years as a trusted source of information and as a platform where organizations can interact with audiences. Institutions communicate

with students via YouTube and Facebook Connecting with experts on topics via social media helps in the research process, enhanced learning management systems and can build learner's social credibility.

In the arena of modern education, new technologies, method of teaching, learning material, learning resources and content are introduced. Through Facebook, Whatasapp, various groups can be formed where students can exchange study materials, opinions, concepts as well as assignments for better understanding. Teachers can also interact with students beyond regular classes which make the student teacher relationship better. It also helps teachers to keep the record of their ex-students.

You Tube is another effective educational aid which provides online streaming. Uploading e-learning contents to YouTube makes it available throughout the YouTube network that helps learners to access and view it via their smartphones and tablets. After viewing a YouTube video, teacher can encourage online discussion by asking students to add their personal insights.

Wikipedia, an online encyclopedia which provides information about any content helps reduce the time of the person. It is also effective for the learners to understand the new techniques.

Google helps searching online course and contents and saves time and effort. Even students who are not interested in regular educational initiatives can study online. E-Education is electronically supported learning that relies on the Internet for teacher or student interaction and the distribution of class materials. The product of e-learning is e-content . E-content lessons are generally designed to guide students with information, or to help them perform specific tasks. An e-content package can be used as teacher in the virtual classroom situation. Students don't have to travel somewhere to build new skills and gain new knowledge.

Libraries play an important role in the educational and research process. But today when conventional libraries are lacking resources, online Digital Libraries provide varied content which can be easily accessed by many. A digital library is a collection of documents such as magazines, articles, books, papers, images, sound files and video, organized in an electronic form and available on the internet or in a digital support, can provide access to many of the knowledge networks around the world, which is a necessary component of any research experience.

Webinar is another helpful aid in higher education. Webinar connects students across the globe by conducting workshops and seminars through online video conferencing. Regular classroom studies in college require one to invest a lot. Most of the time, webinars are free too. Webinars can make education quite convenient and effective for the students who are unable to afford college. A webinar allows for people to attend and conduct a class from anywhere be it their home, a cafe, library or just about any other place they feel comfortable in. All you need to do is decide upon a specific time and inform all the relevant audiences.

At the end it can be concluded that today smart phones are the easiest way to communicate, to connect to social media and practically it is impossible to find anybody who is not involved in social media. However, one should not get addicted to social media, rather to make it their guide in the path of education. So, we should encourage our students to access e-contents and online resources more frequently. In this way social media can be incorporated in modern educational system.

THE BUBBLING EFFECT OF SOCIAL MEDIA

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Most of the world's population is leaving the traditional media and adopting social media now. Social media holds enormous information and we have easy access to it. But everything that comes cannot be and should not be considered to be true and authentic. Social media is feeding us with various kinds of information every day. There lies a certain algorithm of catering the information. It receives your personal information you put into any social platform and uses it. It continuously updates its filtering system based on the personal information, browsing history, shopping list, likes, posts, searches of a user. The process of customisation gets changed for each user according to his/her preferences. The internet activist Eli Pariser named it the filter bubble. The filter bubble exists and we cannot deny the fact. Though the filter bubble seems to be non-destructive, it actually is damaging. Most of us spend our leisure time on social media. Most people do not know of the existence of the filter bubble. In a bubble, things get separated from others and fall into a kind of isolation. The Filter bubble works in similar way. It serves people with what they want to hear. People see, interact, and convey one kind of matter with like-minded people. Thus they eventually get cut off from other peoples' point of view, their conditions and matters, those that are out of their comfort zone.

The web search also gets customised according to the user. If two people search for a similar subject, both of them will not get the same results. Their own bubble prohibits it. The filter bubble is so powerful that people get imprisoned by the impact of the choices they unknowingly made. The filter bubble may trap the user into his own utopia since the content seen by the viewer is the product of the algorithm customized for him. It creates a narrow circle of like-minded people and poor acceptability to counter views and ideas. It is a great threat for democracy. Democracy is based upon an entire population where people have the power by emphasising the majority. If people are influenced by false information and are unable to debate, democracy becomes invalid. Inquisitive voters turn to search engines to conduct basic research on candidates. If they are getting information that is influenced to one side because of their personal filter bubbles, then that can significantly impact the views of the voters. For example, the results of the U.S. presidential election in 2016 have been associated with the influence of social media platforms such as Twitter and

Facebook, and as a result have called into question the effects of the "filter bubble" phenomenon on user exposure to fake news.

(https://en.wikipedia.org/wiki/Filter_bubble#cite_note-9).

A user can be fed with biased and manipulated information very easily which is very alarming. From the ethical point of view, it is incorrect. The filter bubble may restrain a person to view any opposing fact or can empower the media to enforce certain views. As people are already living in the eco-chamber, there lies very little effort and scope of checking the authenticity of information posted or shared. It creates confirmation bias which is very alarming for society. As people are already living in the eco-chamber, there lies very little effort and scope of checking the authenticity of information posted or shared. It regulates what we read and may change it. Hence it is capable of changing what we think. It is high time that we beware of it and break the bubble around us.

There is no easy way out. The first like/ subscribe/ share that one does starts the bubbling process. Not only is the algorithm is to be blamed for the filter bubble users too also play a part in it. We tend to read, like, share, post, blog on things that we agree with. We do not like challenging ideas or view and we don't tend to accept opposition. We like to live in our own echo chamber of information. But we can reduce the customization process. There are some ways to reduce its effect. Having conversation with people even if they disagree with you, guiding people to pursue knowledge, how to research, and that not everything online is true is very much necessary. Turning off customization features, targeted advertisements, deleting cookies, keeping personal data private may help. Each person has a responsibility for breaking their own personal filter bubbles.

Though we can somehow reduce the filter bubble, the bigger bubbles will get divided into many smaller bubbles. The more we interact with or search or question different kinds of things, even out of our comfort bubble, the more the customization pattern will break. We have to be well aware of the fact that the filter bubble exists. Leaving social media and spending leisure and live in the real world, interacting with people in person, reading newspapers and books, and working to solve problems in real life rather than babbling about them on social media is more necessary.

IMPACT OF ICT IN BIO-SCIENCES TEACHING AND LEARNING EDUCATION

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Information Communication Technology (ICT) are enabling technologies that requires both hardware and software necessarily for delivering of voice, audio, high speed data, videos and internet service from one point and associated equipments that are connected via internet protocol (IP) and non IP network (Aluko 2004). The world is like a global village as a result of the development in ICT (Lawteacher.net, 2019) and the key instrument to this globalization are computers and mobile phones that have changed the way common people live, work and play. ICT is changing every aspect of human life - trade, manufacturing communications service, culture, entertainment, education, research, defence and global security (Abdullahi, 2013). ICT holds the opportunity to revolutionize pedagogical methods, expand access to quality education and improve the management of education. The present pedagogical pattern used in Indian classrooms does not prepare students for the information age and globalization. Simply, it is not equipping students to live effectively in the modern age of science and technology. It is quite over wheeling to stress that ICT gadgets simplify methods and strategies of acquisition of knowledge. Moreover, ICT is a critical tool for preparing and educating students with the required skills for the global work place (Ibe-Bassey, 2011). ICT is a diverse set of technological tools and resources used to communicate, and manage information. (Amajuoyi, 2012).

The impact of ICT in education cannot be overemphasized, it is interesting to note that: (i) ICT removes problems concerning space and time - students can communicate anywhere, anytime with teachers. Students can also collect and exchange information anywhere, anytime. (ii) ICT gives access to knowledge - students can draw on a global pool of knowledge. (iii) ICT makes serving and sharing knowledge easier - students can individually and/or together create record notes and presentation and thus, register their progress and use it for examinations. This way they are also trained for future participation as global research communication

The Impact of ICT in Science Education

It is emphasized that in science education, to develop knowledge and understanding the basic scientific principles, ICT has a major role to play. There are four common rationales for science education.

- Utilization: The knowledge of science is practically useful to everyone.
- Economic: We must ensure an adequate supply of scientifically trained individual to sustain and develop industrial society.
- The Cultural Argument: Science and technology are one. Further, the achievement of contemporary society and that a knowledge thereof is an essential prerequisite for the educated individual.
- The Democratic: Participating in debates requires knowledge of some aspects of science and technology. Hence, educating the population in science and technology is an essential requirement to sustain a healthy democratic society. (Osborne et al., 2003).

The main goal of ICT implementation in education, the proclaimed vision and mission of the government to promote ICT in education especially in bio-sciences is the following-

- To surround Colleges with dynamic and innovative learning environments for students to become more motivated and creative
- To enable students to gain wider range of knowledge and be able to access the internet for developing a global outlook
- To nurture students with capabilities of processing information more effectively and efficiently
- To develop students with attitudes and capability of life-long learning. It is also right to say that almost all ranges of subject's starts from mathematics, science, languages, arts and humanistic and other major fields can be learned more effectively through technology-based tools and equipment.

The Truth of ICT Use in the Science Lab

Teacher's motivation to use ICT in the classroom is at present, adversely influenced by a number of constraints such as lack of time to gain confidence and experience with technology, limited access to reliable resources, a science curriculum overloaded with content assessment that requires no use of the technology and a lack of subject-specific guidance for using ICT to support learning. Well integrated and effective classroom use of ICT is currently rare. In sum, teachers tends to use ICT largely to support, enhance and complement existing classroom practice rather than re-shaping subject contents, goals and pedagogy. However, teachers' motivation and commitment should be high and practice may gradually change. Training of faculty for using ICT in the classroom might have more success in science than in other subjects. Teachers/ faculty are now beginning to develop and try new strategies which successfully overcome the distractions of technology and focus attention instead on their intended learning objectives. (Osborne et al., 2003).

The Benefits of ICT in Science Education

Amajuoyi (2012) summarized the beneficial roles of ICT in education as:

- (i) Promoting students intellectual qualities through higher order thinking, problem solving, improved communication skills and deep understanding of the learning tools and concepts to be taught.
- (ii) Promoting a supportive, interactive teaching and learning environment by creating broader learning communication and therefore provide learning tools for students especially those with special needs.
- (iii) Using computer generated graphics illustrated by individual pictures.
- (iv) Improving college attendance levels and enabling the creation of a new and more effective curriculum.
- (v) Encouraging deeper understanding about data collection saves time on measuring and recording analysis.
- (vi) Empowering learners with ICT awareness and skills for success in knowledge economy.
- (vii) Improving the quality of instruction.
- (viii) Transforming the College by improving management policy.
- (ix) Enhancing the tools and environment for learning because materials can be presented by using multimedia.
- (x) Increasing the quality of student learning through access to the content through ICT facilities.
- (xi) Encouraging collaborative learning.

Conclusion

Nowadays, not only children but also younger or older people use ICT as a promising hope everywhere. Computers, Internet, E-mail, Mobile Phones, Video Conferencing, Printers, Fax machines soon and so forth aid today's world to run the activities at jet speed. The use of such technology in education might contribute a lot in the pedagogical aspects and lead to effective learning with the help and support from ICT elements and components. It is also right to say that almost all ranges of subject's from mathematics, science, languages, arts and humanistic and other major fields can be learned more effectively through technology-based tools and equipment. Internet is the platform to project the scientific lessons and success of our better teaching. Eventually, people of common interests come together to share their knowledge, collaborate and to work for a much better world. It was also found that professional development training programs for teachers and faculties might be play a key role in enhancing students' quality learning. Every educational institution should have an ICT coordinator & must be modern computer laboratories for the opportunity to be ICT literate.

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INSTAPOETRY

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Social Media has brought about changes in the way literature is presented and in the way it is produced and read as well. One of the areas where this change is noticeable is poetry. Poetry has always been an art form, however, for most poets, even great ones, it has rarely been a career. Poets have always had to deal with the idea of making a living and creating art.

Rupi Kaur is an example of how different things are now in the arena of poetry. Her first collection of poems, *milk and honey*, has now been translated into 40 languages and has sold over 3.5 million copies. However, it was not like this when Kaur began writing poems. Faced with rejections, she first started posting her poems on Tumblr in 2012 and then moved on to Instagram. *milk and honey*, published in 2014 topped the New York Times bestseller list and Kaur is now a literary sensation whose fame and popularity is due to social media. She has over 3 million Instagram followers.

On her Instagram account, Kaur alternates beautiful pictures of herself in elegant outfits with short poems written entirely in lower-case. One of her popular poetry post reads - "fall/in love/with your solitude" – and is accompanied by a line drawing done by her. Some of her other posts include "you've touched me/without even/touching me" and "she was music/but he had his ears cut off".

i do not want to have you
to fill the empty parts of me
i want to be full on my own

i want to be so complete
i could light a whole city
and then
i want to have you
cause the two of
us combined
could set it
on fire

- rupi kaur



Since the publication of Kaur's collection of poems and its grand success, poetry has become one of the fastest growing genres in book publishing. About 12 of the 20 bestselling poets in recent times were Instapoets – poets who shared their poems on Instagram.

HAUNTED

I wish someone
had warned me
when I was younger,
now I stay up all night and weep;
the ghosts of everything
you have loved and lost
come back to haunt you in your sleep.

Nikita Gill

Kaur was not the first Instapoet. In 2013, a Canadian- Australian poet, Lang Leav became popular on the internet and her poetry was shared on social media. Her popularity on Instagram led to her volume of poems, *Love & Misadventure* that sold more than 150,000 copies. There have been other poets too, all of whom owe their popularity to social media – Nikita Gill, Cleo Wade, Atticus, R.M.Drake, r.h. Sin among others.

I let her go
because I knew she could do better
and now she's gone
I wonder—
if I should've
just been better.

—ATTICUS—

An Instagram post is characterized by brevity and hence Instapoems are small, almost like aphorisms and deliverable quotes. Most Instagram poets advise about how to live life well – how to move on ahead in life, how to believe in oneself, how to pursue one's dreams, and the like. On a social media platform that speaks of food, travel, lifestyle, fashion and travel, poetry presents aspirations and beliefs. Instapoems do lack complexity and subtlety that characterizes great poetry and are often very confessional. As a result of their size and straightforward nature, Instapoems are extremely popular. It is, off course, to be seen whether such poems remain ephemeral or pass into the annals of literature.

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