

**NAAC Sponsored**  
**Two day State Level Online Workshop on**  
*"The Use of ICT enabled tools for Teaching, Learning  
and Evaluation in Higher Education Institutions"*



**07-08 May, 2022**

Organized by  
Internal Quality Assurance Cell (IQAC)  
Durgapur Government College  
Durgapur, West Bengal-713214

**National Assessment and Accreditation Council  
(NAAC) Sponsored**

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## Durgapur Government College

(Accredited by NAAC with "A" Grade)

J.N. Avenue, Durgapur, District : Paschim Bardhaman, West Bengal, Pin-713214

Website : <http://www.durgapurgovtcollege.ac.in/>

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**Dr. Debnath Palit**

Principal

Durgapur Government College

Durgapur-713214

### Message from the Desk of the Principal

It gives me immense pleasure to convey that the Internal Quality Assurance Cell (IQAC) of this college is going to organize the NAAC sponsored Two Day state level workshop on "*The Use of ICT enabled tools for Teaching, Learning and Evaluation in Higher Education Institutions*". The education sector is presently witnessing the paradigm shift to outcome based education system, and during the pandemic situation, computer-aided methods of teaching, learning and assessment, were the only feasible modes of imparting education and assessing the learning levels of students. Technology cultivates long term adaptation and once it is adapted, it remains forever. Use of ICT education has opened new gates of possibilities such as teacher-student online interactions beyond the regular class hours, learning at own time and pace, learning through animations, web based software and through interactions with experts and academicians beyond the campus walls through massive open online courses (MOOCs). Online assessment through learning management system (LMS) has also taken its way to assess the learning levels of students. This workshop is highly relevant one in the present scenario to facilitate the technological competence of teachers. We are really honoured to receive the approval of the National Assessment and Accreditation Council (NAAC) to organize this workshop. I welcome all resource persons and participants from all parts of India to this workshop. I hope the event a grand success with full assistance and cooperation from the administration.

(Principal)

**Principal  
Durgapur Govt. College**



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**Dr. Avijit Mandal**  
Coordinator, IQAC  
Durgapur Government College  
Durgapur-713214

### Message from the Desk of the Coordinator, IQAC

The emancipatory and transformative potentials of Information and Communication Technology (ICT) in higher education in India lead to a massive improvement in interactions between teachers and students. The role of ICT in education has become increasingly important strategy of student centric teaching learning mechanism. There has been an unprecedented growth in the use of ICTs in teaching, research and extension activities. The sudden boom in Information Technology has transformed the way how knowledge is disseminated today. This not only improves the learning process of slow learners but also helps to improve the performance of the advanced learners.

The objective of the workshop is to provide the basic knowledge and hands on experience of the learning management system so that teachers can use the ICT enabled tools for teaching, learning and evaluation as a strategy for student centric teaching learning mechanism. This workshop basically provides the basic knowledge and hands on experience of the learning management system (LMS) to the teachers so that maximum number of teachers will be able to apply ICT enabled tools for teaching and evaluation. It will help teachers to get connected with the students beyond the class hour. This prime task of the workshop is to develop consistent and catalytic improvement in the teaching learning mechanism through proper training on the use of ICT enabled tools and designing of the four quadrant massive open online courses (MOOCS).

With all best wishes

*Avijit Mandal*  
(Coordinator, IQAC)

## **A Brief Overview of Durgapur Government College**

The foundation stone of Durgapur Government College was laid down on January 22, 1969, by the Government of West Bengal as the follow-up of an effort to set up a co-educational government-funded institution of higher education at the gradually emerging industrial town of Durgapur. In 1969, the College, besides being the first institution of its kind in town, was the only Government College not only in the home district of Burdwan (now officially known as Paschim Bardhaman), but also in the neighbouring districts of Bankura, Purulia and Birbhum). The institution presently continues its singularity in being the only government college in the district of Paschim Bardhaman.

The academic journey of the institution started on September 15, 1970, in the academic session 1970-71 with B.A. Honours and General courses in seven subjects. Although the College initially offered Humanities courses, it gradually expanded its horizon through introduction of subjects in demand and now offers quality education in Humanities, Science and Commerce streams. Presently, we offer undergraduate programmes in 14 subjects, post-graduate and Ph.D. programmes in three science subjects; Chemistry, Conservation Biology and Geology.

The institution was affiliated to The University of Burdwan since its inception till June 23, 2015 and subsequently by Government order is presently affiliated to the newly set up Kazi Nazrul University (KNU), Asansol since June 24, 2015. The institution is recognized under the Section 2(f) and 12(B) of UGC act and was accredited by the National Assessment and Accreditation Council (NAAC) with "A" Grade (2nd Cycle) on October 30, 2017.

The institution has maintained quality assurance in its more than 50 year old chequered history by producing brilliant graduates absorbed in IITs, IISER and other institutes of national repute as an outcome of the effective and efficient teaching and learning strategies, cultivating research through several reputed publications and research projects, preparing NCC students for armed services, shouldering social responsibility and environmental consciousness through its two NSS units, promoting yoga and physical fitness through sports activities, with the sincere dedication and team work of all stakeholders. Our teachers are appointment by the Government on recommendation from the Public Service Commission (PSC), and consequently, we get the best teacher profiles, some of them are university gold medallists and rank holders. More than 60 students have passed Joint Admission Test for M.Sc. (JAM) examinations with good all India ranks in last three years. Our student statistics shows 67% of female students and we promote inclusive education by offering the best quality teaching to all sections of the society at a nominal fee structure, provision of Government scholarships and dedicated support services for the students, faculty and the non-teaching staff.

## **Internal Quality Assurance Cell (IQAC) Durgapur Government College**

The Internal Quality Assurance Cell, established on July 02, 2007, following the first cycle of assessment and accreditation of Durgapur Government College by the NAAC Peer Team in 2007, bridges the academic and administrative wings of the College, framing and implementing policies to ensure steady and sure steps to stay in sync with the demands of a fast-changing world in which the stakeholders move and work. This dynamic autonomous body pursues the ever-shifting threshold of excellence through continuous interaction with all the academic departments, the college administration, the students and other stakeholders to oversee that all the wheels turn efficiently to help in the forward march of the college. It relies on feedback from all stakeholders to review and revise its policies as and when the need arises. It takes on its shoulders the onus of creating an ambience in college conducive to teaching-learning, research work and academic exchange, cohesion among various groups, smooth functioning of the college administration and rolling out activities involving stakeholders to spread awareness about gender, caste, environment and our culture besides ensuring the participation of members of the staff, both teaching and non-teaching, in faculty development and skill enhancement programmes.

The IQAC maintains a database relating to infrastructure, profile of students including the alumni, the performance of students in Internal and university examinations, the placement of students after their completion of study at the college level, the financial assistance required by students from economically-depressed background, academic achievements of faculty and achievements of students in curricular and extra-curricular activities. It ensures that the Academic Calendar for each academic session balances various types of activities contributing to holistic development of students. With a focus on inclusive education and encouragement of innovative teaching methods especially in a digital age, the IQAC is on its toes round the year to offer the best available infrastructure to its stakeholders and also organizes several events in association with different departments of the institution..

The very composition of the body with the Head of the Institution as the Chairman, in-house and eminent members from outside college, reflects its responsibilities towards the beneficiaries at the institutional level and the society at large. The IQAC monitors both academic and administrative matters to initiate sure steps to a sustained level of excellence.

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**CHIEF PATRON**

**Dr. Debnath Palit**

*Principal, Durgapur Government College*

**PATRON**

**Dr. Avijit Mandal**

*Coordinator, IQAC, Durgapur Government College*

**VICE PATRON**

**Prof. Debasish Maitra**

*Associate Prof. of Commerce & IQAC Member  
Durgapur Government College*

**Jt. CONVENER**

**Dr. Nivedita Acharjee**

*Assistant Professor of Chemistry, IQAC Member and  
Jt. Convener, NAAC Steering Committee, Durgapur Government College*

**Dr. Deep Banerjee**

*Assistant Professor of Commerce and  
Jt. Convener, NAAC Steering Committee, Durgapur Government College*

**ORGANIZING SECRETARIES**

**Dr. Swapan Kumar Ghosh**

*Assistant Professor of Physics & IQAC Member*

**Dr. Pinaki Roy**

*Assistant Professor of Geology & IQAC Member*

**ORGANIZING COMMITTEE MEMBERS**

**Dr. Debamitra Dey**

*Associate Professor of Sanskrit & IQAC Member*

**Dr. Anindita Chatterjee**

*Associate Professor of English & IQAC Member*

**Dr. Amiya Biswas**

*Assistant Professor of Mathematics & IQAC Member*

**Dr. Kuntal Bhattacharya**

*Assistant Professor of Zoology & IQAC Member*



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## Programme Schedule

Day-1, May 07, 2022

Inaugural Session (10.00 am to 11.00 am)	<b>WELCOME ADDRESS</b> Dr. Debnath Palit <i>Principal, Durgapur Government College</i>	
	<b>INAUGURAL SPEECH</b> Dr. Avijit Mandal <i>Coordinator, IQAC, Durgapur Government College</i>	
<b>GREETINGS</b> Dr. Swapan Kumar Ghosh <i>Secretary, Teachers' Council and IQAC Member, Durgapur Government College</i>		
<b>VOTE OF THANKS</b> Dr. Anindita Chatterjee, <i>Associate professor of English and IQAC Member, Durgapur Government College</i>		
Workshop Session I	11.30 pm to 12.30 pm	<b>Resource Person</b> Professor (Dr.) Partha Sarathi Mukhopadhyay Department of Library and Information Science, University of Kalyani <i>Topic: Virtual Learning Environment, E-Content for E-learning</i>
	12.30 pm to 1.30 pm	<b>Resource Person</b> Dr. Ruchi Tripathi, Assistant Adviser, NAAC, Bengaluru <i>Topic: Role and Importance of Data Validation and Verification (DVV) in Accreditation Process</i>
<b>LUNCH BREAK</b>		
Workshop Session II	2.30 pm to 3.30 pm	<b>Resource Person</b> Professor (Dr.) Sunil Karforma Department of Computer Science, The University of Burdwan <i>Topic: Spread Sheet Processing: An ICT application</i>
	3.30 pm to 4.30 pm	<b>Resource Person</b> Dr. Sasanka Ghosh Department of Geography, Kazi Nazrul University <i>Topic: An overview of NAAC SSR Preparation Guidelines</i>
	4.30 pm to 5.30 pm	<b>Resource Person</b> Dr. Avisek Ghosh, Department of Microbiology, Maulana Azad College, Kolkata <i>Topic: Journey through an Open Source Learning Management System</i>

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## Programme Schedule

Day-2, May 08, 2022		
Workshop Session III	10.30 am to 11.30 am	<i>Resource Person</i> Dr. Tathagata Mukhopadhyay Visva Bharati <i>Topic: Identifying important areas to supplement learning in classrooms and an overview of MOODLE LMS</i>
	11.30 am to 12.30 pm	<i>Resource Person</i> Professor (Dr.) Tanmoy Banerjee Department of Physics The University of Burdwan <i>Topic: Creating Teaching Materials/Presentation/Thesis using "Notepad"</i>
	12.30 pm to 1.30 pm	<i>Resource Person</i> Dr. Neelesh Pandey, Assistant Adviser, NAAC, Bengaluru <i>Topic: Overview of the Student Satisfaction Survey (SSS)</i>
<b>LUNCH BREAK</b>		
Workshop Session IV	2.30 pm to 2.45 pm	<b>POSTER PRESENTATIONS</b>
	2.45 pm to 5.30 pm	<b>ORAL PRESENTATIONS</b>
	5.30 pm to 6.00 pm	<b>VALEDICTORY SESSION</b>

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Abstracts  
of  
Resource Persons

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# **Role and Importance of Data Validation and Verification (DVV) in Accreditation Process**

**Dr. Ruchi Tripathi**

*Assistant Adviser*

*National Assessment and Accreditation Council (NAAC) Bengaluru*

Email: drruchitripathibl@gmail.com

In Self Study Report, Quality indicator framework consists of two type of metrics, Quantitative metrics (QnM) and Qualitative metrics (QIM). Quantitative metrics (QnM) needs data in the form of numbers along with relevant supporting documents on the basis of standard operating procedure (SOP). For Qualitative metrics (QIM) information needs to be provided in the form of description/summary a prescribed word mentioned in each metric with supporting documents and links. Extended profile contains all the questions related to programs, students, academics and Institutions which are basically the figures of denominators of the formulas used for calculation of various Quantitative Metric values. DVV partner verifies input for extended profile questions and Quantitative Metrics based on templates for complete details validating the same with uploaded documents links and also with external web sources like AISHE, NIRF, UGC, Institutional website etc. on portal. DVV partner raises the queries to extended profile questions and / or Quantitative metrics wherever it finds mismatch or discrepancy in the data after initial verification and validation. 15 days time will be given to clarify all the queries; upload relevant documents; provide revised clarification input and submit DVV clarification on portal only. HEI can go through Standard Operating Procedure document for better clarity on what kind of relevant supporting documents to be uploaded for DVV queries; which are considerable; and which are not considerable etc. No extension of time will be given to submit DVV clarification unless for natural calamities, political disturbances and likewise no second level clarification. If the input is more, the document(s) may be provided for a small random selection of data as sought by DVV partner. DVV will take a decision of pro-rata basis.

Kinds of Quantitative metrics: First kind (last five years); Quantitative metrics which seeks year wise data for last five years. Second kind (Block year) Quantitative metrics which seeks Block year data collectively for the last five years. Third kind (OPTION) Quantitative metrics which seeks the input data based on options Fourth kind:(Data for the latest completed academic year) Quantitative metrics which seeks the input data for latest completed academic year. Fifth kind: Quantitative metrics which automatically calculates the response for the metric using the data provided in extended profile. Apart from these for metrics related to finance/Budget, the data to be consolidated for financial year (1st April to 31st March). For publication related metrics data to be consolidated for preceding calendar year data (1st January to 31st December) While providing the data and for the other metrics, the academic year to be considered (1st June-31st May).

# Spread Sheet Processing: An ICT application

**Professor (Dr.) Sunil Karforma**

*Head, Department of Computer Science, The University of Burdwan*

*Email: sunilkarforma@yahoo.com*

A spreadsheet is a computer program that can capture, display and manipulate data arranged in rows and columns. Spreadsheets are one of the most popular ICT tools available with personal computers. A spreadsheet is generally designed to hold numerical data and short text strings. In a spreadsheet program, spaces that hold items of data are called spreadsheet cells. They can be renamed to better reflect the data they hold and can be cross-referenced through row numbers and column letters. Different functions associated with spreadsheet processing are covered in this presentation.

# Creating Teaching Materials / Presentation / Thesis using "Notepad"

**Professor (Dr.) Tanmoy Banerjee**

*Department of Physics, The University of Burdwan, Burdwan 713 104, India*

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Making presentation, writing thesis and books, and creating reports have always been associated with the availability of certain commercial software packages. Apart from being commercial, these packages have commercially (ill) intentional "expiry date"; i.e., a thesis written using MX-office-95 cannot be edited with MX-office-19. In this interactive session I will discuss, with examples, how to exploit a simple text editor application to create documents like presentation, thesis, and book. The catch points are (i) These text editors are free and available in our pc/mobile phone, (ii) They are free from any expiry dates.

# Journey through an Open Source Learning Management System

Dr. Avishek Ghosh

*Department of Microbiology, Maulana Azad College, Kolkata*

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The digital evolution and involvement of artificial intelligence have become indispensable in most of the aspects of life, now a day. Methods of teaching has altered and shaped in a so called 'blended mode' where face-to-face classroom teaching has been actively synchronised with digital processes by the use of Information Communication Technology (ICT). Learning has now been 'managed' by digital management systems designed to ease the process of teaching and imbibition of knowledge involving a whole 24×7 format: like a hot buffet system where consumers (learners) can choose the course content they want with full liberty of options regarding the portions of course material they want to follow, duration & timings they think suitable and also the mode of taking assignments.

In this regard, there has been formulation of numerous LMSs, some of which are open source (optional modifications are possible) and some are closed source LMSs where the liberty of using the LMS is actually limited and alteration of settings becomes proprietary. Since the open source LMSs is advantageous for both course maker/instructor and learners, they have gained considerable attention especially during the CoViD-19 pandemic situation in our country.

Such an open source LMS is Moodle (Modular Object-Oriented Dynamic Learning Environment) which is also the first open source LMS of modern day. This is provided freely as open source software under GNU General Public License which means that, it is actually copyrighted but there are some additional freedoms as a user. User/course instructor is allowed to copy, use and modify the materials according to her/his own choices provided that instructor agrees to provide the source to others, not modify or remove original license and copyrights and apply the same license to any derivative works. It can be installed as a software on a PC or as an application on android/iPhone those can run PHP and can support SQL type database. It is also consistent with Linux.

Moodle is available with various web-addresses such as <https://moodlecloud.com/app/en>, Moodle - Open-source learning platform | Moodle.org. etc. each of which are having almost same features for the course instructor as well as learners. At first, the course instructor needs to create an account for her/his registration and then course materials can be uploaded by navigating the available options there. It was absolutely free of cost for a small group of learners and course instructor before mid 2020 but due to prevailing and prolonged usage and vast increase of 'demand', now it has become a paid service but still there is an option of a free trial for 45 days with little bit lesser domains of navigation. Simplest version usually allows 50 users (roles assigned as learners/students) to be registered with the course instructor. The total available domain space is 200MB, which, in my opinion is enough for a beginner or the course materials we deal with in UG/PG level. The course materials may include simple text-based materials, PDFs, audio or video files (MP4 preferably). Learners may be registered with prior intimation from the course instructor using their respective credentials and site usage by learners can be tracked by the instructor in real time.

Course instructor can arrange for many types of assessments like broad answer-type questions, short-answer type questions, MCQs, justification of statements with many options etc. Gradation procedure is usually automated but manual grading may also be possible since automated grading may not always reflect the exact scenario. Timings for taking tests may be flexible for the ease of both ends with usual flexibility and precision in specifying the duration of the test. Most importantly, there is option for obtaining feedback from the learners without disclosing the identity which is very useful and mandatory requirement for any type of course format.

In summary, it can be commented that, Moodle is a large scale open source LMS with complete provisions and beneficial compared to other widely popular LMSs which are not fully open source and do not have all the LMS provisions. Some of the other so called LMSs have got massively popularised in our region during the COVID-19 pandemic but Moodle continues its voyage from 2002 meeting the expectations of large group of users. Each LMS has its own advantages and demerits and by considering the facts, it can be concluded that, Moodle may be considered as user friendly and effective open source LMS which can become beneficial for the present day UG/PG learners.



# **Identifying important areas to supplement learning in classrooms and an overview of MOODLE LMS**

**Dr. Tathagata Mukhopadhyay**

*Associate Professor, Computer and System Sciences, Visva Bharati*

Email: [tathagato.mukhopadhyay@visva-bharati.ac.in](mailto:tathagato.mukhopadhyay@visva-bharati.ac.in)

The academic community was forced to adopt online mode of teaching/learning and evaluation in the last two years in the unprecedented pandemic scenario. Different institutions have taken different approaches to cope up the challenge. As part of the effort, we searched for free and open source tools where interactive study materials along with audio/video of the instructor can be accessed by the students at their own time as a supplement to their online classes. Moodle was found to be a good LMS (Learning Management System) which could be deployed free with relatively small footprint for the purpose. The first part of the proposed talk would be to identify some important area for the students to supplement their learning in the classroom - and certain types of tests and exercises to self-evaluate their achievement level. The second part would have an overview of Moodle LMS; its salient features and how it can be used to fulfil the objectives discussed in the first part.

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Abstracts  
of  
Oral Presentations  
by  
Participants

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# ICT Tool for Deaf and Dumb People

Abhishek Mehta

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The aim of this paper is to design a convenient system that is helpful for the people who have hearing difficulties and in general who use very simple and effective method; sign language. This system can be used for converting sign language to voice and also voice to sign language. A motion capture system is used for sign language conversion and a voice recognition system for voice conversion. It captures the signs and dictates on the screen as writing. It also captures the voice and displays the sign language meaning on the screen as motioned image or video. The aim of this paper is to improve the communication with the people who has hearing difficulties and using any sign language to express themselves. At the first sight, as an idea, how difficult could make a sign languages converter. After detailed research about sign language linguistics, it is figured out about 240 sign languages have exist for spoken languages in the world. To show how tough to working with any sign language, the general information about sign languages is given briefly.

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# Using E-learning in English Language Teaching

**Rosy Yumnam**

*The English and Foreign Languages University, Shillong*

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The benefits of e-learning in English Language Teaching (ELT) are immensely huge. The outbreak of the dreaded COVID19 pandemic has forced schools, colleges and universities to temporarily remain closed to fight the contagion. E-learning or online learning is a learning method which has been employed in such a difficult scenario to continue the teaching-learning process. E-learning uses various tools and systems to optimize the teaching-learning process through online platforms. For teaching ESL, the teachers should explore collaborative learning, communicative language teaching and communicative task-based language teaching to enable learners to effectively participate in the e-learning process. The use of these approaches engages the students to interact and perform the assigned tasks enabling them to effectively learn the language in the online platform. The paper explores the various e-learning practices into making an effective teaching of English as a second language. Various e-learning tools like internet, video conferencing platforms like Zoom, Google Meet and Webex, Google Classroom, YouTube, podcast and vodcast, online-boards, mobile phones and social networking sites like WhatsApp, Facebook and Twitter are explored to efficiently teach English as a second language. Further, the study investigated and analysed an English as a Second Language (ESL) classroom where the various e-learning tools are used.

# Massive open online courses (MOOCs) : Future of learning

**Dr. Shilpi Show Mandal**

*Department of Physics, Banwarilal Bhalotia College, Asansol, West Bengal*

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A massive open online course (MOOC) is an online course aimed at large-scale interactive participation and open access via the web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user forums that help build a community for the students, professors, and teaching assistants (TAs). MOOCs are a recent development in distance education. The word MOOC was first invented in 2008 by Dave Cormier, from the University of Prince Edward Island for a course offered by the University of Manitoba, "Connectivism and Connective Knowledge." The course Connectivism and Connective Knowledge developed by Stephen Downes and George Siemens.

## **INDIAN PLATFORMS FOR MOOCs:**

**SWAYAM** - Stands for Study Webs of Active Learning for Young Aspiring Minds. It is an India Chapter of Massive Open Online Courses, indigenously developed IT platform, initiated by Government of India, which is instrumental for self-actualization providing opportunities for a life-long learning. It is an integrated MOOCs platform for distance education that is aimed at offering all the courses from school level (Class IX) to post-graduation level. SWAYAM was developed in 2014, collaboratively by MHRD (Ministry of Human Resource Development) and AICTE (All India Council for Technical Education) with the help of Microsoft.

**NPTEL** is an acronym for National Programme on Technology Enhanced Learning which is an initiative by seven Indian Institutes of Technology (IIT Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and Indian Institute of Science (IISc) for creating online course contents in engineering and science. It is a project funded by the Ministry of Human Resource Development (MHRD) and contents for the courses were based on the model curriculum suggested by All India Council for Technical Education (AICTE) and the syllabi of major affiliating Universities in India.

## **APPLICATIONS OF MOOCs**

- Professional development
- Skill development
- Faculty development – fostering soft skills, inculcating research etc.
- Development of knowledge.

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# **Soft Computing & ICT Based State-of-art Secret Key Generation (SSKG) in Online Higher Educational Systems**

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Online higher education system had rendered its best possible services to all the education aspirants during the COVID-19 through myriad ICT modes. Revolutionary changes were found ever since the cameo of novel coronavirus19. Online classes, lectures, practical, examinations, assignments, exchange of study materials, etc were the recurrent activities in the higher education during the present pandemic. Data security was one of the most challenging issues in such domain. This paper aims to propose soft computing and ICT based State-of-art Key Generation (SSKG). Hybrid soft computation model on Artificial Neural Network with ICT were developed to generate a randomized as well as secure secret key. Moreover, hash function has been used to expand the secret key to its desired key size. Hash functions are one-way function to generate the message digest. The proposed key can be easily used to encrypt and decrypt various data in the online higher education system. Security reinforcement has been the main emphasis in this paper. Numerous mathematical tests were carried out during the result section. NIST was conducted on the different proposed SSKG. Acceptable p-values were obtained there. The proposed secret key generation time were found to be as 3.254 ms, 5.087 ms, and 7.263 ms for 128 bits, 256 bits, and 512 bits respectively. The proposed SSKG can resist Man-In-The-Middle attacks during the time of public communication.

# COVID 19 Pandemic Lockdown, Online Learning and Poor Students in India: A Short Review

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COVID 19 pandemic lockdown affected students of Economically Weaker Section (EWS) of the society (Source: 2020, NDTV). They were also unable to explore online learning resources due to unavailability of required infrastructure including computers, laptops, tablets, smartphone and internet. According to UNICEF, the closure of educational institutions because of the coronavirus pandemic has affected over 1.57 billion students in 190 countries. The educational setup has moved online overnight. According to the National Sample Survey, 2017-2018, there were less than 27 per cent Indian households that have at least one member with access to the internet. According to a survey by the Broadcasting Audience Research Council, only 66 percent of Indian households own a TV set. It indicated, learning through TV isn't an inclusive solution either (Source: Jun, 2020, Newslandry). A 2013 study analyzed the difference between reading linear texts on paper and on a screen. It concluded that students who read on paper secured better grades than students who read on screen. That was because touching paper and turning pages aided memory (Source: Jun, 2020, Newslandry). UNICEF recently shared a new composite indicator called The Remote Learning Readiness Index (RLRI) that measures countries' readiness to deliver remote learning. While countries like Philippines, Barbados and Argentina scored high marks on the RLRI index, more than 31 countries are unprepared to deploy remote learning during crisis times. Poor access to connectivity has become a powerful barrier that prevents young students from accessing effective forms of learning (source: Feb 2022, World Economic Forum).

In India, children living in rural areas suffer even greater learning isolation. Two-thirds of the parents from the SCHOOL (School Children's Online and Offline Learning) survey stated their children, unable to access schooling online, have fallen behind, with reading and writing skills in decline [Source: 2021 Annual Status of Education Report (ASER)]. COVID-19 placed girls at higher risk for adolescent pregnancy, early and forced marriage and violence (Source: World Economic Forum). Child labour and incidents of child marriages among school going children has increased during lockdown [published on August 29, 2020, Kolkata, by Press Trust of India (Hindustan Times)] which affected education of rural poor students.



# Virtual Lab importance in Indian education system

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Research facility preparing and practices give active experience to the understudies. Notwithstanding, the constraints in the research centre offices in the designing schools might influence the educating and educational experience of things to come engineers. Thus, Government of India has begun a drive called Virtual Lab to conquer this issue. The head establishments in India were subsidized and these foundations are the nodal focus in giving virtual lab offices to schools which don't have refined research centre offices. The progression in IT and web offices can no more hamper understudies and specialists in improving their abilities and information. Likewise, in a country, for example, India, expensive instruments and gear should be imparted to individual analyst's furthest degree conceivable. This section talks about and features the Virtual Lab drives and executions.

# **Role of Information Communication Technologies (ICT) in Teaching Learning Process in 21st Era**

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Globalization and innovations in technology have led to an increased use of ICTs in all sectors and education is no exception. Information communication technologies (ICT) at present are influencing every aspect of human life. They are playing salient roles in work places, business, education, and entertainment. Moreover, many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information. Usages of information communication technology in the sector of education prevalent and continually increasing in global level. That is generally believe that information communication technology can be make a powerful teacher and students that make important contribution of learning and teaching achievement. Now educators believe that the significant role of information communication technology in education adequately has extremely important in students learning achievement. The paper aims to highlight effective use of ICT in Education, accessibility and quality of education and benefits of ICT in education and students' lives.

# Online teaching and assessment methods

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Modern era is the age of science and technology. In this science and technology era, every field of human has been affected. Revolutionary changes have been made in the field of education. Online education has been established as a strong pillar in the field of education. How knowledge becomes technology and Technology become the backbone of knowledge. This can be seen in today's online education. Online education is being provided with the help of information and communication technology. Due to covid-19 online classes are also going more. Education is being imparted through online in various academic educational institutions, research and development laboratories etc. As through this the teaching-learning process becomes simpler. Online learning is also a flexible medium and makes learning easy. Both the teacher and student can attend the teaching session sitting at home with the help of mobile and Internet connection available in it. Online education process costs less time and money. Student can ask their questions without any hesitation. In online study we can also record the classes and later study the syllabus as per convenience.

Online learning is a boon for learners who have neither the time nor the resources to benefit from traditional classroom teaching. You can benefit from online learning even though you are engaged in your business or any work. Students who potentially use the Internet. Online learning has emerged as an effective and interesting medium for them. Online teaching has the potential to provide learning experiences to the learners according to their needs, mental level, interest and desire. Online education process costs less time and money. Student can ask their questions without any hesitation.

Online courses do not require high technology. For this only basic internet usage audio and video knowledge is enough. A large number of students and teachers have shown enthusiasm in adopting new methods of online education despite many limitations. They have been associated with online learning through discussions, homework, providing digital study materials and to some extent assessment. Apart from online training for teachers, there is also a need to change the mindset of students and parents. Only then can online learning be implemented more effectively. Those opposing the use of online education and its practicality also argue that online teaching is a virtual learning platform that can never replace direct classroom teaching, nor can it effectively organize discussions in large groups and can't evaluate them. It also does not prove to be effective for practical subjects. Along with this, human qualities like discipline, making friends, making patience, making, being free from despair etc. Using online classes for a long time can also cause many types of physical problems for the students like headache, pain in eyes, back ache, stress etc. Due to not getting notes on time the dates of the test have to be changed frequently. It is hoped that the current online learning tools are richer than the previous years and in the same way the future online learning platforms will be more enriched than the current ones and will also overcome their shortcomings.

# **Impact of ICT in Higher Education across India: Bridging the gap between hope and opportunity post-pandemic**

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Everything across the globe has widened its scope toward digital platforms. Education is now moving to new approaches to learning and the role of information and communication technology is reaching every facet of education. With technology, teachers are considered as the facilitators being into powerful roles, where technology provides teachers the platform to interact with students. ICT provides an innovative platform that promotes student-teacher engagement.

On the other hand, ICT enables the students to collaborate with their teachers, for instance, to discuss and consult resources they found on the Internet.

The objective of the paper is to examine how ICT is bridging the distance between hope and opportunity post-pandemic. This paper studies the impact of ICT in Higher education across India.

# ICT Enabled tools for Assessment and Grading

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Technology is supposed to play in effective and efficient assessment of learning. The technology in modern times has reshaped the teaching learning process as it offers various numbers of tools that can be used in the classroom to enhance the learning to a great extent. Technology has the ability to support teachers by assessing students' learning in terms of their performance in the classroom. The use of ICT in assessment is now common where it utilizes digital devices which help in construction of assessment tasks for students. Assessment is always considered a key component in the process of teaching and learning. A major role is being played by ICT in making the process of assessment easy for teachers. As the use of ICT is increasing, the assessment is made now in a new and innovative manner. While employing ICT in assessment, the recording of responses and providing necessary feedback is likely to grow as virtual learning environments is growing day by day. Not only this, students are being empowered to make use of online or web-based assessments which in return help the students to do self-assessment of their learning. This paper is in support of applying ICT in conducting assessment for students. The paper analyses the concept of assessment with its types and explores various technological tools which will empower the teachers to make assessment much more effective in a class room situation.

# **Online Learning: A New Paradigm for Teaching and Learning Mechanism**

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Online learning is education that takes place over the Internet. It is often referred to as "e-learning" among other terms. Online learning is the newest and most popular form of education today. In recent times it has had a major impact on postsecondary education and the trend is increasing. In this paper, I want to explore what the experience of online learning is like for students and how it has changed the role of the Teacher. The expected average growth rate for online students for 2021 is 74.8%, up from 45.8% in 2019. Teachers had to create their "virtual classrooms" from scratch which was difficult and often led to poor results. Today, an entire industry has emerged to do this for us. Course Management System (CMS) software is utilized by just about all colleges today. CMS allow instructors to design and deliver their courses within a flexible framework that includes a number of different tools to enable learning and communication to occur. This is a student-centered approach in which students "co-create" their Learning experience. This approach empowers students as active learners instead of just passive recipients absorbing information and reproducing it for standardized tests.

# Application of ICT tools in Teaching and Evaluation Purpose

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The Information Communication Technology (ICT) is one of the emergent tools in every sphere of life. In this paper, the area taken under study was based on ICT based teaching learning mechanism for education. Here, we have proposed to teach students using ICT enabled tools so that teaching can be done not only in home district but also throughout the country also. Different statistical aspects had been done in this study.

Information and Communication Technology (ICT) enabled services can be considered as a good option to inform the people globally and making them aware. Using the ICT oriented services, global and 24\*7 facilities can be exercised. ICT can also be applicable to evaluation purpose also.

# **The study of usefulness in online teaching-learning methods in higher education**

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In this paper I want to address the required essentialities of online teaching-learning in education amid any pandemic situation and how can existing resources of educational institutions effectively transform formal education into online education with the help of virtual classes. It looks forward to for further future academic decision-making during any adversity.

The paper employs both quantitative and qualitative approach to study the perceptions of teachers and students on online teaching-learning modes and also highlighted the implementation process of online teaching-learning modes. The value of this paper is to give a picture of ongoing online teaching-learning activities in the education system.



# **Aptness of ICT Oriented Teaching - Learning System in Sustainable Higher Education During COVID-19 Times**

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Information and Communication Technology (ICT) has enabled us to have modern computing skills in all spheres of life. ICT had enabled us to retain the sustainable Higher Education in the critical phase of COVID-19. It has several forms like developing study / course materials, sharing E-content and presentations, online communication between learners and teachers for the academic and research works. It helped the students' preparations for examinations and it can provide feedback Google forms etc. ICT also had enormously helped the teachers to assess different higher institutions and universities in terms of NAAC, NIRF, etc. During the coronavirus pandemic, educational institutions were forced to sustain with the help of ICT based teaching-learning systems. ICT can be treated as knowledge building source in our society. It can give details on the broader perspectives on technological usage like the concept of Goole Classroom, smart class, smart board, Google Meet, Zoom,etc. The online platforms were very much apt in this COVID-19 pandemic for online education conduction, examinations, practical, internal, assignment, webinar, projects etc. Good use of technology can inspire the learners who can join from the remote locations and can make the classes more interactive. Higher education systems have grown exponentially in this pandemic through ICT based methods. However, there were security issues to be addressed in such online systems. In this paper, the author had noted some of the important data privacy challenges and their corresponding solutions. To conclude, it is apt to say that ICT had played a pivotal role in COVID-19 times in the higher education sector.

# Information and communication technology tools for slow and advanced learners

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The main objective of education is to make the students fit by imparting timely knowledge and skills. Special changes have been seen in the education system of developed and developing countries of the world through technology. Secondary education in technology has made a significant contribution in imparting knowledge about educational content through interaction between teachers and students of the school and in the present day education spread all over the world. Technology has a special role to play in making education attractive and up-to-date. Technology has a role to play in attracting students, especially slow and advanced students, to education in developing countries like India. Apart from this, attention is paid to the education of the backward students in the society and different time-consuming and different strategies are adopted here. In the modern world, technology education is the teaching of applying scientific knowledge properly. A breakthrough has been observed in developing countries of the world, especially through technology education. Education is the key to the development of the country. Technology education plays a major role in enhancing the quality of education and taking the development of education to all levels of society. At present, technology education is becoming more and more attractive to the students because of the contribution of technology education in making it easier for the students to present various aspects of the curriculum through this technology. Secondary information has been used in this research work. Secondary information has been collected in various journals, papers, personal sources newspapers books, government records websites, etc.

# Online teaching and assessment method

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Teaching in the process of flows of ideas, instructions and knowledge from one mature person to other less mature person (Learners), which happens in the classroom and so called formal teaching. But there can be teaching even outside, the classroom as well, this is called informal teaching, where learns from our family, friends, society etc. More over in the present day the learning that we receive using modern technology in science and networks is called online teaching, where teachers and learners participate from separate physical locations. But Present day in India the word teaching, that we are familiar with from the current situation in India, especially during the corona epidemic, is online teaching through "Google meet" or other apps. Of course made the video an overnight sensation; it was like the first sunrise in the morning for students who have been deprived of the joy of life for so long. The purpose of which is to show the way to life and help the life to learn to follow the laws of nature again. However, in developing country like our country, India, we were not very familiar with the term "online teaching and assessment". However the term "online teaching and assessment" has long been used in developed countries. Because with the application of these "online teaching and assessment" it is possible to easily teach multiples student in their own environment in very short time and at low cost, not only this, with the help of multiple teachers. It is possible to teach one subject. This makes the subject matter stronger with the details of each subject of the students. Which sharpens is their thinking power energy and makes them curious to know more about the unknown. On the other hand throw the use of 'online teaching and assessment' by teachers all the students can know their needs, interest, motivations etc., with their uniqueness and they also become interested in their subject matter and always strive to increase thematic knowledge. The use of online teaching has been around for a long time in the developed countries of the waste mainly due to multiple benefits of this type. However, every modern technology has its advantages as well as its disadvantages. Such as student assessment in often in accurate through the use of such technology and many times, poor students are deprived of online educational systems on due to finance reasons. Nevertheless, online teaching has become very popular in present day India, is especially in the corona era, which is still going on today and it is hoped that it will continue in the future as well. Because such as epidemic and the fast moving modern world student especially Indian students to survive and keep pace with all online teaching and assessment in absolutely necessary and essential.

# **Tremendous exposure on Massive Open Online Course (MOOC) that engage artistic students**

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Technology is transforming the teaching and learning processes. Technology has a sway on every aspect of education. Many universities around the world now offer courses for free or at a low cost via the Internet and large numbers of people are enrolled in such courses. MOOCs' rapid rise has sparked intense interest in their potential to interrupt traditional modes of education by broadening access and providing free or low-cost content to millions of students universal. This new method of providing a virtual course is known as a Massive Open Online Course. MOOCs have recently become terribly popular, since a number of these huge online courses will reach innumerable students. Faculty members from crucial universities deliver courses through MOOC platforms: Coursera, Edx, Miriada X, and so forth aside from the content, several alternative factors can influence the standard of a course; for instance, a nasty user expertise of an online MOOC platform can lead students to drop out a stimulating and well-organised course. MOOC platforms need abundant effort to worry for the user experience. Massive Open Online Courses are quite new and maximum conspicuous traits in better training. It represents studying phenomenon where newcomers get entry to online academic multimedia materials, and get related with great numbers of other learners through social engagement equipment such as discussion (Liyanagunawardena et.al., 2013). MOOC have a major influence on the learning strategies and cognitive appraisal of the students. This mandates multiple options for the MOOC platforms to accommodate learning experiences of students.

# **Significance of ICT in Enhancement of English Language Skills among the Entrepreneurs**

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In every walk of life language that we use for communication is very important. The importance of communication skill in English needs to be viewed as a core value for entrepreneurship. Use of English language skills has become vital for better learning and earning. Therefore it is necessary to teach English and develop English language skills among the entrepreneurs. To teach English and develop English language skills among the entrepreneurs various approaches and methods are in use in our country but most of them are traditional, less interesting ineffective as well as less motivating, So it is necessary to use modern approaches and tools of ICT (information and Communication Technology) to develop better understanding and acquisition of basic skills of English language. . In every walk of life language that we use for communication is very important. The importance of language skill in English needs to be viewed as a core value in Entrepreneurship.

# Student's perception towards online assessment

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The use of computer-based assessment is growing for a variety of reasons. Although computer-based exams are becoming more popular, there haven't been enough studies on student perceptions of online assessment in general, as well as student perceptions of specific fields of online assessment systems. The computer-based assessment is becoming more common. Entrance exams in education, military training exams, job application exams in the private sector, and professional group certification exams are some examples (Russo, 2002). Research on students' perceptions of categorised areas of online assessment systems provides detailed information about which parts of the systems are important or should be developed or revised to achieve better results.

Online assessment is a technique for evaluating student learning in an online environment (internet). Multiple choice, collaborative projects, online debates, team case studies, and self-assessment are among the features of available online assessments. Feedback is either available immediately or is provided later by the course administrator. The most commonly used tests, such as multiple choice questions and short answer tests, are handled automatically by computer programmes. There are numerous websites that provide educational content. However, the majority of these sites are constrained in terms of either the breadth of their content or the size of their potential audience. Some websites are simply lecture notes or PowerPoint slides prepared by individual professors for their own courses. Other sites are designed to replace or supplement corporate training classes, and thus only serve a small portion of the population.

## **E-content development on education**

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The e-Content scheme aims at developing high quality e-Content, as well as expertise for generating such content over the long term. The scheme provides financial assistance and technical support to teachers and other experts based in colleges and universities for the development of e-Content. The e-Content development and the associated web based learning described here do not seek to replace traditional teaching and learning, but are expected to supplement them. The inclusion of e-Content in learning is now inevitable, and the UGC initiative is designed to meet the new challenges, and to help India take the lead in this newly emerging field. Information technology and the Internet are major drivers of research, innovation, growth and social change. The growth in Internet has brought changes in all walks of life including the education. E-content requires huge amounts of creativity both at 'information' level as well as the 'technology' level.

The e-Content, once developed, will be maintained at the mirror sites of the UGC Information Network (UGC INFONET) and will also be available at Consortium for Educational Communication (CEC) Website. The content will be accessible to all teachers and students of the Indian university system throughout the country. The goal of this scheme is to encourage individual teachers, groups of teachers in colleges and universities and experts in the IT industry in content development and multimedia production to develop educational content in electronic format, suitable for use in various teaching and learning programmes. This scheme is opened to teachers in all subjects and disciplines.

# ICT is a Reflective Tool: Enhance the Abilities of Learners during Learning Process with Respect to Slow and Advanced Learners

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ICT stands for Information and Communication Technology, and as the name implies, technology is utilized to communicate information. ICT has also influenced traditional teaching methods, resulting in the development of the constructivist pedagogical approach. ICT functions as a reflecting tool in learning because if it is taught to students, they will be drawn to the subject and take an interest in reading. This can only happen if the teacher is knowledgeable with it, which is why ICT has been given specific attention in Teacher Training Programmes.

It has been retained as an EPC courses in the B.Ed, which is known as Critical Understanding on ICT. Teachers who use smart classes to teach the subject matter related to the subject make classroom teaching effective. Slow learners will be able to participate more actively in the learning process as a result of this, and advanced learners will be more aware of it.

In terms of the present, the covid pandemic has wreaked havoc on the world for the past two years, affecting humans and all connected fields and the most important component of education, which is the basis of national growth, has not been spared.

Students' work in class and at home has been achieved efficiently to ICT. Students have been able to finish their classroom teaching-learning process while staying at home because to technological advancements. Which led to the creation of the Google Meet, Zoom, and Google Classroom e-learning apps, which were made possible solely via the use of ICT. Computer-aided instruction, which usually refers to student self-study, has been used to marginally enhance test scores of slow learners on some subjects; such progress can be real in the student's learning. It is accepted that specialized usage of ICT can have a good impact on student accomplishment when integrated with pedagogy



# Virtual Laboratories in Education

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Practical experience is an important component of the educational process. However, the time and economical resources often required for the setting up and construction of scientific laboratories is outside the scope of many institutions. A solution to this problem could be found in the adaptation of the Virtual Reality technology, which could allow the creation of Virtual Laboratories, which will simulate the processes and actions that could take place in real laboratories. In particular, this paper, based on the expertise and motivation gained by the VirRAD-IST project, proposes and describes such an educational virtual laboratory, which aims to meet the requirements of a real laboratory and furthermore to support communication and collaboration services. We propose a web-based system, which allows users to perform experiments on educational fields, such as Physics or Chemistry in 3D multi-user worlds where users are represented by avatars and they are offered a wide range of communication and collaboration services in order to simulate efficiently a real learning experimental process. The concept of a virtual laboratory in the physical sciences is one with many ramifications. These may relate to the purpose a virtual laboratory is seeking to address, its mode of delivery, the scope of delivery, the experience of both students and tutors, and indeed the suitability of an activity for implementation in a virtual laboratory. The concept also excites opinion, both for and against, in many educational circles. The laboratories are built on open source platform OpenSim. In this paper it is exposed the different laboratories of our University, we see small fragments of various laboratory practice, as well as the most representative parts of each practice. The laboratories selected are electronics, chemical experimentation, physical and topography. The use of computer simulations to expand science offerings online is discussed. A simulation programme, called Virtual Chemical lab, allows student to conduct experiments safely while studying at home. It is suggested that the development of a virtual lab, that includes all the possible variables that are encountered in real labs, is time consuming and expensive.

# **E-Content Development Necessity for Education**

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In this era students and teachers are more liking the e-learning rather than classroom learning. The development of e-content has arisen from the fact that how and where we can utilize this. Internet plays a vital role for enhancing the accessibility for the students. Electronic content or e-content is the digital contents designed and developed for creating information rich society. Here In this article will discuss the importance of e-content, design and development prospect, tools required to prepare e-content, various initiative taken by UGC for e-content development, and challenges faced during e-content development.

# A study on the efficacy of using Virtual Lab to promote practical-based learning during and after the COVID-19 pandemic

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Virtual lab has appeared as one of the predominant tools of Information and Communication Technology which creates a virtual reality of a physical laboratory to be accessed remotely through the internet. Integration of a virtual lab with a Learning Management System (LMS) increased the effectiveness of practical-based learning to a new height. A simulated environment of the traditional physical laboratory in cyberspace enabled the students, teachers, and researchers to use the laboratory tools, equipment and learning resources to perform the experiments virtually. It's gaining huge immersion in the field of science, Engineering, and Biotechnology. During the pandemic period as all the physical education activities were forced to shift to the online virtual Lab responded as an indispensable tool of ICT. Ministry of Human Resource and Development (MHRD) also initiated a project named Vlab under which all leading educational Institutes including IITs also participated to provide remote access to learning through virtual labs and to fulfill the thirst of keen learners. The present article describes the scope of the virtual lab in practical-based disciplines during and after the pandemic period. Here we have also studied the benefits and shortcomings of virtual laboratories along with their technical specifications.

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# **In Modern Educational Structure persistence of e-content as an operative implemented tool for Teaching and Learning**

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The pressure on educational systems throughout the world to employ modern information and communication technologies to provide students with the knowledge and information they need in this techno-savvy day is increasing. The Internet and information technology are key drivers of research, innovation, growth, and social change. The expansion of the Internet has resulted in changes in all aspects of society, including education.

It is critical to integrate ICT at all levels of the educational system in order to establish a knowledge society. E-content is an extremely effective educational tool. It is the most recent style of instruction that has piqued the interest of students and teachers across all educational systems. It is a valuable resource for the development of an information-rich society in which everyone, regardless of caste, religion, race, region, or gender bias, has the ability to create, share, and use information and knowledge for their economic, social, cultural, and political upliftment and development. E-content necessitates a great deal of ingenuity on both the 'information' and 'technical' levels.

In higher education, online learning has become a common practise. Lecturers will re-theorize some fundamental problems about education, learning, and evaluation in non-traditional contexts. Assumptions like cogency and evaluation anonymity inside digital contexts about accomplishing the intended objectives, as well as comprehending how formative assessment works in the context of online learning, are among the issues that have surfaced.

As the topic of social advancement has been more prominent in recent decades, the desire to expand access to instruction has driven the creation of e-learning. The use of technology in our classrooms has resulted in e-content. Traditional teaching and learning are not intended to be replaced by e-content; rather, they are supposed to complement each other. As a result, before moving forward with the production of E-content, it is vital to consider all of the e-content viewpoints. The purpose of this paper was to learn about the importance of digital methods of teaching and learning, as well as their advantages for students and teachers. In truth, e-learning must be one of the primary tools for increasing access to teaching and, finally, enabling social integration.

# ICT Tools for Slow and Advanced Learning

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It is difficult to find out the definition of advance and slow learners. The term gifted children means children have abilities that give evidence of high performance with comparison of slow learners. But the ICT tools are very powerful in providing for learning environments where slow and advanced learners are partners. ICT supported learning environments offer many opportunities for both slow and advanced learners. It provides flexible modes of content presentation and delivery. It provides contextualized presentation of content and information and many wide and diverse perspectives on content and information. ICT interactive and engaging learning setting and place independence for learning. It is also ease of use for both type of students. Simulations of tasks are possible in the classroom for both. Programme learning is an important part of to take main stream of slow learner also. ICT is a medium for field testing of technology based resources with a variety of students in a variety of setting. The content of ICT is a systematically structured and presented though technology which allow students to learn according to their own interest, requirement their speed. ICT provide a combination of on and off campus education as requirement of the Modern age. It provide individualized instruction technique which makes sure that most students learn excellently, quickly and self-confidently. This tool is based on stimulus-response regulation for both type of children. Their area of understanding is broadened by helping them to find out the new avenues of the problem and their possible solutions. Also they face the chances to deal with more difficult problem according to their ability.

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Abstracts  
of  
Poster Presentations  
by  
Participants

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# Education in the Era of Post-COVID-19

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The effects of the COVID-19 have wreaked havoc on many areas of society, including education. As we approach the post-COVID-19 era's new normal, there is a need to rethink education in light of new opportunities and challenges. The consequences of the ongoing crisis are explored for the four aspects of the curriculum: aim, content, approach, and evaluation. Some new possibilities may make sense when seen through the eyes of these factors. For many people, the year 2020 has delivered life-changing events that have impacted a variety of professional fields. Instruction has been one of the most significantly impacted areas, with virtually all institutions switching to types of online education, which has become commonplace. With the fourth industrial revolution unfolding right in front of our eyes, several aspects of the current educational system are becoming obsolete. Although online learning is here to stay, frontal courses are a millennia-old tradition that cannot be completely replaced without ignoring human nature. Instead, old and new can coexist, and humans and machines can work together to advance society.

# Online teaching and assessment : methods and implementations

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Student assessment and teaching has changed in the new millennium. In this current situation time to change old-fashioned paper and pencil methods. New alternative technology is evolving daily. The online educational delivery methodology ought to be accustomed facilitate teaching and promote learning. The major advantages of /virtual online teaching and assessment is also convenience, flexibility, and "learning anytime, anywhere;" however academics should raise if Those advantages contribute to student learning outcomes. Virtual /online assessment Must be accustomed live each learning objectives and application of data. The web professional ought to use assessment techniques to strategically replicate the pedagogy of online teaching and assessment. Several current assessment techniques are often Modified to use in virtual teaching and assessment. There need to be different skills, like web knowledge, technology, internet. The common goal of online teaching and assessment is to make student- friendly and improve student learning, however the objectives can vary slightly, depending on the type of assessment that's used. In present pandemic Crisis has opened the doors for introducing online innovations for assessment of students. Online assessment provides computer rich, comprehensive, formative feedback that can scaffold the learning process and helps the learner to self-evaluate and enhance their learning outcome while preparing for summative assessment. However, digital infrastructure alone is not sufficient for truly effective online assessment. A foundation of solid pedagogical underpinnings is needed. Here are five strategies to enhance the effectiveness of your online assessment practices. Some major initiates are aligned constructively, instil student confidence, personalise your feedback, harness the power of learning analytics, check access and accessibility etc.



# Google Classroom, the teachers' saviour

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Google is the most authentic name of search engine in our daily digital life where we can search almost anything we want. Not only as browser, but Google has also ventured almost everywhere like artificial intelligence, cloud computing, email, navigation, video sharing etc. and proved its genuine brand value. In Information and Communication Technology (ICT), Google came up with a blessed product or service named Google Classroom which is literally a virtual classroom. Published by Google in 2014, this educational programme allows any user without having any a G-suite for education account. As a result, any personal Google user can crate and teach a class, can schedule students' assignments, check exam copies, can put gradation etc. Further, it improves itself by adding features for teachers to arrange content by topic. Google Classroom assembles several Google Applications for Education such as Google Drive, Google Docs, Google Sheets, Google Slides, Google Forms, Google Sites, Gmail to help educational institutions for going forward to a virtual, paperless system. The advantages of Classroom are: easy for use, universal device accessibility, using Google Drive as an efficient mode for teachers to quickly share assignments with students, the paperless process for saving papers for printing and giving them out to others and the fast feedback system between students and teachers. Despite its many boons, it also has some limitations like, lack of automated quizzes and tests, and a deficiency of live chats that can help in feedback efforts. Google Classroom has proved to be one of the most competent ICT enabled platforms for teaching and learning whose use heightened during the COVID pandemic to facilitate students' education from remote places.

## Outcome of the Workshop and Proposed follow up actions

This workshop was an initiative to facilitate the application of ICT enabled tools in the teaching, learning and assessment. The workshop sessions were highly informative and useful for the participants to pave their way of implementing the computer-aided methods of teaching, learning and assessment. There were total 285 registered participants from almost all states of India and also from Algeria, Oman, Riyadh and Pakistan. The total programme was also streamed on YouTube to make it available to all teachers, scholars and students of India and worldwide after the completion of the workshop.

The concept of virtual learning environment was introduced initially to the participants with an overview on the preparation of E-contents by using simple online ICT tools and open source software. Training sessions on the use of spread sheet processing and creation of teaching materials/presentation/thesis using "Notepad" were conducted. One of the sessions was based on identifying important areas to supplement learning in classrooms. There were two different sessions to provide training on the use of open source learning management System with an overview of using the "MOODLE" for teaching, learning and assessment.

The significance of assessment and accreditation by NAAC was presented in one of the sessions, while two sessions were conducted separately on the "Role and Importance of Data Validation and Verification (DVV) in Accreditation Process" and "Student Satisfaction Survey". These two sessions were followed up to address the questions of the participants, which provided clarification of varied aspects of the NAAC accreditation process, and also informed and encouraged the participants from different colleges and universities towards the NAAC assessment and accreditation process of their respective institutes.

There were 29 oral and poster presentation by the participants, which facilitated the exchange of new innovative ideas and methodologies on varied aspects of using ICT tools for teaching, learning and assessment such as use of virtual laboratories, ICT for slow and advanced learners, students' perception towards online assessment, soft computing etc.

The proposed follow up actions of this workshop will be (1) Taking feedback from the participants on different sessions of the workshop, and considering their views and suggestions in future events, and also addressing their queries (if any) on the use of computer-aided methods of teaching and learning. This is intended to enable all teachers to apply the ICT tools for teaching, learning and evaluation (2) Use of Learning Management System (LMS) by the participants of different institutes for teaching and

evaluation process. (3) Uploading of E-content, assignments, quizzes and other e-resources by teachers to enable students learn at their own time and pace beyond class hours and also serving as the open educational resources of India beyond the institutional boundaries (4) Use of Learning Management System (LMS) for formative assessment (both evaluative and non-evaluative) and for summative assessment by the teacher participants of different institutes (5) Sharing and exchange of ideas among the workshop participants for effective dissemination of knowledge and expertise on use of computer-aided methods of teaching and assessment.

