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क्षेत्रीय पुस्तकालय, अजमेर
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आविष्कार

मई 2022 वर्ष 52 अंक 5 इस अंक में ISSN 0970-6507

<p>अध्यक्ष एवं प्रबंध निदेशक कमोडोर अमित रस्तोगी (से.नि.) प्रमुख एन.जी. लक्ष्मीनारायण संपादक डॉ. अंकिता मिश्रा विक्रय वरिष्ठ कार्यकारी अधिकारी रिमाता पाराशर ○ अनुभाग अधिकारी खेमचंद ○ वितरण अरविन्द कौशिक दीपक तुली प्रवीन राजौरा जयसिंह</p>  <p>नेशनल रिसर्च डिवेलपमेंट कारपोरेशन [वैज्ञानिक और औद्योगिक अनुसंधान विभाग, विज्ञान और प्रौद्योगिकी मंत्रालय, भारत सरकार का उद्यम] 20-22, जमरूदपुर सामुदायिक केंद्र कैलाश कॉलोनी एक्सटेंशन नई दिल्ली-110048 फोन : 29240401-07 फैक्स : 091-11-29240409, 29240410 ई-मेल : ankita@nrdc.in, write2@nrdc.in editors.nrdc@gmail.com वेबसाइट : www.nrdcindia.com CIN : U74899 DL 1987 GOI 002354</p>	<p>लेख : भारत को आर्थिक शक्ति देगा डीप ड्रोशन मिशन — डॉ. कृष्ण कुमार मिश्र 5 डीप ड्रोशन मिशन : गहरे समुद्र की खोज के प्रति भारत की प्रतिबद्धता — डॉ. विजय कुमार, डॉ. गोपाल आचंगर, डॉ. जी. ड. रामदास, डॉ. एस. एमेश, डॉ. एम. अशोकन और डॉ. भव्या खन्ना 10 महान भारतीय इंजीनियर मोक्षगुंडम् विश्वेश्वरैया — गुणाकर मुले 17 विविधा : डार्क वेब-इंटरनेट की रहस्यमयी दुनिया — पूनम त्रिखा 24 अब भारत में श्री हींग की खेती — डॉ. मनीष मोहन गोरे 29 विज्ञान साहित्य चर्चा : वैज्ञानिकता : स्वामी विवेकानन्द का एक अनछुआ पहलू — मंजुलिका लक्ष्मी 32 कौशल विकास मंच : स्वचालित मोटर पंप नियंत्रक — अभिनव चौरे 35 खेल-खेल में विज्ञान : खिलास का चिपकना — दुष्यन्त कुमार अश्रवाल 39 अनुसंधान और विकास : आइसएर के वैज्ञानिकों ने तैयार किया खिलोय और हल्दी का जीनोम अनुक्रम — अंजलि राय 41 समाचारिकी : 43 एनआरडीसी समाचार : 49</p> <p>आवरण: पारुल सिन्हा</p> <ul style="list-style-type: none"> • 'आविष्कार' नेशनल रिसर्च डिवेलपमेंट कारपोरेशन (एनआरडीसी) द्वारा प्रकाशित विज्ञान और प्रौद्योगिकी की लोकप्रिय विज्ञान मासिक पत्रिका है। • 'आविष्कार' में किसी लेख के प्रकाशन हेतु चयन के संदर्भ में संपादक का निर्णय अंतिम होगा। प्रकाशित लेखों और लेखकों द्वारा भेजे गए चित्रों की मालिकता के संबंध में लेखक स्वयं उत्तरदायी होंगे। • 'आविष्कार' में प्रकाशित सामग्री का किसी भी रूप में उपयोग करने से पूर्व संपादक की अनुमति लेना आवश्यक है। • 'आविष्कार' में प्रकाशित किसी यांत्रिक, वैद्युत, इलेक्ट्रॉनिक आदि युक्ति के काम न करने की स्थिति में पत्रिका/एनआरडीसी उसके लिए उत्तरदायी नहीं होगी। • 'आविष्कार' में प्रकाशित विज्ञापनों में किए गए दावों के लिए पत्रिका और एनआरडीसी उत्तरदायी नहीं होगी। <p>आविष्कार का सदस्यता शुल्क: एक प्रति: ₹50; वार्षिक: ₹550; द्विवार्षिक: ₹1,100; त्रिवार्षिक: ₹1,650</p>
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अनौपचारिका वर्ष 48 अंक 3-4 मार्च-अप्रैल, 2022

क्षे.शि.रां. फाल्गुन, जयपुर
दिनांक 31/3/2022
हरताक्षर 022

समानो मन्त्रः समितिः समानी समानं मनः सहचित्तमेषाम्।
समानं मन्त्रमभिमन्त्रये वः समानेन वो हविषा जुहोमि।।
समानी व आकृतिः समाना हृदयानि वः।
समानमस्तु वो मनो यथा वः सुसहासति।। ऋग्वेद

अनौपचारिका

समकालीन शिक्षा-चिन्तन की पत्रिका

वर्ष : ४६ अंक : ३-४ फाल्गुन-चैत्र-वैशाख वि.सं. २०७८ मार्च-अप्रैल, २०२२ (

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दराज के मित्रों एवं भारत के
विभिन्न राज्यों में फैले सुधी पाठकों
से निवेदन है कि समिति के
प्रकाशन की निरंतरता बनाये रखने
के लिए अपनी सहयोग राशि पूरी
उदारता के साथ भिजवाने का
अनुग्रह करें। आज किसी भी
पत्रिका का प्रकाशन बहुत मुश्किल
काम है मगर समिति अपने पूर्ण
सेवा भाव के साथ अनौपचारिका
को पिछले ४६ वर्षों से निरंतर
निकाल रही है। सभी प्रबुद्ध पाठक
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कृतिका जोशी

हिन्दुस्तान टाइम्स का प्रकाशन था। ऐसी स्थिति में हम कटिबद्ध हैं कि
अनौपचारिका निरंतर निकलती रहे। आपका सहयोग सादर अपेक्षित है।

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American Journal of Physics Vol.90, No. 1 January, 2022

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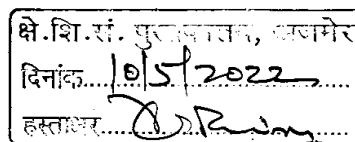
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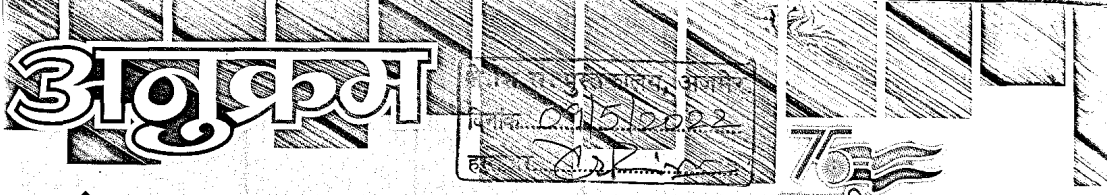
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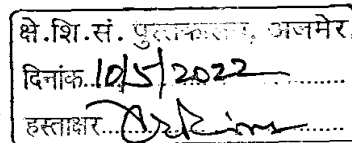
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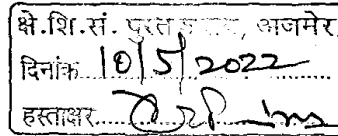
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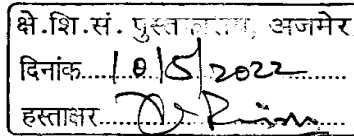
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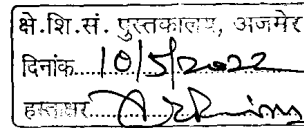
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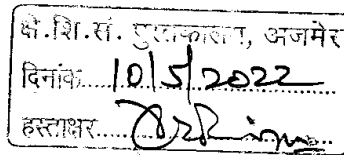
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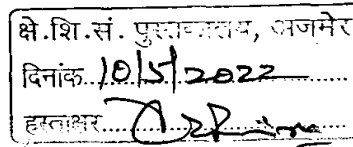
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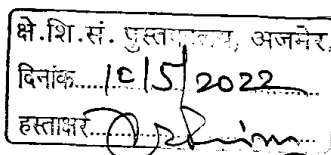
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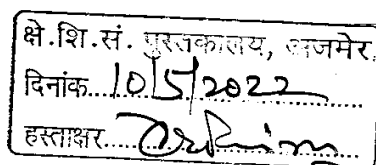
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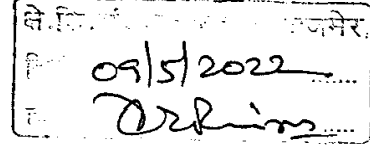
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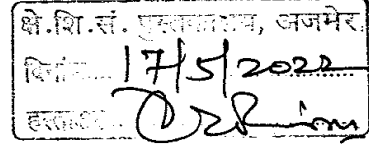
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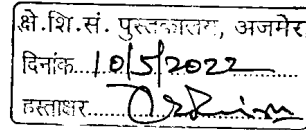
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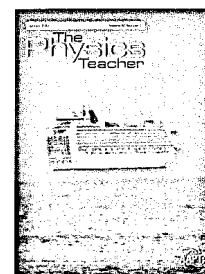


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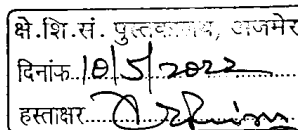
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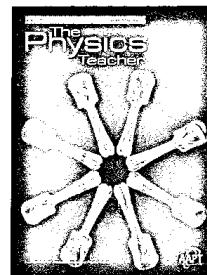


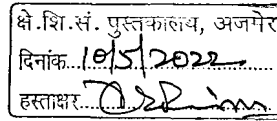
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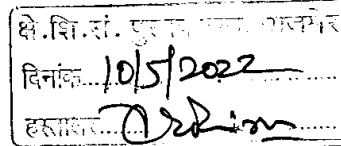


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साहित्य अमृत वर्ष 27 अंक 11, जून, 2022



साहित्य अमृत

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दिनांक 31/5/2022
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मासिक

वर्ष-२७ ❖ अंक-११ ❖ पृष्ठ ८४

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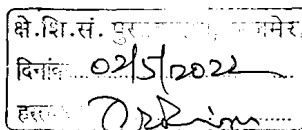
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Health & Safety

For all practical procedures described in SSR, we have attempted to ensure that:

- the requirements of UK health & safety law are observed;
- all recognised hazards have been identified;
- appropriate precautions are suggested;
- where possible procedures are in accordance with commonly adopted model risk assessments;
- if a special risk assessment is likely to be necessary, this is highlighted.

However, errors and omissions can be made, and employers may have adopted different standards. Therefore, before any practical activity, teachers and technicians should always check their employer's risk assessment. Any local rules issued by their employer must be obeyed, whatever is recommended in SSR.

Unless the context dictates otherwise it is assumed that:

- practical work is conducted in a properly equipped laboratory;
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- any fume cupboard operates at least to the standard of CLEAPSS Guide G9;
- care is taken with normal laboratory operations such as heating substances or handling heavy objects;
- good laboratory practice is observed when chemicals or living organisms are handled;
- eye protection is worn whenever there is any recognised risk to the eyes;
- fieldwork takes account of any guidelines issued by the employer;
- pupils are taught safe techniques for such activities as heating chemicals or smelling them, and for handling microorganisms.

Readers requiring further guidance are referred to:

Safeguards in the School Laboratory, 12th edn, ASE, 2020.

Be Safe! Health and Safety in School Science and Technology for Teachers of 3- to 12-year-olds, 4th edn, ASE, 2011.

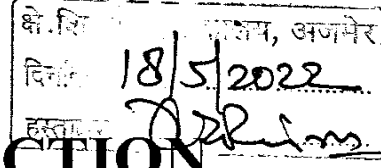
Topics in Safety, ASE, latest version on the ASE website: www.ase.org.uk/resources/topics-in-safety (login required).

Hazcards, CLEAPSS, latest version, and other relevant publications, on the CLEAPSS website: www.cleapss.org.uk (almost all schools, colleges and teacher training establishments in the UK outside Scotland are members, as are many overseas).

Hazardous chemicals database, SSERC, latest version on the SSERC website: www.sserc.org.uk/health-safety/chemistry-health-safety/hazchem_database-2/ (schools, colleges and teacher training establishments in Scotland).

Preparing Risk Assessments for Chemistry Project Work in Schools & Colleges, SSERC, 2020.

Social Action Vol.72, No. 2, April-June, 2022



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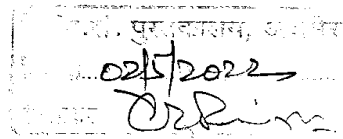
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Technology Pedagogy and Education Vol.31, No. 1, February, 2022

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के.वि.ने
दि. 04/5/2022

**Indian Knowledge in Higher Education:
A Game Changer**

Dhanya S* and S Thanuskodi**

The revamped National Education Policy-2020 envisages an education system that can mentor meticulously the future prodigies of the country so that they evolve as thoughtful and socially responsible citizens apart from their professional excellence and achievements. The policy reiterates the importance of incorporating holistic approaches to the existing framework of education programmes. It not just emphasizes the all-round development of an individual but alleges that quality education would be determined based on its capacity to create vibrant, socially-engaged, and cooperative communities which are happier, productive, cultured, and progressive.

The policymakers have suggested introducing Indian Knowledge Systems or Knowledge of India as a component of the educational programmes offered in the country. The esteemed institutions of India like IIT Gandhinagar and IIT Kharagpur have initiated semester-long courses on the Indian Knowledge System and paved a path to emulate other higher education institutions across the nation. How this knowledge of our country helps to boost its development and progress? This needs to be understood by academia. This article attempts to discuss why it is essential to incorporate Indian Knowledge into the current academic and research landscape of India.

Knowing the Treasure Trove-India

Bharat (the land of Bharata) has been a fertile land for arts, science, and technology from ancient times. Later popularized as India in the western world, the philosophers and renowned scientists have always acknowledged the contributions of Indians to the world in the fields of philosophy, science, technology, medicine, agriculture, and metallurgy. Mark Twain once beautifully quoted:

"India is the cradle of human race, the birthplace of human speech, the mother of history, the grandmother of legends and the great grandmother of all world traditions."

The British rule and Colonialism had created an undeniable impact on Indian knowledge and educational practices. To a fair extent, it won't be wrong to say even our present education sector is not free from the clutches of western education and schools of thought. For a country and its people to prosper, education and research knowing the soul and pulse of the soil are imperative. India- entitled

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Views on Online Teaching and Learning Processes and National Education Policy—2020

Om Vikas* and G Gopalakrishnan**

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#Let'sBeatCoronaTogether

During the pandemic, most of the schools and colleges in the STEM (Science, Technology, Engineering and Management) sector, the world over, were closed, in order to contain the spread of the virus. It was during this time, that ideas sprung up to offer on-line programs for school and college students. At about this time, both educators and the taught were not confident of getting into the on-line stream of teaching; perhaps the regular offline programs would commence or whether the on-line programs need to be continued. ICT – the acronym for ‘Information and Communications Technology’ had to be strengthened to enable proper on-line transfer of educational materials.

Simultaneously, the teacher and the taught had to be educated and brought on equivalent wavelengths to appreciate and undergo a thought revolution to accept the on-line programs. Initially there was quite some reluctance, ‘to go or not to go’ or try it for sometime till one is acquainted fully with the positive aspects of such an educational system! The anxieties arose when it came to taking laboratory lectures and classes, particularly for engineering and science streams.

Implications of Change-over

Apart from the various divergent views and mindsets of the teaching community, certain things are quite clear. What happens to all the study material that had been prepared over the years, like assignments, lecture notes, power point presentations, videos pertaining to offline programs? All these need to be reorganized, rewritten, and re-presented for online lectures and classes. Total dependence on ICT facilities in the schools, colleges and auditoriums! Though it may not be relevant or difficult for the teaching processes, the gamut of difficulties arises at the other end for the learners. Learners, particularly at the middle or high school levels need to have access to continuous sources of power, access to laptops or personal computers, internet supplies, or at least a good mobile phone.

It was in 2019, when Padma Vibhushan Dr. K. Kasturirangan, Former Chief, ISRO submitted the Draft National Education Policy that was put open for wide consultations, and later approved by the Government of India in 2020 as National Education Policy—2020 (NEP 2020). It recommends the change in the Educational Framework, emphasis on holistic education, multi-disciplinary university,

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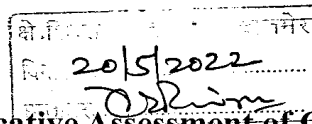
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Educative Assessment of Online Teaching during COVID-19 Pandemic

Bhanu Varma* and Rabinder Henry**

The COVID-19 pandemic necessitated rapid adoption of educative technology across the world. This has impacted academic delivery, academic administration and academic assessment. The initial days of the pandemic forced Higher Education Institutions (HEIs) to adopt creative online delivery and educative management. In order to assess the outcomes – especially the online mode of delivery, an educative audit process has been implemented as part of this education quality improvement program. This is generally defined as Educative Assessment.

The process of evaluating educational outcomes with respect to classroom and online mode lecture delivery include all related academic processes such as examinations, evaluations and administration. These analyses are performed using data collected in real time processes. The Quality Improvement Program for educative audits has been implemented at ATLAS SkillTech University (ASU), Mumbai over four semesters. This article provides a brief sketch of the experience of educative audits implemented at ATLAS SkillTech University (ASU), Mumbai.

The process started with a quantitative discussion with teaching faculty members and other stakeholders to identify key parameters for the measurement of teaching and knowledge delivery. In keeping with standards followed in the service and manufacturing industries, where a customer or a user is considered to be one of the main stakeholders, it was agreed that students would be the equivalent stakeholder in a HEI. The evaluation parameters that could potentially create a positive or negative impact on the student's behaviour or experience in a class while learning, has been included in the assessment process. These processes have been measured with specific empirical values. The measured outcomes have been shared with the respective faculty member as feedback. This is intended to improve the quality of teaching and classroom efficacy (<https://asq.org/quality-resources/auditing>).

The parameters were classified into absolute basic requirements (class hygiene), opening remarks, recap of the previous session and expected outcomes from the current session (Setting the context) and usage of diverse pedagogical methods in teaching while engaging with students (Knowledge Delivery and Connect). The impact that the delivered lecture and the students' experience along with their interactivity have been measured to improve efficacy of faculty members within the classroom. Different weights for each parameter

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Reimagining Technical and Vocational Education and Training in India: Prospects and Challenges

Suprabha Dey* and Asheesh Srivastava**

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#Let'sBeatCoronaTogether

India since its ancient Vedic age through its rich education and culture has tried to impart an education that leads to the holistic development of individuals. The great Rig Veda addresses the education that makes a man selfless and self-reliant, and the great education system of India has advocated for the mastery of 64 traditional arts or *chausath kalas*. The Gurukul system engaged the students in activities like building their own cottages, veterinary sciences, agriculture, animal husbandry, and various crafts - in cloth, wood, leather, metal works, etc., that in turn imparted vocational skills, competencies, and knowledge to them.

As per the All-India Council of Technical Education (AICTE), "Vocational Education or Vocational Education and Training (VET), also called Career and Technical Education (CTE), prepares learners for jobs that are based on manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation, hence the term, in which the learner participates". As expertise is developed for a particular technique or technology in the learners, vocational education is sometimes also referred to as technical education. Various education commissions of India suggested reforms in general and vocational education during pre as well as post-independent India. The need for introducing vocational education at the secondary school stage in pre-independent India was for the very first time pointed out by Wood's Despatch (1854). After this, the Hunter Commission (1882), Hartog Review Committee (1929), Sapru Enquiry Committee (1934), Wood-Abbot Advisory Committee (1936) as well as the Sargent Report (1944) emphasized the crucial role of vocational education in the country's economic development.

India has been the motherland of great educationists and scholars like Mahatma Gandhi and Rabindranath Tagore who were the ardent propounders of education that lead to the overall development of an individual. Mahatma Gandhi believed in an education that is grounded in the harmonious development of the 3Hs- Head, Heart, and Hand or the cognitive, affective, and psychomotor domains. Gandhi Ji at the Round Table Conference in London held in 1931 pointed out the low literacy rate among Indians because of the ineffective primary education system of India and advocated that educating a child through manual

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