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India Celebrating One Earth, One Family, One Future

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CHEST

5th Batch

INTERNATIONAL DIPLOMA IN EDUCATIONAL LEADERSHIP —HIGHER EDUCATION

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SOCIETY FOR EDUCATION AND ECONOMIC DEVELOPMENT
NEW DELHI

EDITORIAL

CELEBRATING THE IMPLEMENTATION OF NEP-2020 - WHILE FORMULATION OF KEY ORGANIZATIONAL STRUCTURES AWAITS!

The government of India celebrated the completion of three years of announcement / implementation of the National Education Policy, 2020 in a grand manner. It is reported in the press that more than 25,000 academics were invited from all over India at newly constructed Mandpam at the Pragati Maidan, New Delhi. This was a celebration of the implementation of the policy.

Independent India had formulated two policies in the past namely, National Education Policy` 1986. Revised policy in 1992. Although since independence two major commissions namely Dr. Radhakrishnan Commission on University Education 1948 and for school education - Secondary Education Commission chaired by Laxmani Swami Mudaliar -1952 and Professor DS Kothari Commission covering all sectors of education titled as" Education and Development"-1964-66 guided several policy actions. Constitutional amendment also caused policy action such as bringing education on concurrent list. However, these two documents namely 1986 and 1992 are formal policy statements on education.

I had an opportunity to be associated with the preparation for formulation of 1986 Education Policy. First when National Commission on Teachers was constituted in 1983 and a detailed report based on huge data on status of teachers was prepared and submitted to government of India. The Teachers commission report for school and higher education became inputs for formulation of policy on teachers in school and higher education. Followed by this a document on the challenges of Education was prepared. This document was circulated all over India and feedback was obtained. Finally, based on back up data/information the Education Policy was drafted by then-education minister Shri Narasimha Rao and placed before the Parliament for its approval. Followed by a program of action was drafted and financial resources were budgeted for implementation. When the BJP government came into power it set up Ramamurthy Committee to revise the policy. Later Shri Janardhan Reddy Committee was set up to revise the Policy. This committee submitted its recommendations. Shri Arjun Singh then education minister presented the policy in the parliament and the revised policy was accepted and announced in 1992.

National Education Policy- 2020 also had a detailed consultation with a large number of the population starting from districts to several institutions. The first draft of the policy recommendations was put up to then Education Minister, Srimati Smiriti Irani, but this draft recommendation was not taken forward. A new committee headed by Shri Kasturi Rangan, then Chairmen of the Indian Space Research Institute and member of Rajya Sabha was constituted. This committee gave its recommendations. These recommendations were accepted. These took the shape of National Education Policy-2020. A summary of this committee was prepared and put up to the cabinet for approval. With the approval of Cabinet, the NEP-2020 was announced. The process which was followed for the approval and announcement of the earlier two policies was not followed. This document was not placed before the parliament for their approval. Nor a program of action was formulated. Celebration indicates that implementation has been started.

The Policy document among other things, states that there would be a National Higher Education Commission of India with its four verticals namely, National Higher Education Regulatory Council (NHERC), National Accreditation Council (NAC), Higher Education Grants Council, and General Education Council. These four verticals are expected to work independently, yet within the framework of HECI. Three years have passed yet neither HECI - the overarching body- nor have its verticals been formulated and put to parliament or the public. Therefore, one is at loss what are we celebrating about the implementation of NEP-2020!

However, several things are happening on the ground as envisaged in the policy, namely, National Higher Educational Qualification framework (draft) announced by the University Grants Commission, which was the mandate of General Education Council. Similarly, many central universities were asked to prepare Institutional

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G.D. Sharma

Co-editor
Baldev Mahajan

HIGHER EDUCATION 4.0 MAKING TEACHERS FUTURE READY

SEED- ICF in Collaboration with Lakshmi Bai College, Delhi University, and GAD- TLC of Madan Mohan Malviya Tearchers Training Centre of Government of India organized a faculty development programme titled Education-4.0 Making Teachers Future Ready. Nearly 100 teachers from the colleges from Delhi and outside Delhi attended the FDP programme. The content of the programme was put on LMS and programme was conducted online. Very eminent resource persons addressed the participants of the week's programme. Presentation of experts and their interaction with participants were recorded and made available to teachers.

Teachers attempted Qizz on various aspects of Higher Education 4.0 and responded to three assignments given to them. Two of them were the short answers of 1000 words and the other was a long answers of 2000. Words. Participants were awarded certificates of faculty Development which they can use for the carrier advancement Scheme.

INTERNATIONAL DIPLOMA IN EDUCATIONAL LEADERSHIP- HIGHER EDUCATION

SEED - CHEST conducted the fourth batch of International Diploma Programme from September 2022. Seven senior principals of colleges and two young enterprising persons attended the programme. The programme was online and content was put on LMS. There was an interactive session on every Thursday with experts on various modules.

LEADERSHIP DEVELOPMENT PROGRAMME FOR SENIOR ACADEMICS

A three-day LDP programme for participants of IDEL-HE and senior academics of colleges and university was conducted at India Habitat Centre. The focus of the programme was implementing NEP-2020 - multidisciplinary aspects and use of new technology and AI in higher education The programme was held from 19-21 December 2022. Many eminent persons namely, former Vice Charman UGC and Executive Chair of NAAC, Professor A.C. Pandey, Director. NSC -UGC, Professor Sudhanshu Bhusan, Head Higher and Professional Education, NIEPA, Professor MM Pant, former PVC IGNOU and technology Expert, and GD Sharma, President SEED addressed the participants. Dr. MC Pant chaired the inaugural address and Shri Baldev Mahajan inaugurated the programme. The valedictory address was given by Professor NV Varghese, Vice Chancellor of NIEPA.

EXPLORATORY SESSION ON THE USE OF AI IN HIGHER EDUCATION

SEED-CHEST in collaboration with LMP Trust conducted an online/in person one day exploratory session on the use of AI in higher education for teaching, research and management. The issue of the use of Chat GPT and cyber security was also discussed. The programme was coordinated by Dr. Reshma Vats and supported by Professor Aman Vats. Dr. G.D. Sharma and Professor Pant addressed the participants. Dr. SC Sharma also joined the exploratory session.

IDEL-HE PROGRAMME 5TH BATCH

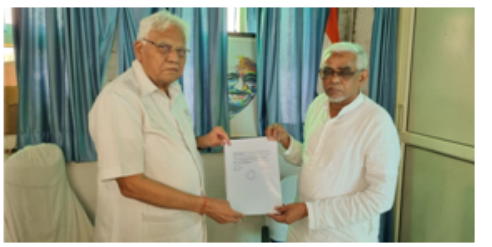
IDEL-HE programme 5th Batch has been restructured and proposed to start on January 2024. It is proposed to reach out to international participants through nominating coordinators in the respective region. The programme is on LMS and has built rich content in text and video form.

REVAMPING ICF ANNUAL CONFERENCE

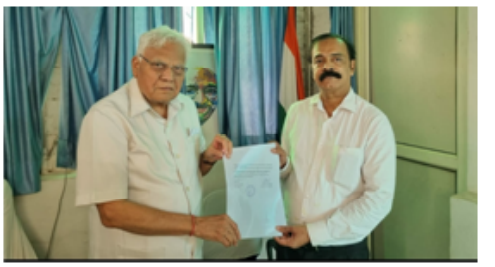
Due to Covid-19 ICF could not conduct its regular annual conference. An attempt will be made to organize an annual conference this year. As a first step, it is proposing to hold a regional one-day meeting on the implementation of education policy and the use of AI for teaching, research, and management of Higher Education. Following it national level meet will be arranged.

CERTIFICATE COURSES ON VALUES AND LIFE COPING SKILLS

SEED -CHEST has launched two certificate courses namely, Values and Life Coping Skills each of 2 credits. This course is very useful for the youth of colleges and universities as part of their personality development and also to meet the UGC guidelines for values and Life Skill courses for Undergraduate students. SEED- CHEST has signed an MOU with Majlis College, Kerala, and MES Keevyam College, Kerala for implementing these certificate courses.



Signing of MoU by Mr. Hamza, Secretary, Majlis College, Kerala



Signing of MoU by Dr. Mohmed Ali, Secretary, MES Keveeyam College, Kerala

QUANTUM COMPUTING AS A FORCE FOR EQUITY AND INCLUSION IN EDUCATION

DR. R.C. SHARMA *

The article reviews the development in use of Quantum Computing in the past in various appliances and machines. It brings out how quantum computing /computer is different from classical computer as it can compute exponentially with enormous variables. It has great potential to influence, science, education and life on the planet earth.

INTRODUCTION

Quantum computing is a cutting-edge paradigm in information processing that leverages the principles of quantum mechanics to perform complex computations. Unlike classical computing, which relies on bits (0 or 1), quantum computing uses quantum bits or qubits that can exist in multiple states simultaneously due to quantum superposition. This unique property allows quantum computers to process vast amounts of data in parallel, potentially solving certain problems exponentially faster than classical computers. The historical development of quantum computing is marked by significant contributions from scientists and researchers, shaping the field into what it is today. It began with Richard Feynman's proposal in 1982, in which he envisioned a quantum simulator that could efficiently simulate quantum systems, a task challenging for classical computers.

The historical development of quantum computing is marked by significant contributions from scientists and researchers, shaping the field into what it is today. It began with Richard Feynman's proposal in 1982, in which he envisioned a quantum simulator that could efficiently simulate quantum systems, a task challenging for classical computers.

To illustrate quantum superposition, consider a qubit represented by a quantum coin. In classical computing, a coin can be in either a heads (H) or a tails (T) state (a bit). However, in quantum computing, the quantum coin can simultaneously exist in a superposition of both heads and tails states. There are fundamental differences between quantum and classical computing architectures and their computational capabilities. Classical computers process data using bits that represent either 0 or 1, while quantum computers leverage qubits with quantum states, allowing for exponential parallelism in computations.

Quantum phenomena that are used in our daily lives

Several examples of quantum phenomena are used in our daily lives, often without we realize it. Here are a few examples:

» **LED lights:** LED lights use quantum dots, tiny crystals made of semiconductor material, to convert electricity into light. The quantum dots are excited by the electric current, causing them to emit light. This process is based on the principle of quantum confinement, where the quantum dots are so small that they can only contain a limited number of electrons, leading to unique optical properties.

» **Laser printers:** Laser printers use lasers to create patterns of light on paper, which are then absorbed by toner particles to form images. The laser technology used in these printers relies on the principles of quantum mechanics, specifically wave-particle duality, where light can behave both as a wave and a particle.

» **Flat-screen TVs and monitors:** Many flat-screen TVs and monitors use liquid crystal display (LCD) technology, which relies on quantum mechanics to control the orientation of molecules in a layer of liquid crystal. By applying an electric field to this layer, the molecules can be aligned to prevent light from passing through, creating images on the screen.

» **Smartphones and other mobile devices:** Many smartphones and other mobile devices use quantum dots in their displays to improve brightness and color accuracy. Quantum dots are also used in medical imaging techniques, such as positron emission tomography (PET) scans.

» **Kitchen appliances:** Some kitchen appliances, such as microwave ovens, use quantum mechanics to heat food. Microwave ovens work by causing water molecules in the food to vibrate, generating heat through the process of dielectric heating. This process is based on the principle of quantum mechanics, where the microwaves cause the water molecules to absorb energy and vibrate at specific frequencies.

» **Refrigerator magnets:** Many refrigerator magnets are made of materials that exhibit ferromagnetism, which is a property that arises from the quantum mechanical behavior of electrons in iron, nickel, and

* *Faculty at Ambedkar University, Delhi and technology expert*

cobalt. When these materials are placed near a magnet, the electrons in the material align with the magnetic field, creating a strong attraction between the magnet and the material.

» **Window glass:** Window glass is made of sand that has been heated to extremely high temperatures and then cooled slowly, allowing the grains to settle into a crystalline structure. This process is known as the "annealing" process, and it relies on the principles of quantum mechanics to control the movement of atoms during the cooling process.

» **Thermal insulation:** Some thermal insulation materials, such as fiberglass, use quantum mechanics to reduce heat transfer. These materials consist of thin fibers that are designed to trap air molecules, reducing the amount of heat that can be transferred through the material. This effect is based on the principle of quantum statistical mechanics, which describes the behavior of large ensembles of particles.

KEY PRINCIPLES OF QUANTUM MECHANICS

Quantum mechanics is the foundation of quantum computing, and understanding its key principles is essential to grasp the functioning of quantum systems, which includes superposition, entanglement, and measurement uncertainty.

Quantum Superposition

Quantum superposition is a fundamental principle in quantum mechanics, allowing qubits to exist in multiple states simultaneously. It enables quantum computers to process information exponentially faster by performing multiple computations in parallel.

Example:

We use the analogy of a spinning coin to illustrate superposition. In classical computing, a coin can be either heads or tails when spinning and eventually settles into one state. In quantum computing, the spinning quantum coin is simultaneously in a superposition of both heads and tails until measured.

QUANTUM ENTANGLEMENT

Quantum entanglement is a phenomenon where two or more qubits become correlated in such a way that their states are interdependent. Changes in the state of one entangled qubit instantly affect the state of the other, regardless of the distance between them.

Example:

This is highlighted through the concept of entangled particles, such as two entangled electrons with opposite spins. When one electron's spin is measured, the other's spin instantly aligns in the opposite direction, irrespective of their spatial separation.

QUANTUM MEASUREMENT AND UNCERTAINTY

In quantum mechanics, measurement collapses a qubit's superposition into one definite state. However, due to Heisenberg's uncertainty principle, precise measurements of certain properties, like position and momentum, are inherently uncertain.

Example:

Heisenberg's uncertainty principle with the position and momentum of a particle demonstrates it. The more accurately one is measured, the less certainty there is in the other property, highlighting the inherent uncertainty in quantum measurements.

TYPES OF QUANTUM COMPUTERS

There are several types of quantum computers, each based on different underlying technologies. Gate-based quantum computers use quantum gates to manipulate qubits, while adiabatic quantum computers rely on quantum annealing. This sub-topic introduces these types and their respective advantages and limitations. Quantum computers are highly sensitive to environmental noise and errors, which can rapidly degrade the accuracy of computations. Quantum error correction (QEC) techniques are essential to ensure reliable and fault-tolerant quantum computation. Quantum interference is a phenomenon where quantum states can constructively or destructively interfere, affecting the outcome of quantum computations. However, quantum systems are susceptible to decoherence, a process where quantum information is lost due to interactions with the environment.

Example:

Let's take the example of a gate-based quantum computer, like those built by IBM and Google. These computers utilize qubits to perform computations by applying quantum gates to the qubits' quantum states. Such computers are versatile and capable of executing various quantum algorithms.

Quantum technology is rapidly evolving, and researchers and companies are continuously making progress in developing more capable quantum hardware. This sub-topic discusses the current state of quantum technology, including the number of qubits, quantum volume, and real-world applications.As of the latest available data, quantum computers with around 100 qubits have been developed by leading companies like IBM and Google. Quantum volume, a metric that assesses the overall performance of quantum computers, is also

increasing steadily, indicating progress in the field.

QUANTUM COMPUTING USE CASES

Quantum computing's impact extends beyond theoretical research and scientific simulations. This topic explores practical and real-world applications of quantum computing in various activities of our daily lives, including secure communication, sensing, imaging, and artificial intelligence.

QUANTUM COMMUNICATION AND SECURE CRYPTOGRAPHY

Quantum communication and cryptography leverage the principles of quantum mechanics to achieve unprecedented levels of security. Quantum key distribution (QKD) allows two parties to share cryptographic keys with absolute secrecy, preventing eavesdropping or tampering.

Example:
One of the most notable examples of quantum communication is Quantum Key Distribution (QKD). Explain how QKD uses quantum states to distribute encryption keys, ensuring secure communication even against sophisticated attackers.

QUANTUM SENSING AND IMAGING

Quantum sensing harnesses the sensitivity of quantum systems to detect and measure physical quantities with exceptional precision. Quantum imaging technologies, such as quantum-enhanced cameras, enable ultra-sensitive imaging for various applications.

Example:
Quantum-enhanced imaging can be exemplified by quantum lidar, which uses entangled photon pairs to achieve high-resolution imaging in challenging environments, such as underwater exploration or remote sensing.

QUANTUM METROLOGY AND PRECISION MEASUREMENTS

Quantum metrology utilizes quantum phenomena like entanglement and superposition to improve measurement accuracy. Quantum sensors can outperform classical sensors in tasks like atomic clock synchronization and gravitational wave detection.

Example:
The application of quantum gyroscopes, which use quantum interference to measure rotation with unprecedented precision. These gyroscopes have applications in navigation systems and inertial sensing.

QUANTUM-ENHANCED AI AND MACHINE LEARNING

Quantum computing offers the potential to accelerate machine learning algorithms through quantum parallelism. Quantum-enhanced machine learning can solve complex optimization problems and improve pattern recognition tasks.

Example:
One example of quantum-enhanced machine learning is the use of quantum annealers to optimize solutions for traveling salesman problems, where the goal is to find the shortest route between multiple cities.

QUANTUM COMPUTING IN EDUCATION

Quantum computing can transform the education landscape by offering unique advantages and opportunities. It allows students and researchers to explore cutting-edge technology, encourages interdisciplinary collaboration, and fosters critical thinking in tackling complex problems. It has the benefits of integrating quantum computing into STEM (Science, Technology, Engineering, and Mathematics) education. By doing so, students can gain insights into quantum mechanics, programming, and problem-solving, preparing them for future careers in quantum-related fields. Integrating quantum concepts into the educational curriculum enables students at various levels to grasp the fundamentals of quantum computing. Age-appropriate quantum lessons can spark interest in STEM subjects and cultivate future quantum researchers. Quantum simulation allows researchers and educators to model complex quantum systems that are challenging to simulate using classical computers. It accelerates scientific discovery and aids students in understanding abstract quantum concepts.The advancement of quantum education requires dedicated initiatives and accessible resources. This topic explores quantum computing outreach programs, online quantum learning platforms, quantum education for K-12 students, and collaborative projects in quantum education.

ETHICAL CONSIDERATIONS IN QUANTUM COMPUTING

As quantum computing advances, ethical considerations become paramount in its development and application. This topic explores ethical challenges related to data privacy, security, quantum supremacy, and potential societal impacts. Quantum computers have the potential to break classical cryptographic methods, posing a threat to data privacy. The protection of sensitive information against quantum attacks is a significant ethical concern. As quantum computing becomes more powerful, the risk of quantum attacks on classical cryptographic systems

increases. Ethical considerations include developing quantum-safe solutions and transitioning to secure encryption methods. Quantum supremacy, the demonstration of quantum computers outperforming classical supercomputers, raises ethical questions about responsible communication of achievements and potential societal implications. Quantum computing's societal impact raises ethical concerns related to fairness and access. Ensuring equitable distribution of quantum resources and opportunities becomes crucial in avoiding exacerbating existing inequalities.

QUANTUM COMPUTING AND ARTIFICIAL INTELLIGENCE

Quantum computing has the potential to revolutionize artificial intelligence (AI) by enabling faster machine learning algorithms and optimization techniques. Quantum-enhanced AI promises to address complex problems beyond the capabilities of classical AI. Quantum computing poses both challenges and opportunities for cybersecurity. While it threatens classical cryptographic systems, it also offers quantum-safe encryption methods that can enhance cybersecurity.

Quantum computing can accelerate drug discovery by simulating molecular interactions and optimizing chemical structures. Quantum simulations provide insights into drug properties and potential interactions. Quantum computing is poised to revolutionize materials science and engineering by simulating quantum systems and exploring novel materials with unique properties. Quantum simulations can optimize material properties for various applications. Carbon capture and storage (CCS) technologies are crucial in mitigating carbon emissions. Quantum computing can optimize the process of capturing and storing carbon, making it more efficient and cost-effective.

Weather forecasting relies on complex numerical simulations, which can be resource-intensive. Quantum computing can accelerate these simulations, leading to more accurate and timely weather predictions. Renewable energy solutions, such as solar and wind power, are essential in addressing climate change. Quantum computing can optimize the deployment of renewable energy resources to maximize efficiency and minimize costs.

Disciplines that involve the intersection of quantum mechanics:

- **Quantum Mechanics:** The fundamental discipline that studies the behavior of matter and energy at the atomic and subatomic scale.
- **Quantum Computing:** The study of using quantum-mechanical phenomena to perform computation, promising faster and more efficient algorithms for specific tasks.
- **Quantum Information Science:** The study of quantum phenomena in the context of information processing, including quantum communication and quantum cryptography.
- **Quantum Optics:** The study of how light and matter interact in the quantum regime, exploring phenomena like quantum entanglement and superposition in photonics.
- **Quantum Chemistry:** The application of quantum mechanics to understand and predict the behavior of atoms and molecules, crucial in computational chemistry.
- **Quantum Biology:** The exploration of quantum phenomena in biological systems, studying how quantum effects may play a role in biological processes such as photosynthesis and navigation in birds.
- **Quantum Materials Science:** The study of materials and their properties at the quantum level, investigating phenomena like superconductivity and quantum phase transitions.
- **Quantum Condensed Matter Physics:** The study of the quantum behavior of matter in condensed phases, including quantum liquids, solids, and other complex states.
- **Quantum Field Theory:** The theoretical framework that combines quantum mechanics with special relativity, fundamental in understanding particle physics.
- **Quantum Gravity:** The search for a unified theory that combines quantum mechanics and general relativity to describe the behavior of gravity at the quantum scale.
- **Quantum Metrology:** The application of quantum mechanics to improve the precision of measurement devices, essential for advancements in fields like timekeeping and navigation.
- **Quantum Sensing:** The use of quantum phenomena to build sensitive sensors for detecting physical quantities like magnetic fields, gravitational waves, or temperature.
- **Quantum Imaging:** The study of quantum-enhanced imaging techniques that offer improved resolution and sensitivity in imaging applications.
- **Quantum Machine Learning:** The exploration of quantum algorithms and models to enhance machine learning tasks and speed up certain computations.
- **Quantum Thermodynamics:** The study of thermodynamic processes in the quantum regime, exploring the connection between quantum information and thermodynamics.

G-20 BHARAT 2023 INDIA - IT IS GOOD TO BE ON THE HIGH TABLE, BUT WE HAVE A LONG WAY TO GO

G.D. SHARMA *

The paper discusses the position of India among G-20 Countries with regard to education and economy. It makes a case for India to work hard to achieve high position in the Group. It also urges the Group to make more concrete recommendations.

THE BACKGROUND

Group 20 now 21 is an offshoot of G-7/8 formed at the time of financial crisis by Finance Ministers of developed countries. Initially, it worked as a platform for interaction among finance ministers and the World Bank, IMF, and other organizations to deliberate on financial stability and economic cooperation. On the advice of an Asian Development Bank economist its membership to large and emerging economies was expanded and the group became of 20 countries. Until 2008 the group was led by the Finance Minister of member countries. From 2008 to accord greater credibility and importance heads of states were invited to lead the respective country.

The group consists of five sub-groups, four members' countries in each group, and one has three countries. The meeting of the group is held by rotation within these groups (See Chart below).

India had an opportunity to host the meet this year after the G-20 Meeting was held in Bali, Indonesia in 2022. The next meeting is scheduled to be held in Brazil in 2024.

Its various theme-based subgroups work from November in the host country till the meeting is held. The outcome of these sub-group meetings is annexed to the Declaration by the Group.

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NO SECRETARIAT

It does not have any permanent secretariat, its work is handled by the OECD secretariat. There was an agenda to have its permanent secretariat in Japan, but was not accepted.

It is said, that G-20 /21 does not have any international legal framework.

It is also said that at best it could be viewed as a club of developed and emerging economies to deliberate on financial, economic, climate, and other issues and make recommendations/declarations without specific binding on the members to implement the recommendation.

Group 1	Group 2	Group 3 (Latin America)	Group 4 (Western Europe)	Group 5 (East Asia)
Australia (2014) Canada (2010-1) Saudi Arabia (2020) United States (2008, 2009-2)	India (2023) Russia (2013) South Africa (2025) Turkey (2015)	Argentina (2018) Brazil (2024) Mexico (2012)	France (2011) Germany (2017) Italy (2021) United Kingdom (2009-1)	China (2016) Indonesia (2022) Japan (2019) South Korea (2010-2)

To ensure continuity, the presidency is supported by a "troika" made up of the current, immediate past, and next host countries. Source Wikipedia.

At times it is viewed as a club led by America and Europe as an alternative forum of UN organizations. Also

* *Former Professor NIEPA, Former Secretary, UGC and Former Director, CEC- UGC*

as an attempt to find markets in large and emerging economies to ensure financial stability.

Often questions are raised:-what and how does the Group influence global development when its recommendation/ declaration has no binding on members? How does its declaration influence the development/interest of developing countries when no concrete steps of supporting developing countries are specified or committed? How the progress of the declaration is being examined when there is no secretariat of its own?

AGENDA OF THE GROUP

The group's main agenda has been and is financial stability, economic cooperation, and climate change. During the last three meetings education also became one of the aspects along with other issues for deliberations.

During the last two meetings - one in Indonesia and the other in India the issue which became a matter to debate was the Ukraine-Russia War. President of America Joe Biden even spoke about removing Russia from the group. Some of the European countries also wanted to condemn Russia over the Ukraine-Russia War. But India and other states stood the pressure both at the Indonesia Meeting as also in the India Meeting. This aspect could not have formed the agenda as this was beyond the agreed framework of financial stability, economic cooperation, and climate concern. Nevertheless, the heavy presence of developing countries, the USA, and countries of Europe acquired a place in this forum. This issue attempted to overshadow the other important economic and developmental issues.

AGENDA ABOUT EDUCATION

As mentioned above education aspects acquired attention during the last three meetings. Particularly, after the pandemic Covid-19 wherein complete lockdown affected the education of children as well the all levels of education. We will attempt to examine the declaration on education and other aspects while studying the profiles of member countries. We would first focus on education.

G-20 DECLARATION ON EDUCATION SINCE 2020

About three years back the Group recognised the importance of education in sustainable development. During the 17th Meeting of the Group in Bali,Indonesia in 2022 recognized the role of education in sustainable economic recovery. It advocated the "resilient, inclusive, equitable, and tech-enabled education system." It viewed education as a human right. The declaration read "We welcome the outcome of the transforming Education Summit. We will act in solidarity in particular with developing countries to rebuild more resilient, tech-enabled, accessible, and effective education systems. We will empower relevant actors within and beyond G20 to remove barriers to education, improve teaching and learning environments, and support transitions within and across all stages of education, with emphasis on women and girls," It is also committed to promoting lifelong learning "at all levels amidst the changing nature of the world of work and encourage partnership in this regard."

This declaration had its genesis in an earlier declaration made in 2020 during the COVID-19 pandemic in a virtually held meeting in Saudi Arabia. The pandemic challenged the whole world education system in particular early childhood education as children and adults were confined to homes. The group recognizing this called for" sharing best practices adopted by member countries for continuing education through virtual or blended mode. It viewed early childhood education as a foundation stone for the rest of the education trajectory of a learner and building the awareness for a suitably qualified workforce and increasing the accessibility of education for all."

Following this in 2021 G-20 meeting held in Italy called for providing " Equal access to all the levels and types of education and other life-long opportunities, particularly for girls, women, and vulnerable groups, as one of the means to address educational, professional economic and social inequalities".

The Delhi G-20 declaration more or less emphasizes earlier aspects and added technical and vocational education, as well as investment in human capital. It declared

"We are committed to inclusive, equitable, higher-quality education and skills training for all, including for those in vulnerable situations. We recognize the importance of investment in supporting human capital development. We recognize the importance of foundational learning (literacy, numeracy, and socio-emotional skills) as the primary building block for education and employment."

The Declaration also emphasized expanding access to high-quality technical and vocational education and training (TVET) as well as the importance of life-long learning "especially for vulnerable groups".(1)

To be precise Para 30 of the declaration stated as follows:

"Delivering Quality Education

30. We are committed to inclusive, equitable, high-quality education and skills training for all, including those in vulnerable situations. We recognize the importance of investment in supporting human capital development. To this end, we:

i. Recognize the importance of foundational learning (literacy, numeracy, and socio-emotional skills) as the primary building block for education and employment.

ii. Reiterate our commitment to harness digital

technologies to overcome the digital divides for all learners

iii. *Extend support to educational institutions and teachers to enable them to keep pace with emerging trends and technological advances including AI.*

iv. *Emphasize expanding access to high-quality Technical and Vocational Education and Training (TVET).*

v. *Reaffirm our commitment to promote open, equitable, and secure scientific collaboration and encourage mobility of students, scholars, researchers, and scientists across research and higher education institutions.*

vi. *Emphasize the importance of enabling life-long learning focused on skilling, reskilling, and upskilling especially for vulnerable groups."*

The aspect of Enhancing Economic and Social Empowerment in para 64, specifically mentioned women and girls education.

"Ensure equal access to affordable, inclusive, equitable, safe, and quality education from early childhood through higher education to lifelong learning and support the greater enrolment, participation, and leadership of all women and girls, including those with disabilities, in STEM fields and emerging digital technologies." (2)

There has been mention of developing countries and vulnerable situations/countries in several declarations without specifying vulnerability aspects.

These declarations are important as these go to establish the important role of education in economic and social development as well as concern for those often left out owing to several economic, social, and infrastructural and the lack of specific policy and investment initiatives.

The question, however, arises what are G-20 specific initiatives in hard terms, like, expansion of facilities for equal quality access, allocation of funds to achieve this, specific policy measures, and a time framewithin which these statements are likely to be addressed/ implemented? And what would be the role/contribution of members of the group to achieve these good statements, in particular in member emerging economies and if possible other developing economies? In the absence of these hard terms, the statements sound like good intentions without any real commitment to address them.

As we attempt toanalyze the profiles of the member countries, it might appear in reality these statements may not hold good or are relevant to most of the member states.

EDUCATION AND EMPLOYMENT PROFILE

Let us look into the education profile of member states of G-20 by examining a few indicators namely investment in Education, the Participation rate in higher education, the rate of

Unemployment of educated people, and the rate of Not in Education, Employment, and Training (NEET). Let us see wheremember countries stand on these indicators. From this analysis, we will know which countries in this group that need to address these declared intentions.

Table No.1 given above indicates the investment in education, Gross enrolment in Tertiary Education, Percentage of Unemployment among the advanced level Education youth, and percent of youth population Not in Education, Employment, and Training (NEET) for Females and Males.

THE RATIO OF EXPENDITURE ON EDUCATION TO GDP

The table reveals that countries namely, Argentina, Australia, Brazil, Canada, France, Saudi Arabia, South Africa, United Kingdom, USA spent 5 and more than 5 percent of GDP on Education. The highest expenditure is by Saudi Arabia, South Africa, Australia, and the USA. These countries spent more than 6 percent of GDP on Education. India spent 4.5 percent of GDP. This is comparable and a little higher than the average for the world. However, recent figures for the ratio of expenditure to GDP on education in India are somewhat low. It is 3 percent in the year 2023.

GROSS ENROLMENT RATIO IN TERTIARY EDUCATION

The gross enrolment ratio in tertiary education (figures are somewhat dated) shows that but for India and South Africa, gross enrolment in tertiary education is higher than 50 % of their eligible population. For India and South Africa, it was 28.1 and 23. 8 percent respectively. A good number of G-20 Countries have almost achieved universalization oftertiary education.India is projected to achieve a gross enrolment ratio of up to 50% by 2035. India has to work consistently and very hard to achieve a respectable position in higher education among the G-20 Countries.

EDUCATED UNEMPLOYMENT

The more worrying position of India, South Africa, and Turkey is that there is two-digit unemployment among advanced-level educated people. With 14, 15 and 12 percent of unemployed for these countries respectively. For the rest of the G-20 countries, it ranges between 2-5 percent except for Saudi Arabia with a 9 Percent unemployment rate.

NOT IN EMPLOYMENT, EDUCATION, AND TRAINING (NEET)

Yet another indicator of the percentage of the population not in education, employment, and training shows a matter of greater worry for a good number of G 20 Countries.

Table No. 1 : Profile of Educational and Employment Indicators - G- 20 Countries

	% of Govt. Exp. on Education to GDP			% of Govt.Exp. On Edu.		Gross Enrolment Ratio for Tertiary Edu.		Unemployment with Advance Edu. % and Labour force with Advance Edu.		Not in Employment Edu. And Traning NEET % to Youth Population		
Sl No.	Countries Name	Years	%	Year	Exp. On Tertiary	Year	%	Year	%	Year	Female	Male
1	Argentina	2020	5	2017	22%	2017	90%	2021	3	2021	18.6	13.8
2	Australia	2020	6.1	2016	27%	2018	107.8	2021	4	2017	9	8.9
3	Brazil	2019	6	2015	21%			2022	5	2022	25.8	16.3
4	Canada	2020	5.2	2011	36%	2018	70.1	2022	4	2022	10.6	13
5	China	2020	3.6	1999	24%	2018	50.6					
6	France	2020	5.5	1999	18%	2018	67.6	2021	5	2021	10.3	12.5
7	Germany	2020	4.7	2016	26%	2018	70.3	2021	2	2021	7.7	7.4
8	India	2020	4.5	2013	29%	2018	28.1	2022	14	2021	43.5	13.7
9	Indonesia	2020	3.5	2015	16%	2018	36.3	2022	4	2022	27.2	17.7
10	Italy	2020	4.3	2016	19%	2018	64.3	2021	5	2021	20	19.5
11	Japan	2020	3.4	2016	20%			2020	2	2019	3.8	2.7
12	Rep. of Korea	2019	4.7	2016	20%	2018	95.9	2022	3			
13	Mexico	2018	4.3	2016	21%	2018	41.5	2022	4	2022	25.3	9.3
14	Russia	2020	3.7	2016	22%	2018	84.6	2021	5	2016	14.6	10.3
15	Saudi Arabia	2020	7.8	1998	17%	2018	68.1	2021	9	2021	23.9	15
16	South Africa	2021	6.6	2018	15%	2018	23.8	2022	15	2022	34.5	31.3
17	Turkey	2020	3.4	2006	32%	2018	130.2	2021	12	2021	32.4	17.5
18	United Kingdom	2020	5.5	2016	26%	2018	61.4	2019	2	2019	10.6	10.5
19	USA	2020	6.1	2014	28%	2018	88.3	2022	2	2022	11.7	10.8
20	World	2020	4.3			2018	38.4					

Source: Compiled from World Bank, IMF, UNESCO Data set and Trading Economies - G20 Countries.

This could be viewed as the most vulnerable population. India has the highest number of female population in NEET. It is 43.5 percent. Followed by South Africa (34.5%), Turkey (32.4%) Indonesia (27.2%), Brazil (25.8%), and Mexico (25.3%) part of it could be social structure as some females may be in marriage. Yet the figures are very high for these countries. Even a good number of developed countries (except for Japan, Germany, and Australia) of the group have female NEET in two digits. This should be a matter of worry for the group. Though several of past declarations on vulnerable situation/group talks to address the problems of vulnerable groups, but Group has not addressed this as its problem. The NEET among the male population is also a matter of worry for most G-20 countries as they have NEET males with more than two digits. Japan, Germany, and Australia have NEET males in single digits. The lowest is for Japan with only 2.7 percent.

The population that is falling in NEET should be a matter of worry for most of the members of the G-20 and in particular India, South Africa, Turkey Indonesia, Brazil, and Mexico. Intriguingly, the sub-group working on education could not pinpoint this for addressing the problem by the Group, let alone declaration for other developing and least developed countries. Investment in education, participation rate in higher education, unemployment of educated people and those not in employment, Education and Training (NEET) show there is wide gap between developed and emerging economies with investment, participation rate, and educated employment. Among Emerging economies also India is relatively poorly placed. The percentage of the female and male population in NEET is a matter of worry for the members of the group except for a few.

Instead of broad and vague statements the Group, when meets next time, needs to look into the matter a little more deeply and work out a strategy to address the problem with cooperation and learn from best practices.

VISWA GURU PHENOMENA

India in the past had attracted students from all over the world. The three oldest universities, namely, Nalanda, Vikram Sila, and Taxsila have attracted students and scholars from far of countries. Recently a statement is

frequently made that India would be viswa Guru. One of the indicators is the ability of higher education in G-20 countries to attract students. Data pf inbound mobility indicate the number of students coming from G-20 countries for studies and research. Data are given in Table No. 2. The data reveal that inbound mobility is lowest in India among G-20 Countries. It is 0.1 percent. The highest is for Australia (21.5%). This is followed by the UK and Canada with 17.9 and 12.9 percent respectively. India, Indonesia, Brazil, and Turkey have a long way to go to claim the position of being Viswa Guru.

Table No. 2.G-20 countries Inbound Mobility Rate Both Sex

Sl No.	Countries Name	Inbound Mobility Rate Both Sex
		The year 2017
1	Argentina	2.8
2	Australia	21.5
3	Brazil	0.2
4	Canada	12.9
5	China	0.4
6	France	10.2
7	Germany	8.4
8	India	0.1
9	Indonesia	0.1
10	Italy	5.3
11	Japan	4.3
12	Rep. of Korea	2.3
13	Mexico	0.6
14	Russia	4.3
15	Saudi Arabia	4.7
16	South Africa	4.1
17	Turkiye	1.5
18	United Kingdom	17.9
19	USA	5.2
20	World	2.4

Source: Data Set- Complied from UNESCO, World Bank, IMF, Trading Economies- G-20 Countries

G-20 ECONOMIC INDICATORS' PROFILE

There is a close link between education and economic development. Education pushes up economic development and economic development pushes up education. How to integrate and harness these two forces for development is challenging. To understand it we will attempt to analyze the Economic Indicators profile of G-20 Countries.

Some of the economic indicators considered areper capita GDP, Ratio of population in Poverty ($2.1 PPP) per day, and Unemployment rate. Figures are given in Table No. 3.

GDP PER CAPITA

The data on Per Capita GDP in $ G-20 Countries show that India stands the lowest in the group with only $ 9.7. The highest per capita GDP among the group is of USA (80.03). It is followed by Germany, Australia, Saudi Arabia, and Canada with $ 66.13, 65.37, 64.84 and 60.18 respectively. Countries namely, France and UK have $58.83 and 56.47 respectively. The rest of the countries have per capita GDP ranging from $20-50 except South Africa and Indonesia. They have $16.1and 15.86. India has to bootstrap even to reach the level of South Africa and Indonesia.

POVERTY RATE

Poverty Rate figures based on ($ 2.1 per day at PPP) estimates for G-20 countries reveal a very disturbing picture of South Africa, and India. South Africa has doubled the number as compared to India with 10 percent. Countries namely, Germany and Russia have 0 rate of poverty under this category. For most of the countries, except Indonesia andMexico, It is 1 or less than 1. Indonesia has 4.4 percent and Mexico has 2.6 percent.

UNEMPLOYMENT RATE

Except for South Africa unemployment rate is in the single digits. South Africa has a 32.6 percent employment rate. Turkey -9.4, India -8, Brazil -7.9. France 7.2, Italy 7.6 percent. The rest have less than 7 percent. USA, Russia, Mexico, and Australia have between 3-4 percent. Japan with 2.7 Percent has the least unemployment rate.

On three indicators namely, GDP Per Capita, Poverty Head Counts and Unemployment India has least GDP Per Capita. It has second highest Poverty Head Count, highest being South Africa. It has relatively higher per capita GDP as compared to India. Again India has third highest unemployment. Highest being South Africa. It is followed Turkey - a little higher than India. The rest of G-20 countries are far ahead in Per Capita GDP, less poverty head counts, and less unemployment rate. The gap is very wide and telling.

BALANCE OF TRADE AND DEBT RATIO TO GDP

There are yet two more economic indicators showing the balance of trade that is surplus/deficit and the ratio of debt to GDP. Countries with high trade deficit have to rework international trade, even if it has adopted the policy of liberalization of trade. Trade often indicates the relative position of the country within the Group and also influences the exchange rate of the currency. The debt position offers either more or less space for the growth of the economy.

Table. No.3 G-20 Countries - Some Economic Indicators

Sl No.	Countries Name	GDP per capita in $ 2023	Poverty Headcount Ratio PPP		Unemployment	
			Years	%	in %	Reference
1	Argentina	27.26	2019	0.8	6.9	Mar-23
2	Austrialia	65.37	2018	0.5	3.7	Aug-23
3	Brazil	18.69	2017	5.4	7.9	Jul-23
4	Canada	60.18	2018	0.2	5.5	Aug-23
5	China	23.38	2019	0.1	5.2	Aug-23
6	France	58.83	2019	0.1	7.2	Jun-23
7	Germany	66.13	2019	0	5.7	Aug-23
8	India	9.07	2019	10	8	Jul-23
9	Indonesia	15.86	2019	4.4	5.45	Mar-23
10	Italy	54.22	2019	1	7.6	Jul-23
11	Japan	51.81	2013	0.7	2.7	Jul-23
12	Rep. of Korea	56.71	2016	0.2	2.4	Aug-23
13	Mexico	23.82	2018	2.6	3.1	Jul-23
14	Russia	34.84	2019	0	3	Jul-23
15	Saudi Arabia	64.84			5.1	Mar-23
16	South Africa	16.1	2014	20.5	32.6	Jun-23
17	Turkey	41.41	2019	0.4	9.4	Jul-23
18	United Kingdom	56.47	2019	0.5	4.3	Jul-23
19	USA	80.03	2019	1	3.8	Aug-23
20	World		2019	8.5		

Source: Compiled from - Data Set- World Bank, IMF, Trading Economies - G-20 Countries

Balance of Trade and Debt to GDP Ratio:

Balance of trade shows surplus or deficit are indicator of trade position of the countryvis a vis other countries in Group. The positive balance would indicate the strength of the country in trade and the negative would show weakness in trade. Which invariable affects the rate of exchange or value of the currency. The debt to GDP Ratio indicates the economy's ability to reinvest and give push to the economy. Figures are given in Table No. 4

Data given in Table No. 4 on these two indicators for G-20 reveal that Japan has a trade deficit of -78.7 JPy Billion. The next highest trade deficit is for India with -24.2 billion US $. China, the USA, and Germany have a high trade surplus of US $ 68.36, 65.02, and 15.95 billion. The rest have a surplus /deficit in millions. Countries having a surplus in millions are Saudi Arabia, South Africa, Russia, the Republic of Korea, Italy, Indonesia, and Brazil. The rest have a trade deficit. The alarming situation is for India because on other parameters also does compare with Japan. The high trade deficit for India requires urgent attention in the G-20 countries.

DEBT RATIO TO GDP

This indicator shows that developed countries have a higher debt ratio toGDP and very few countries meet the IMF norm of 70 percent to GDP as manageable debt without affecting the growth rate. Countries having low debt ratio are Russia (17.2), Australia (22.3), Saudi Arabia (30), Turkey (31.7), Indonesia (40.9) Mexico and South Korea (49.6 each), Germany (66.3) South Africa (67.4). However, India with 89.26 percent and the rest of the countries have crossed the bar. The highest is for Japan with 264percent. It is followed by Italy, the USA, Canada, France, and the UK with 145,129, 113,112, and 101 percent. With regard debt to GDP ratio, most of the developed countries have higher than their GDP. The

Table No. 4 G-20 Countries Balance of Trade and Debt to GDP Ratio

Sl No.	Countries Name	G-20 Balance of Trade Data			Debt to GDP Ratio	
		Last	Reference	Unit	In %	Reference
1	Argentina	-649	Jul-23	USD Million	85	Dec-22
2	Australia	8039	Jul-23	AUD Million	22.3	Dec-22
3	Brazil	9767	Aug-23	USD Million	72.87	Dec-22
4	Canada	-987	Jul-23	CAD Million	113	Dec-21
5	China	68.36	Aug-23	USD Billion	76.9	Dec-22
6	France	-8089	Jul-23	EUR Million	112	Dec-22
7	Germany	15.95	Jul-23	EUR Billion	66.3	Dec-22
8	India	-24.2	Aug-23	USD Billion	89.26	Dec-21
9	Indonesia	3124	Aug-23	USD Million	40.9	Dec-22
10	Italy	6375	Jul-23	EUR Million	145	Dec-22
11	Japan	-78.7	Jul-23	JPY Billion	264	Dec-22
12	Rep. of Korea	868	Aug-23	USD Million	49.6	Dec-22
13	Mexico	-881	Jul-23	USD Million	49.6	Dec-21
14	Russia	5489	Jul-23	USD Million	17.2	Dec-22
15	Saudi Arabia	37316	Jun-23	SAR Million	30	Dec-21
16	South Africa	15961	Jul-23	ZAR Million	67.4	Dec-22
17	Turkey	-8880	Aug-23	USD Million	31.7	Dec-22
18	United Kingdom	-3446	Jul-23	GBP Million	101	Dec-22
19	USA	-65.02	Jul-23	USD Billion	129	Dec-22
20	World					

Source: Compiled from Data Set- World Bank, IMF and Trading Economies - G-20 Countries.

developed countries' ability to manage the rate of growth with high debt is somewhat puzzling. This could be possible because these countries have built higher assets over a period and acquired the ability to borrow externally.

A SERIOUS CONCERN FOR INDIA:

The position of India with regard to : high trade deficit, debt to GDP Ratio above IMF norm, relatively high rate of population under poverty headcount, relatively higher rate of unemployment, relatively higher rate of unemployment among advanced educated people, relatively higher rate of population under NEET for female and male, low investment on education, low rate of participation in higher education and finally low rate of inbound student population

in the Group-20 is a matter of serious worry for all and in particular those who advice government on economic and education matters. They need to rework their advice on model of economic and educational development.

TO SUM UP

The declaration on most of the agenda namely, financial stability, Climate Change, and SDG, have reaffirmed the position taken by respective UN organizations, World Bank, WTO, and other multilevel agencies. G-20 needs to concretize its recommendation with facts and figures. It needs to indicate time frame for achieve/implementing them, even, if it is not binding on members.

There is enormous reference of developing countries without their representation by the expert economic and education forums to make their points. Without their presence it does not sound well to speak about them.

India has added a new dimension to the structure / nature of the Group and is non-binding on the member states. It has added the concept of voluntarism. It offered to work on certain declarations on climate change, digitization, etc., voluntarily. If this aspect is woven into G-20 while declarations are not binding, states can voluntarily act open to making the Group to work for a better future.

Both education and economic indicators reveal that there is a wide gap between developed and emerging economies. It betrays the adage of one earth one family and one future. Earth is the same but the position of the family is highly skewed. Unless serious steps are taken by emerging economies and supported by developed countries future is not going to be one. India has long way to go to justify being on this higher table.

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...contd. from page 1

Development Plan (IDP) which are required to be funded by Higher Education Grant Council based on IDP of the institutions. UGC has formed Academic Bank of Credit- this is to facilitate flexibility in the system as envisaged in the policy. Central Universities have been asked to follow credit system and incorporate multidisciplinary courses/ programmes. Another major change has been formulation of Central University Eligibility Test (CUET) for admission to central universities. It is suggested that state universities should also follow this test for admission of students. This test incorporate multidisciplinary aspects.

Yet another major change has been repeal of the Science and Engineering Board Act, 2008 meant to provide public funds for Science and Technology Research, handled by Department of Science and Technology, and the formation of National Research Foundation Bill, 2023. The new bill of NRF is under debate by academics. Three main features of this Bill are under serious debate. These pertain to lack of funding of research by the state, dependence on private sector's contribution for research funding and finally constitution of NRF, where a large proportion of representation in the body is of private sector. The NRF is proposed to be headed by the Prime Minister of India. The Prime Minister of India is very busy person and to spare time for regular meeting of NRF is really a challenge. Views on the suitability of NRF are quite divergent and ,therefore, needs some harmonization. This is necessary to ensure proper and adequate funding of research- a key action- for the development of India.

Above all this, if we really mean to implement NEP-2020 - an excellent piece of document, we need to formulate HECI and its verticals. This is essential. Its structure would reveal whether the system would be functional or otherwise.

Readers are encouraged to send their comments, opinions, and alternative views on any of the issues published in this issue for consideration by the College Post.

Editor

STUDENTS' SATISFACTION SURVEY
VOICING THE VOICELESS - STUDENTS SHARING THE LEVEL OF THEIR SATISFACTION WITH EDUCATION

PROFESSOR SUDHANSHU BHUSHAN *

The present article is a summary of a detailed Students' Satisfaction Survey with their education process. It deals with conceptual and practice aspects of students' satisfaction with higher education based on all India survey.

FORUM OF STUDENTS' VOICE:

Students' Councils -some questions waiting for resolution: Students are important stakeholders in the higher education system. Policy, planning, financing and governance all revolve around maximizing the learning and satisfaction of students. However, there is hardly an attempt to understand the views, preferences and satisfaction of students. There are, no doubt, Students Union or Council to represent students' point of view whose representative are also present in some decision-making body of the University or the college. However, in many institutions of higher education Student Council does not exist. The argument is given that they are highly political and there is no scope for politics in academics. There may be an element of truth in the above to the extent that elections to the Student Council are sometimes manipulated and when in existence they begin to ask questions which may not be convenient to the governing body. Does this mean that a sole representation of students through the Student Council be discouraged in higher education? Conflict leading to violence in the campus is not desirable in the academic pursuit of knowledge. But certainly, any conflict has to be resolved through the deliberative process in which students, teachers and administration should work together. This is the call of a democratic process. There should not be a vacuum in the communicative channel. This gives rise to the dissatisfaction of students.

Conflict leading to violence in the campus is not desirable in the academic pursuit of knowledge. But certainly, any conflict has to be resolved through the deliberative process in which students, teachers and administration should work together. This is the call of a democratic process.

CONFLICTS ARISING OUT OF DIFFERENCE IN PERSPECTIVES

The field reality makes us aware that if the fee is raised in the name of efficient governance, students oppose the move because it may make higher education not accessible to them. Teachers may determine the curricula and syllabus which may be oriented towards theory and the students might feel it burdensome with lots of learning difficulty for many learners who may be interested in the curricula that provide knowledge with experience. There may be a dress code desirable from the point of discipline. Students may however like to have freedom of personal choice. Hence there may exist transcendentally unity but in actual practice there are conflicts and oppositions which can only be settled through reason and deliberation. It is desirable to have students' satisfaction, views and preferences known to the teachers, administrators and the policymakers.

ARE STUDENTS AN ACTIVE AGENCY IN EDUCATION PROCESS?

What is the place of students in the whole movement of university in the passage of time? It was thought that a unity must exist between teachers and students. This meant that teachers must do teaching and research and in this unity of teaching and research, students should participate in cooperation with teachers so that the advancement of knowledge proceeds in an unrestricted manner. However, in terms of the architecture that University builds teachers become the important agency of the state and decides all the activities within the University to function. Hence teachers decide the curriculum and the transactions with the purpose to impart knowledge to the students which are to be assessed by the teachers. As the University grants degree to the students for the purpose of certifying the knowledge, teachers become the masters of students. The role of students is subordinated both in the process of broader governance and teaching learning processes. Do we understand students well? We presume that everything works in the interests of students. And, if there is doubt, we take the feedbacks from students and incorporate those feedbacks conveniently. Students are never taken as an active agency.

Why students are not an active agency? They're not considered active because they do not represent state directly. State is represented by administration and academic employees who are directly funded by the state and are, therefore, accountable to the state. Whatever is delivered to the students is decided by the state through its various policy directions and by teachers through its

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academic functions. However, I do not consider a knowledge enterprise to be flourishing if students remain passive agency. If we do not understand the level of satisfaction of students, their views and preferences and if we do not deliberate with them the agency of the students will remain subordinated to the power and knowledge of the state and academia. This I do not consider as happy state for the growth of knowledge as we do not know whether growth of knowledge is beneficial to the students and to the society, in general.

HOW STUDENTS CAN BE ACTIVE AGENCY?

How will the students become an active agency may be a matter of debate? Students may not be equal partner in the administration and therefore students may represent in some capacity in the administrative bodies to present their voices. This is of course provided in the functioning of the universities formally, though not always granted in practice. However, its agency may be made more flourishing if there is a mechanism by which the academic practices allow the voices of students to be understood and represented in the decision making processes. If it is felt that knowledge generation process should benefit students; then in what manner it benefits the students need to be understood. It is for this reason that perhaps at a national level there is a need to understand students' satisfaction. It is important that the students' views and preferences on some of the dimensions of governance and the teaching learning processes be understood.

TRANSITION FROM HOMOGENEITY TO DIVERSITY OF STUDENTS

This is all the more important because in the transition from the elite to mass higher education students are no longer a homogeneous entity. They represent various classes, castes, gender and geographical spaces. As a result, their interests may vary. Their needs may vary. Also, the purpose and content of knowledge may vary. Under such variations it becomes important to know who want what? There may even be sometimes conflict which may be resolved only when we know what are the conflicting issues and challenges? Through the student's satisfaction survey there has been an attempt to understand students' points of view so that some policy directions may be made to address those challenges, even if they are not addressed fully.

IMPERATIVES OF FIRST GENERATION LEARNERS

In this changing scenario of higher education perhaps the importance of first-generation learners has not been properly understood. There has been a category of Scheduled Castes, Scheduled Tribes and OBCs who have been given reservation in admissions. Thus, at the entry level they have been given certain advantages over another general category. However, they have suffered in the University campus from various disadvantages right from issues relating to governance as well as teaching-learning process. In this context, the issue of first-generation learners acquires more importance. Because the first-generation learners suffer from those disadvantages due to social and cultural deficits which they carry from their own circumstances of deprivation. They may not have a level playing field at the entry point in the University. Hence any cognitive endeavor by the first generation learners may face challenges which non-first generation learners may not face. Is it therefore not essential that such disadvantages of the first generation learners be addressed through the policy? If students who are the first-generation learners are not explicitly considered in its goals and functions of the University perhaps policies may not lead to social justice.

For example, it has been generally argued that University helps students in advancing cognitive ability in the upward mobility of students. However, for many first-generation learners the understanding of University was very peculiar. They did not know how will the knowledge help them in the upward mobility? For them University has some aspirational value. They knew that someone had achieved something in terms of job, prestige and the reputation by going to the University. So, they felt that University will somehow achieve the same for them. They may not have high motivation to acquire more knowledge as having certain aspirations to be fulfilled in the University. Only when they come to the University, they realize that the social space has provided them the opportunity to realize their potential which remain unexplored. In this social space for them the way the peers and the teachers help them to realize the potentials help them to discover something new. Hence University is not simply a space that is concerned with teaching-learning process within class. It is much more important how things work out for them out of the class. In this context the extra-curricular becomes much more important. An important message derived from the student's satisfaction survey is that a space within the class is important but the social space of interacting with the books, peers and teachers is of no less importance.

IMPERATIVES OF DOUBLE DISADVANTAGES - FIRST GENERATION AND LOW INCOME

The barriers are many fold if we consider the situation of students coming from low income groups and particularly students who are the first generation learners. They are in the institutions of higher education in large numbers. In our sample of over 10,000 students, 44% of students belonged to the first generation learners. The NSS 71st round survey on education puts the figure at 46%. The first generation learners come from a rural background. Most of them are from government schools with inadequate facilities in the rural area. They travel long

distances to attend colleges. Many of them have to support their families by earning. In terms of father's occupation they may have a small business, they may be a small shopkeeper, a driver, a railway employee, an ex-army man or a daily worker. They undertake to study arts subjects. Many girls students are anemic and have feeble voices. They are also under prepared at school level of education to pursue higher education. We do not know whether they are adequately nourished. We do not know under what mental stress or anxiety they have come to the college. Dr. Mani Madhavan conducted a survey in his college and informed me the following features of first generation learners:

BOX 1: MANI MADHAVAN POINTS ON FIRST GENERATION LEARNERS

1. The first-generation students are from BPL family
2. Don't have proper guidance.
3. The problem of expressing ideas
4. Hesitate to ask questions
5. Most of them don't have appropriate parental care
6. Poor basic knowledge
7. Poor self-image
8. No hygiene practices
9. Non-availability of nutritious food
10. Don't have a focus on their plans
11. Poor communication in English as well as in the local language.
12. Don't know about the available options
13. Poor self-discipline
14. Not sincere in studies
15. Good at their heart.
16. Want to grow in life but not interested in taking initiative
17. Fear of failure and not willing to take challenges
18. Not willing to travel
19. Not ready to work in faraway places.

Do we have understanding of how do they adapt to the standardized curriculum which is served by the top of the administration to the college? Do we know sufficiently enough, what their learning difficulties are? Many of them, it was noted during the discussion, are slow learners as they do not adequately follow their lectures by the teachers. It is important to understand their fears, silence and powerlessness in the whole system of higher education. How much do we know how the rigour of knowledge in the multidisciplinary liberal education, as suggested in National Education Policy, 2020, is confronted by the first generation learners? Perhaps the failure rate is very high amongst them. Those who pass out may have cumulative deficit which may not help them to fetch a job in the labour market. There were a whole set of questions that came up during the focus group discussion with the students of colleges.

Is there not a complete policy vacuum to deal with the challenges of first generation learners? The policies look at an idealised and standardised setting. They have students in mind who are properly educated at the school level of education and who are prepared to join higher education. The curricular reform, pedagogy and method of assessment is aimed at those standard students which is unsuitable for the first generation learners. There is not even a discourse in higher education on how they have to be dealt with? There is of course few research studies on diversity and discrimination . However, their teaching learning experiences are put at the margins. As a result, teachers and administrators do not know how to deal with the situation? There is no denying the fact that at the local level they do confront them and make attempts to solve them.

THE VOICE OF STUDENTS

The focus group discussion highlights students' voices and their concerns. Some simple, doable suggestions were made by them. However, there was a great appeal by first generation students to address those concerns by the policy makers.

TRANSITION EXPERIENCES- FROM SCHOOL TO COLLEGE LIFE

This is what was reflected in the focus group discussion on the transitional experience from school to college life. The college life was the life of freedom that provided them the opportunity to do this or that. It was a life where many decisions did not require parental counselling. A student said that he wanted to fight for student union election so he fought for it. Another student said that she rediscovered herself through the music and dance. All of them said that it is a completely new experience from the school life. There is no six hour continuous classes. There is time in between classes to go to the library or to engage in discussion. Dissatisfaction was shown wherein college administration for some reason or other engages students for almost six hours continuously. In all such activities during leisure there is a lesson to be learned which unconsciously motivates and gives a direction to the thinking process.

STUDENTS' VOICE

An important point that came out of the focus group discussion is that a college cannot be isomorphic in its structure and functions. The support system for a weak agency differs from the support system of a strong agency. Hence there is the need for differentiating between the two. There may be a college where there are weak

agencies that need support system in terms of facilities, activities and mentoring role of teachers, cheap transport, deep engagement, flexible timing, English lab, remedial coaching, vocational programmes, scholarship, sports and canteen facilities, mentoring by teachers which will help the low agency students to flourish.

In the transitional experience to college majority of students seek education as a source of aspiration to achieve better quality of life. During this period the whole process of rediscovering oneself in interaction with peers and teachers assume great importance. Students noted that a structural facilitation by the college and the process through which facilitatation is made in interaction with peers and teachers and to explore the potentialities supporting the agency of the students has relevance to which different colleges must respond by looking at the agencies of the students. In this whole process, it was noted, language is a barrier. Colleges need to facilitate students to overcome language barrier with the adequate support from the government.

THE LANGUAGE ISSUE

During focus group discussion in conducting the student satisfaction survey the issue of language came to the fore. There were colleges in which students were all from lower social and economic backgrounds. There were also colleges in which students were from backgrounds - lower as well as middle. The issue of regional vs. English language was prominent in the case of colleges where students were from lower socio-economic backgrounds. Most of them studied school education from the regional language. This suffered from a peculiar dilemma in colleges during their studies. If they continue to study in a regional language their upward mobility for higher studies or for jobs in a better market will be low. They will be subjected to a lower quality of education due to the absence of high-quality text books in a regional language. If they prefer to study the subject in English language they will be in an advantageous position. For them the challenge was to overcome the language barrier. In a mixed college scenario where students were from lower as well as middle class backgrounds they also suffered from various learning difficulties due to language barrier amply demonstrated during the focus group discussion. Those who were from English background were unable to connect with peers from regional language background and vice versa. There was also a peculiar dilemma with the teachers whether to conduct the classes in regional or English language. Of course the problem was not so much in colleges where students mostly belonged to the middle and higher socio-economic backgrounds. The study in English is commonly accepted by students as well as teachers.

In the policy discourse in higher education perhaps the issue of language is not sufficiently understood in terms of the dilemma that both the students as well as teachers face in the classroom. One important intervention relates to the translation of books in the regional language which has also suffered from inadequate attention

How to face the dilemma of bilingualism is still an unresolved proposition which came to the fore and the suffering of students on this account was highlighted in the focus group discussion with the students.

There were students who argued that developing English as the language and its wider acceptance in the world has opened the gateway to knowledge. Therefore, they argued that why can't regional language be developed by the governments of both -centre and the states-to open the gateway to knowledge. This will equip students to advance local knowledge through the regional language. The local knowledge may challenge some of the hypotheses which has come through the lens of European understanding in European language. However, the practical reality is otherwise. It is this practical compulsion that was reflected during discussion with the students. To the surprise of many, many students who studied in the regional language during school education opted in favour of developing their communication ability in English for the better job as well as higher studies prospects. They gave concrete suggestions in this regard. The first generation of students are slow learners and have learning difficulties. They find it difficult to adjust with the standard curriculum and syllabus and the pace of learning necessary in a semester system. Understanding of lectures by the teachers is one of the main difficulties of students.

STUDENTS 'VOICE

Students reported that 40 to 60% of the lectures is understood by the students. In the absence of adequate support mechanisms students fall back upon the text books. However, in the absence of a good textbook in regional language students fail to have grasp over the subject. Some colleges do have doubts classes where students go to clear doubts.

The students reported that teachers are in great hurry to complete the syllabus. They informed that severe shortage of teachers is the main reason for hurried approach to complete the syllabus and non-occurrence of tutorial or doubts classes.

So far as advanced knowledge is concerned they fail to grasp the subject as many ad hoc teachers teach them without specialised knowledge though this argument may not be generalised for all higher education institutions. Many students fall back upon the self-study. However, time for self-study is difficult to find as they have to support the family as well through the engagement in family activities of different kinds. They also fall back upon online resources available to them.

Here they find it difficult to choose online resources

which are relevant from the point of view of syllabus. Peer group learning is not very much prevalent. The use of library is not very frequent for various reasons - lack of motivation,, inadequate seating space, shortage of books and inadequate management of library.

EMOTIONAL COMPONENT

It was important to note that, according to them, colleges mainly manage the knowledge component and pay inadequate attention to the emotional component. Managing the emotional component was emphasised because the first-generation students suffer from fear, lack of confidence, communication, initiative, self-discipline, stress and anxiety.

It is important to note that they may be highly challenged on account of emotions but they do have hidden talents which need to be explored and demonstrated. I have pointed out various facets of slow pace learners, difficulties and their suggestions. At the institutional level much effort needs to be made by the teachers, administrators and the policy makers.

IMPERATIVE OF ACADEMIC REFORMS

Students' satisfaction survey is an important instrument to understand the ground level reality from students. University Grants Commission initiated academic reform almost 10 years ago by introducing semester system, choice based credit system and internal assessment. The purpose of academic reform was to introduce greater engagement and accountability upon teachers. It was anticipated that the academic reform will improve the level of learning of students.

Are students feel satisfied with the academic reforms? This is an important question that needs to be understood.

Semester system is ideally useful as opposed to annual system. Annual system imposes the burden of examination at the end of one year cycle and students feel loaded with the contents to remember for the end year examination.

STUDENTS 'VOICE

Semester and Choice Based Credits system:

The focus group discussion conducted in overcrowded colleges in Dhanbad in Bihar noted that there is a serious shortage of teachers. Hence course is not completed as per the curricular design of a semester. Students feel harassed with the University governance due to delay in examination as well as declaration of results. Such delays as well as non-completion of syllabus deprive the students of the benefits of semester system.

Finally, students fall back upon self-study and take recourse to coaching. With respect to the choice based credit system students noted that curricular structure allows the choice of subjects which is not available in the reality due to the serious shortage of teachers. In many Universities and the curricular making process under the credit system took long time for its introduction.

They also noted that University makes frequent changes in the number of credit. They also noted that there is no rationalisation of credit allotted to some of the papers. As a result students sometimes opt for easier courses having large credit weightage. In this process they have evaded the difficult subjects having less credit weightage. In many unitary discipline colleges there is hardly any choice. Grading system is also an important component of academic reform. However, it was noted that there is no uniform grading. It differs from colleges to colleges and from university to university. There has hardly been any compliance of UGC suggestion with respect to the grading. In many colleges grades are not awarded. They simply follow the numerical marks which is then converted into grades. There were also complaints of students regarding internal assessment. Students were found to be stating that teachers due to the heavy load of teaching choose easier option of internal assessment. They also do not provide any feedback. Hence the advantage is hardly derived.

There is no denying the fact that academic reform has been introduced in different colleges for optimising the level of learning to the students. In some colleges there might have been better implementation. However, in some colleges implementation suffers from problem due to shortage of teachers, mismanagement in governance, inadequate understanding of academic reforms process and inadequate training to the teachers on curriculum, pedagogy and assessment.

THE CURRICULAR REFORM

Curricular reform is central to the teaching-learning process. It needs urgent attention in the University. Focus group discussion conducted in different colleges in Jammu, Goa, Haryana and Coimbatore pointed towards a complete new direction of the curricular reform so for not given attention by the policy makers or subject experts. There has been traditionally emphasis on the disciplinary knowledge. Later on skills component was emphasised to be a part of the curriculum. The national education policy - 2020 puts emphasis on multidisciplinary approach for advancing the knowledge.

The students noted that so far as the knowledge component is concerned an emphasis on theory needs to be limited. They noted that teachers teach theory through the lecture mode. This is mechanical and boring. The students pointed out that curricular structure should revolve around practical knowledge. They also differentiated between the skill and practical knowledge. A skill building is also some sort of knowledge taught in the laboratory. Having knowledge of certain skill does not imply that a person will be able to get a job. In the world

of practice situations very and even an educated and a skilful person may not understand the variable world of practice. They may fall back upon job syndrome. On the other hand, the gain of practical knowledge will help a person to confront the challenge of a varying world of practice.

Students were of the view that if a curricular structure enables students to go to the world of practice and learn by experiencing the world through the activities, students will gain the practical knowledge. In this scenario students will not be the job seekers after graduating. They will be the job creators. They will be confident of actually undertaking activities as practical knowledge helps them to understand the world better. It is for this reason that internship for a semester or two was much preferred by them.

However, internship should be well designed and intern opportunities should be searched by the college. It is during the internship that a student will explore a world of his own actions. Theoretical knowledge should only help a student to understand the ideal world and in this sense theoretical knowledge is complementary to the practical knowledge.

Another important point relates to the composition of knowledge, skill and personality development. Students were of the view that theoretical knowledge should have a weightage of 40% and practical knowledge in the place of skill should have a weight of 30%. 30% weight should be given to the personality development. Curricular structure should be such that with the above weightages all components should be attended. This is a remarkable point as the present curricular structure gives emphasis on the component of theoretical knowledge. There may be disagreement of subject experts on the weightage given to different components. Many examples were cited by the students in support of higher weightage given to the personality development component.

Outcome based education is one of the latest curricular reform strategy of the UGC. As per the strategy defined outcomes will help in curriculum planning and development, and in the design, delivery and review of academic programmes

Students were quick to define the outcome based education in following terms:

1. Understanding the concepts, not through the mugging up a formula but in terms of logic, exposure and demonstration
2. Updating knowledge to the newer systems of machinery, programming and the latest developments in industry
3. Developing a confidence to handle machinery and tools and be able to take decisions in resolving the problem relating to machinery
4. Acquiring soft skills as well as managerial abilities to deal with the new architecture of industry.

It was further noted that outcomes should not be seen in terms of culmination or consequences. It should be comprehensive. Comprehensive outcomes include actions undertaken, agencies involved, processes used etc. along with the simple outcomes in terms of marks obtained. In other words, how do institutions of higher education develop capabilities by focusing on process and agencies involved assumes significance?

THE END NOTE

Every institution which shows the resolve to make institutional reform must undertake an exercise to understand the students preferences, views and difficulties and accordingly plan for institutional reform in terms of agentic understanding, relational change between teachers and students and environmental change within an institution which promotes students capabilities through broadening the choice for students. UGC approach to curricular reform based on learning outcome is a transcendental idea that assumes that actual realization of learning outcome will be achieved if institutions follow the curricular reform as per the document. At the level of practice, any curricular reform is bound to fail due to institutional variation in terms of learner, class size, teaching method, assessment practice, teachers' preferences, and environment of a college and so on. To avoid this, let institutions effectively plan and act, keeping in view the diversity and variations in the agencies of: students, teachers and managements and the broad reform framework under the system of autonomy and accountability.

GANDHI JAYANTI – REMEMBER THE DAY AND GET INSPIRED

Those who know how to think need no teachers — Mahatma Gandhi

ARTIFICIAL EMOTIONAL INTELLIGENCE- HUMANIZING COMPUTER

ER. RAHUL AGARWAL *

Lot of research in brain computer interface is taking place in the world. Issues are raised whether AI can imitate human emotions? This article attempts to answer some of issues of humanizing computers.

Imagine a world in which machines interpret the emotional state of humans and adapt their behaviour to give appropriate responses to those emotions. Science fiction movies and literature has been using robot characters which can interact with humans with emotions and not just as machines.

Machines getting emotional intelligence is fast becoming a reality. Artificial Emotional Intelligence, which is also known as Emotion AI or Affective Computing, is already being used to develop systems and products that can recognize, interpret, process, and simulate human feelings or emotions.

CAN MACHINES TRULY UNDERSTAND HUMAN EMOTIONS?

A mistaken assumption is that AI couldn't replace humans in jobs that require empathy and emotional intelligence. The question is, can AI truly decipher human emotions and if so, how will it redefine our connection with technology? This article will cover answers to these questions.

Machines getting emotional intelligence is fast becoming a reality. Artificial Emotional Intelligence, which is also known as Emotion AI or Affective Computing, is already being used to develop systems and products that can recognize, interpret, process, and simulate human feelings or emotions.

WHAT ARE EMOTIONS?

Human emotions constitute intricate psychological and physiological reactions to specific situations. For instance, the happiness following an unexpected compliment or the intense anger bubbling within during a heated argument are some examples. These emotional responses are orchestrated by the collaborative functioning of our brain, nervous system, and hormones.

Scientists have identified a range of basic emotions such as joy, sadness, anger, fear and surprise that are universally experienced across cultures. These emotions help us survive by preparing our bodies for action like running away from a predator or protecting our offspring. Moreover, emotions play a pivotal role in communication. A warm smile, raised eyebrows, or a quivering voice have the capacity to convey our inner sentiments without the necessity of words, strengthening our social connections and facilitating empathy among individuals.

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But human emotions aren't always straightforward. They can be short duration or long, clear or ambiguous and can even blend together to create complex feelings like bittersweet nostalgia or the thrill of anticipation. This intricate emotional landscape is what distinguishes us as uniquely human beings, and yet it also raises questions about whether AI could ever truly comprehend its intricacies.

EMOTIONAL INTELLIGENCE

Emotional Intelligence, often referred to as EQ, encompasses our capacity to identify, comprehend, and regulate not only our own emotions but also the emotions of others. It serves as the key element that fosters empathy, compassion, and proficient communication. Picture an empathetic friend who instinctively knows when to provide a comforting presence or the charismatic leader who ignites inspiration and motivates their team – these are instances of Emotional Intelligence in practice.

ARTIFICIAL EMOTIONAL INTELLIGENCE (AEI)

AEI, or Affective Emotion AI, encompasses AI's endeavour to replicate the distinctive human capacity for discerning emotions. It involves computers' capability to identify and react to emotions by assessing various data sources, including facial expressions, gestures, tone of voice, keyboard pressure, and more. AEI harnesses advanced algorithms to scrutinize extensive datasets, enabling it

to comprehend and respond to emotional cues effectively. This proficiency paves the way for machines to adopt a more human-centric approach, facilitating more natural and human-like interactions between humans and machines, akin to the dynamics observed in human-to-human interactions.

Examples

You can possibly recall video showing Google Assistant calling a barber to book a hair-cut appointment. (https://www.youtube.com/watch?v=yv_8dx7g-WA)

Social media (facebook, youtube, etc) keeps its users glued by "reading their minds" through careful analysis of their likes/dislikes, time spent on each content, forwards, etc. This analysis helps in identifying which content to be presented/recommended to its users.

ADVANTAGES OF EMOTION AI (AEI)

While human emotional intelligence (EQ) relies on qualities like intuition, experience, and the capacity for empathy, AEI distinguishes itself through its capability to analyze vast datasets and uncover patterns that might escape human observation. Therefore, AEI has the potential to reduce reliance on individuals.

The advantages of AEI can vary across industries, but it has the potential to furnish marketers, advertisers, designers, engineers, and developers with valuable insights gleaned from consumer feedback. Designers, for instance, can employ emotion AI to gain understanding from consumer reactions to advertising campaigns, prototypes, and mock-ups, thereby saving both time and resources. Products and services developed with the aid of AEI are likely to demonstrate a heightened consideration for user needs and emotions.

AEI is poised to exert an influence on various sectors, including healthcare, insurance, education, and transportation. In the future, we may witness its applications in diagnosing depression, identifying insurance fraud, gauging student comprehension of lessons, or evaluating driver performance.

EVOLUTION

AEI (also known as Affective Computing) had its origins in 1995 at MIT Media Lab. During this period, cameras, microphones, and physiological sensors were employed to collect emotional reactions with the objective of identifying emotions, and subsequently, machines were programmed to respond to these emotional cues. These initial research efforts laid the foundation for Professor Rosalind Picard to publish the seminal work "Affective Computing" which can be accessed at https://affect.media.mit.edu/pdfs/95.picard.pdf

The future of AEI technology is only growing brighter. The market size for it is expected to reach $174 billion by 2025.

HOW DOES ARTIFICIAL EMOTIONAL INTELLIGENCE WORK?

There are three main types of AEI: text-focused, voice-focused and video & multimodal emotion AI.

TEXT EMOTION AI: NLP AND SENTIMENT ANALYSIS

Text Emotion AI specializes in the analysis of written text. For instance, it is capable of examining text in the form of online comments or news articles to ascertain whether the prevailing sentiment within the content is predominantly positive or negative.

Sentiments, in this context, refer to attitudes, thoughts, or judgments that arise from emotions. Sentiment Analysis involves the process of discerning these sentiments by analyzing textual data collected from diverse sources such as social media, online reviews, emails, customer support chats, survey responses, blogs, news articles, and more.

Sentiment Analysis tools rely on Natural Language Processing (NLP) to determine whether a given piece of text conveys a positive, negative, or neutral sentiment. Furthermore, they possess the capability to delve deeper and attribute more specific sentiment indicators such as disappointment, excitement, or disgust to the analyzed text.

AUDIO AND VOICE EMOTION AI

Audio and Voice Emotion AI is dedicated to the examination of human speech. Its applications extend to the evaluation and monitoring of customer service interactions, encompassing both the vocal patterns and the content of conversations. This analysis can be leveraged for real-time feedback to customer service representatives or to optimize the alignment between agents and the individuals they are communicating w ith.

Certain sentiment analysis tools are also capable of scrutinizing voice recordings and even conducting real-time analysis of ongoing phone conversations through the application of Natural Language Processing (NLP) principles. Additionally, this technology incorporates the concept of "Honest Signals" which delves beyond the spoken words in conversations, considering factors such as vocal energy, pauses, intonation, and the myriad of cues that aid in deciphering people's intentions, objectives, and emotions during dialogues. This synergy of NLP with honest signals represents a significant technological advancement in understanding and enhancing emotional aspects within conversations.

VIDEO AND MULTIMODAL EMOTION AI

Video and Multimodal Emotion AI encompasses the processing of video signals, which span from eye movements to body language, for the purpose of discerning human emotions. This includes techniques such as Facial Expression Analysis and the analysis of physiological signals like gait.

Researchers have identified specific universal emotions whose visual cues are universally understood, transcending cultural boundaries. For instance, a smiling face conveys joy to both contemporary individuals and

tribal communities. Likewise, emotions like anger, disgust, fear, joy, sadness, and surprise are universally recognizable.

Computers are continuously improving their image recognition abilities through Machine Learning and Deep Learning. Face recognition platforms are playing a pivotal role in identifying emotions. One such example is the Google Vision API, which allows users to experiment with emotion analysis by uploading photos containing human faces.

Recognition algorithms extend beyond facial expressions. Emotions manifest in various ways, encompassing body language, vocal tone, physiological changes such as heart rate, complexion, and skin temperature, and even linguistic elements like word frequency and sentence structure in written communication.

HOW IS ARTIFICIAL EMOTIONAL INTELLIGENCE USED TODAY?

As the field continues to mature, many companies are actively working in this area:

Affectiva's emotion recognition software helps advertisers and video marketers gather moment-to-moment facial expressions when watching a video for Market Research. Realeyes is another company supporting marketers with artificial emotional intelligence solutions for market research.

Microsoft is working in the areas of empathetic search, human understanding in games, and adaptive workspaces, and is aiming to integrate artificial emotional intelligence into Microsoft products.

Cogito provides solutions for customer support, identifying the caller's mood from voice. Receptiviti provides tools to analyze transcript data from the meetings conducted over Zoom. CompanionMx offers a mental health monitoring app that can identify signs of mood changes and anxiety when someone speaks into their phones.

ISSUES

While there are potential advantages, the idea of a vast network autonomously analyzing our images, messages, and physiological data is equally discomforting. What privacy repercussions may arise when corporations employ such detached systems to manipulate our emotions for advertising purposes? Furthermore, how can we address issues related to biases and inaccuracies in these systems?

CAN AI DEVELOP EMPATHY?

Basically, a distinction needs to be made between simulating empathy and genuinely feeling it.

Although AI can be instructed to detect emotions and react accordingly, it operates on patterns and probabilities rather than authentic emotional comprehension. The empathy exhibited by AI is essentially an artfully constructed facade, a result of human engineering and data-driven predictions.

Currently, it appears that genuine empathy remains a distinctively human characteristic, originating from our shared experiences and emotional bonds.

At the end As human beings, our universal desire is to experience understanding. We crave for others to grasp the depth of our emotions and feelings. However, frequently, we encounter disappointment when people fail to connect with us due to their preoccupation with their own emotional states.

Interestingly, AI may surpass humans in the realm of recognizing human emotions precisely because it lacks emotions of its own.

This potential opens up interesting possibilities. For instance, consider returning home after a long, exhausting day at work, burdened with stress that often goes unnoticed by our own family members.

In such a scenario, our Smart House could step in with its perceptive abilities. It might lower the lights to create a calming ambiance, initiate a playlist of uplifting songs on the music system, and suggest comforting food options from the refrigerator. Over time, we might become so accustomed to the attentiveness of these machines that we could find it increasingly difficult to tolerate the self-centeredness of humans who fail to understand our emotional states!

While Affective Emotion AI (AEI) is still in its nascent stages with application limitations tied to specific scenarios, its advancement is rapidly progressing. This prompts us to consider whether it's time for humans to prioritize the development of their own Emotional Intelligence in order to compete with AEI.

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ISSUES IN DETERMINING EQUIVALENCEOF FOREIGN QUALIFICATIONS FOR ADMISSION IN HIGHER EDUCATION

PROFESSOR FURQAN QAMAR *

Paper discusses global and Indian practice in establishing the equivalence of foreign qualification with the domestic qualifications. It brings out issues involved in determiningequivalence of foreign qualifications, particularly in the light of new draft regulation on Recognition of Foreign Qualifications issued by the University Grants Commission.

THE BACKGROUND:

Cross-border mobility of students for higher studies requires a robust system and a facilitative procedure for determining the equivalence of qualifications obtained by them in a country other than the country where they are seeking admission to higher education, the host country. Indian students emigrate for higher education in large numbers to almost all parts of the world, particularly to the USA, Australia, the UK, Europe, Canada, Russia and China. Many of them return to continue their studies or seek employment in India. They must get qualifications obtained in the foreign countries recognised in India.

Similarly, many students come to India from other countries whose qualifications need to be recognised for admission in India. Besides, a good number of Indian students now pursue International education qualifications within India, especially at the school level.

Establishing equivalence of qualifications is not only cumbersome but also quite complex. It may also be gigantic when the number of students seeking equivalence is large and comes from many countries.

Establishing equivalence of qualifications is not only cumbersome but also quite complex. It may also be gigantic when the number of students seeking equivalence is large and comes from many countries.

GLOBAL PRACTICE:

UNESCO initiative: Determining eligibility of cross-border qualifications for admissions and jobs has been so important that UNESCO worked hard to evolve various regional conventions and has now put in place a global convention.

UNESCO's global convention prefers all member states to identify and designate similar centres in their national territory within the framework of their own academic sovereignty. However, they are expected to work with speed, consistency, objectivity, and accord national treatment.

The ENIC-NARIC (European Network of Information Centre and National Academic Recognition Information Centre) networks now facilitate academic recognition of qualifications across 55 countries. These work autonomously within the national and European framework.

Most higher education institutions in North America and Canada rely on credential assessments by the World Education Services (WES), a not-for-profit organisation.

SOME ISSUES:

- Ø Equivalence of foreign qualifications requires a thorough understanding of the foreign higher education institutions and their qualifications. To this end, the qualification recognition agency must maintain a comprehensive resource on foreign qualifications. It must also have a ready-to-use matrix to match and evaluate qualifications.

- Ø Additionally, the recognition of qualification entails a high degree of reciprocity with higher education institutions of different countries. This, in turn, requires regular and continuous communication with variousstakeholders.

- Ø Recognition of qualification is not limited to only awarding equivalence to foreign qualifications. The agency in charge of discharging this function must proactively work to make the world familiar with its higher education systems and qualifications. It must also work to make the international higher education community confident that its higher education system is at least as robust as its own.

INDIAN PRACTICE:

The power to determine equivalence of qualification for admission is vested in individual universities by their Acts and Statutes. Most universities have an equivalence committee for this purpose. However, to ensure objectivity and consistency, they had assigned this responsibility to the Association of Indian Universities (AIU, earlier known as the Inter-University Board (IUB), ever since its inception in 1925.

However, the equivalence of qualification for employment was handled by a committee under the Ministry of Human Resource Development (MHRD), now once again known as the Ministry of Education (MoE), the Government of India.

As this committee was wound up, the Ministry, by a gazette notification, announced in 1995 that the equivalence given by the AIU for admission purposes

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would also be recognised for jobs and employment. This officially entrusted the responsibility of equivalence to the AIU, a body registered under the Societies Act, 1860 representing the Directors of the Institutions of National Importance and the Vice Chancellors of Central Universities, State Universities, Private Universities and Deemed Universities, Public and Private. Since then, it has been establishing equivalence not only university degrees but also the school-leaving certificates of international K-12 education boards.

AIU has been doing reasonably well. It has been publishing handbooks of Indian universities regularly. This provides details of programmes of studies and faculty members of all its member universities. Notably, most universities in the country are already its members. It has become the most dependable treatise on the Indian higher education system and qualification. It is relied heavily upon by the International Association of Universities (IAU), the Association of Commonwealth Universities (ACU) and many of their likes. AIU has already developed and launched a portal for quick response and disposal of applications for equivalence.

THE ISSUES INVOLVED IN PROPOSED CHANGE IN PRACTICE:

The UGC has now come up with a draft regulation for granting equivalence to higher education Qualifications awarded by foreign universities. UGC's regulation states that foreign qualifications must have entry-level requirements for admission similar to those of the corresponding programme in India.

However, AIU provides that the eligibility qualification for admission should be the same as in India. The UGC's provision thus complicates the matter and makes the process susceptible to subjective interpretation. Entry requirements for engineering, medicine, law, etc., are through competitive entrance tests, which most countries do not have.

Equivalence of qualifications demands immediate action. Acting speedily but without being in haste and delivering equivalence in time is the essence of efficiency in granting equivalence. A little delay in the decision could deprive a student of a well-deserved opportunity. Whether the Standing Committee proposed in the draft would be able to meet this essential aspect is a challenge.

CONFLICT OF INTEREST:

The UGC is a standard-setting and regulatory body. Its main function is to set the standards and ensure the maintenance of standards. It should normally not get into the executive function of recognition of qualifications. It can function as an arbitrator /regulator and not as an approver. It cannot be both. Therefore, propriety demands that this function should be better performed by the other body.

THE END NOTE:

Most countries, a few exceptions apart, avoid being involved directly in the decisions involving the recognition of qualifications and rightly so. Denial of equivalence could, at times, become an irritant in international relations, which a nation must avoid. It is, thus, in the larger national interest that such decisions are taken by an agency that is at arm's length from the government but is still bound by the broad policy framework. Therefore, the draft regulations of UGC on recognition of foreign qualifications need more deliberation in the larger interest of higher education in India and abroad.

Editor's Note: There is a thin line beween recognition of foreign qualification and determining equivalence of a foreign qualification with a domestically awarded qualification. Former is a matter of policy and later is an academic assessment of quality of processes and outcome. The regulatory framework of the government can deal with the issues of mutual recognition of foreign qualification's between two countries or among group of countries. This also extends to mutual recognition of qualification by a universtty or group of universities under the provision of its/their acts and statutes. The government can take a policy role of recognition of foreign qualifications from a country or group of countries, but determining the equivalence is an academic decision and therefore should be done by the university or a body of group of universities.

This column brings out briefs of : Ph.D, M.Phil Researches in Education, Economics of Education, Social, Political, Psychology aspects of education conducted in University /College departments. It also brings out briefs on researches done by Research Institutions, Industry and NGOs. This column was introduced from April-June, 2016 issue of College Post. Method of reporting the researches completed and in progress was given in that issue. Interested researchers, professors and Heads of institute are requested to send their brief accordingly. Purpose of this column is to high light the researches in education conducted in university and college departments and in any other institution / industry and NGO for the benefit of policy makers, research scholars, thinkers. Readers are welcome to encourage relevant person and institute to send briefs on research done and being done in education.

This issue brings to you briefs on following Researches in Education.

PH.D. THESIS

Title -Entrepreneurship Ecosystems in Higher Education Institutions of India, Researcher - Promod Kumar Joshi, Guide-Vijay Kumar Kaul and Pankaj Chandra, Department of Business Economics, Delhi University, Year of Completion-2019

Objective of the Study:

With the objectives of better understanding: (a) the key challenges and issues faced in the development and growth of Entrepreneurship Ecosystems in Indian HEIs, (b) the perceptions of key direct stakeholders on the challenges and issues faced and (c) the factors that influence the development and growth of such Entrepreneurship Ecosystem the study has been attempted in three stages.

First-theoretical framework for the development of Entrepreneurship Ecosystems in HEIs, after a Qualitative Survey featuring 35 valid responses from E-Leaders, who are the most important and central stakeholder in the EE Second- Quantitative Survey based on over 950 valid responses from all types of direct stakeholders.

Third-6 case studies of different types of stakeholders, including one complete Entrepreneurship Ecosystem at a Higher Education Institution, whose 15 year long journey of Entrepreneurship development was studied in this stage. These case studies were critically analysed using thematic and topic modeling tools. The study at this stage used AI based software tool for both a manual and automated triangulation between the Qualitative and Quantitative parts of the study It also conducted Expert Opinion Survey of seasoned and experienced E-Leaders, as well as Policy makers and implementers, with an average age of 59 years.

KEY FINDINGS:

» The overall institutional environment at a HEI (Higher Education Institution) - made up of the prevalent Mindset, Motivation and Culture of the stakeholders, the Academic Inputs & Environment prevailing and the Institutional Infrastructure for Entrepreneurship provided - influences the development and growth of its EE (Entrepreneurship Ecosystem) through 7 factors.

» There is a general agreement across all key direct stakeholders on the factors that influence the development and growth of an entrepreneurship ecosystem inside a Higher Education Institution. However the stakeholders differ in their perception on the level of importance of the different factors

» Governmental and Institutional policies for curriculum & pedagogy as well as for entrepreneurship infrastructure significantly influence the growth and development of an entrepreneurship ecosystem inside a Higher Education Institution.

» Governments - central and state - as well as Higher Education Institutions - public or private - can use the 7 Factor "HEI - EE Development Model" to expend their energy and resources more effectively, while creating an entrepreneurship ecosystem or sustaining and developing an existing one.

» The "HEI - EE Development Model" is a suggestive framework and not a prescriptive approach. Given the diverse nature of culture, resources, constraints and limitations prevailing across the length and breadth of the country, it is not possible to prescribe a "one size fits all" model for all higher education institutions in India.

POLICY RECOMMENDATIONS

» Governments and Institutions can provide a strong signaling effect to shape popular perceptions. It is suggested that governments and policy makers set aside budgets to invest in campaigns and programmes that shape and reinforce the positive aspects of entrepreneurship among university faculty, alumni, students and parents

» Tier 2 and Tier 3 cities of the country seem to carry untapped potential for entrepreneurship. The policy of giving large amounts of funding to well established

HEIs based in Metros and Tier 1 cities can be reviewed, and adapted to provide developmental focus - funds, mentorship, networking and marketing platforms - on where latent potential exists. This approach can also help decongest our mega cities as future entrepreneurs will stay put in their own cities instead of migrating to large metros with vibrant entrepreneurship ecosystems like Bangalore, NCR, Hyderabad, Mumbai, etc.

» Higher education governing bodies like UGC, AICTE, MCI, PCI, BCI, etc can relook at the way they guide curriculum development and pedagogical approaches at the universities and institutions they regulate, govern or advise. Curricula can be made more flexible, so that individual HEIs can develop their own methods and frameworks to incorporate entrepreneurship development strategies and programmes in their curricular and extra-curricular activities. Centralized regulation can give way to empowered academic governance, including that of linking the pedagogy to the growth of development of entrepreneurship ecosystems at the local level.

» The study reports that one of the bigger challenges in promoting and developing an entrepreneurship ecosystem in higher education institutions in India is the mindset of the students, faculty and parents, which tends to be risk averse. HEIs would be well advised to address this problem in a holistic way, so that there is a better appreciation of the benefits of starting a venture of your own, if not during the student days, but at some point of time in the career.

» It is suggested that industry forums like CII, FICCI, ASSOCHAM, PHDCC, IAMAI, NASSCOM, etc meet with their counterparts in UGC, AIU, AICTE, PCI, etc to hammer out institutional mechanisms for such collaborations

» Central and state policies could encourage students in higher education institutions to take a break from their studies if they so desire, and allow them to work on a startup venture if it has the approval and support of either their own institution's entrepreneurship ecosystem or that of another recognized one in the country. Such breaks can be quite productive for the student's approach to learning, and he/she may come back with a fresh eye to continue his/her studies. In an analogous way, many B-schools actually prefer graduates who have taken a break from academics after their undergraduate degree and have spent a few years working in the industry or on their own startup.

» Faculty advancement policies, both inside their own institutions as well as in external professional bodies that they may become part of, may be upgraded to give significant credit to contributions made towards the development and mentorship of entrepreneurial culture and mindset in their students.

» Policies linking entrepreneurial activities by students and their outcomes - including both honest successes and honest failures - to academic credit in lieu of certain elective subjects, may also be considered by our policy makers.

» The 7 factor "HEI - EE Development Model" proposed as an outcome of this study can be put to work by any HEI wishing to develop and enhance its entrepreneurship ecosystem. Each of the factors has an influence on the chance of success of the EE

» Since the 7 factor "HEI - EE Development Model" suggests that industry exposure to faculty and students has a bearing on the success of the EE, it is suggested that companies make room for inviting, on a regular basis, faculty and students from nearby universities and colleges, for an "immersive" experience.

» A "faculty in residence" program can be created by the industry for letting a faculty member from an institution come and spend productive time throughout the year. After some cultural acclimatization, both parties could start seeing benefits of such a collaboration. Similarly, an "expert in residence" programme can be initiated at the academia end, where active workers and managers are deputed to spend some quality time on institutional campuses, discussing live problems with faculty and students.

Source : Shodganga, Inflibnet

Scholars and Researchers are encouraged to send their briefs & abstract on Ph.D., M. Phil. and sponsored research studies for publication in this column of College Post — Editor

MC MASTER UNIVERSITY, CANADA

A recent Symposium of Universitas21 on Educational Innovations held at Mc Master University, Canada focussed on keeping human values while experimenting with AI and Generative AI. The report by byJenny Dixon, provost of Universitas -21 a network of 28 universities states that

"It is the highly visible crest of a wave of technologies infiltrating every area of educational delivery, from curriculum development to the delivery of teaching, student engagement, assessment practices and more. The revolution has prompted a debate on digital ethics in the application of these technologies."

On ethical aspects the report of Dixen states that " U21 Symposium panels found that universities have a clear role to play in the development of frameworks and principles for generative AI use that take into account factors such as ethics and human emotion.

These technologies are shaping the workplaces and industries universities prepare their students for, along with much of how they will function in society. This creates a greater need than ever for higher education institutions to focus on equipping their graduates with the ability to engage meaningfully with these new tools and to adapt to a changing world.

There must be an effort to find an appropriate balance between experimenting with the capabilities of these new platforms and fostering the engagement of students with them."

On Co-Creation the Dixen report state that "This seismic technological shift also presents an opportunity for universities to reassess their course content and delivery, as well as assessment methods. Universities can look to leverage this into an opportunity to collaborate with students in co-creating innovative approaches that ensure meaningful evaluation and genuine learning outcomes."

Report further states that "Universities can foster a culture of innovation and co-creation by establishing student-led committees, hosting workshops and seminars, and leveraging technology platforms to encourage ongoing dialogue and feedback."

With regard to UncertainFutureDixen report states that "The use of AI can support the democratisation of higher education when applied to areas such as breaking down language barriers, yet it carries the risk of being viewed as a globalisation project that may not be available to all." It further states that "Political, social and economic factors are still at play with access to this technology and its adoption in educational delivery. Ensuring that co-creation is an embedded part of any change could offer one path to understanding the risks and impacts on all different parties, from the boardroom to the classroom, the server room and beyond."

Source and Courtesy: Jenny Dixen August 14,2023 -

AT US CAMPUS

A similar Concern and hope could be observed in the panel discussion held atthe 2023 Student Experience in the Research University (SERU) Consortium Symposium held at the University of California, Berkeley University of Berkley. The report of Jenae Cohn is the executive director of the Center for Teaching and Learning at UC Berkeley states that "Faculty across the disciplines need to be responsive to the changes AI will bring, to the understanding of how work is done in their fields and also to how students can be engaged in thinking critically about AI.

Even if the current hype may be outsized compared to AI's impact, students, faculty and staff need to be having active and ongoing conversations about what it means to interrogate and explore AI technology in their learning and working lives."

Contemplating on future the report of Cohn states that "AI technology is here to stay, and it is worth higher education leaders' time to think now about how they can engage with it to protect student privacy, enhance the student experience, and help all stakeholders on campus be prepared for a future of working with powerful technology.

When it comes to supporting student learning, nurturing the higher education community's curiosity (and sometimes dread!) about emerging technologies can help all of us make more thoughtful and careful decisions about where, when and how to use AI as part of the educational experience.

It is equally critical to give students, faculty and staff the information they need to make good decisions about their working futures so that they feel empowered and equipped to make good choices about how, when and whether engaging with AI may be the right choice for them right now.

Above all, the hype around AI may create a great amount of urgency to start coming up with technology-based solutions for institutional and infrastructural problems. This is the wrong impulse. Instead, taking the time to understand the capacities of these tools and developing a strategy to help the campus community equally understand how these tools work will be critical to fostering trust and developing a deeper and more meaningful relationship to technology in higher education contexts."

Source and Courtesy: Jene Cohn, August 10, 2023, New York Times.

PLEA FOR EDUCATION BACK TO STATE LIST

Tamil Nadu government has asked for putting education back to the State List from concurrent list. There has been controversy about NEET test conducted for admission to Medical Education. Earlier also Tamil Nadu government has raised the issue of certain lacunae in the admission test and lack of poor and Tamil students getting into medical education. The issue arises in state sponsored medical education colleges. Where state meet all the expenses of education but do not conduct test for admission to students. The centralized admission test of NEET and for that JEE has raised several issues. These tests besides giving rise to coaching industry has put enormous pressure on middle aspiring class for professional education. Stories students committing suicides while preparing for these test have become normal. When Supreme Court was mandating centralized tests, The College Post had raised a flag of concern. Because inadequate supply of professional education there is extreme pressure on limited seats. Hence couching industry and competition for a seat. It is said there are hundred thousands of applications for a thousand seat. (See College Post July- December, 2021 issue on this aspect.

This situation is not happening any other country in the world. In fact recent reports have shown that more than 20 thousand students went to Ukraine for medical education. Their institutes are recognized by WHO. The main reason for this scenario is lack of supply of professional education, let alone quality professional education. Because centralized system even states tend to lack creating more institutions to meet aspirations of their residents. This issue needs an immediate attentions academics, policy makers, state government and even our judiciary to re-thing of centralization of admission process. The quality of education does not only depend on screening out the aspirants, it depends on processes and practices in educational institutions.

FREEDOM OF EXPRESSION

Ashoka University, Haryana, is again in news for attack on freedom of expression. One teacher - Professor Das has published a research article for comments from academia. The article being on "Missing Voters "and related issues. This was not to the liking of the power that be. He might have been communicated this. He went on leave and then resigned. The other two Professors have also threaten to resign to support him. Students also protested against curtailing of freedom of expression and conduct of research by the management.

Ashoka University came in news earlier when one of the very distinguished professor Pratap Bhanu Mehata was made to leave the University to protect the interests of promoters. As his freedom to express his views in newspaper was viewed by the power that be un-acceptable. Professor Mehta left the institute. College Post had carried the news analysis about him in January-June, 2021 issue.* The University was also in the news for financial reasons. But that is not our domain to comment on. Our concern is attack on academic freedom and freedom to carry out and publish research papers. It may be pertinent to re-call what first Prime Minister of India Pt. Nehru hadonce said ""A university stands for humanism, for tolerance, for reason, for the adventure of ideas and for the search of truth. It stands for the onward march of the human race towards ever higher objectives." Any attempt to curtain the freedom of expression by academics should be viewed as serious attack on academic freedom and democratic rights guaranteed by the Constitution of India to its citizens.

**Old Issues of the College Post can be accessed on thecollegepost.in*

DELHI UNIVERSITY DOES NOT LIKE MARX AND SCHUMPETER:

There is a news report that Delhi University Academic Council has removed a paper/course on Karl Marx and Joseph Schumpeter. Schumpeter was an eminent political economist. His seminal contribution to economic thoughts and the concept of entrepreneurship has influenced the economic processes and thinking world over. His book on History of Economic Thoughts is an excellentwork. As far as Karl Marx is concerned, if a student has not read Karl Marx-"Das Capital,"he has read nothing in the field of economic and political thoughts. His theory of dialectical materialism is a significant political and economic thought that has influenced political economy in almost half of habitat on this planet earth. To miss him is to miss understanding the world. So also is true for Schumpeter. University may not teach in their courses, but students would learn on their own in libraries or on Internet.This trend of political interference is dangerous for development of higher education and search for knowledge and truth.

UGC NEW GUIDELINES ON RECOGNITION OF FOREIGN DEGREE / QUALIFICATIONS

There is controversy about recognition and ascertaining equivalence of foreign degrees/qualifications with Indian university degrees/qualifications. Through a Gazette Notification Association of Indian Universities was authorised to ascertain equivalence of foreign education qualification with Indian University/School Education qualifications. Recent guidelines seem to be making UGC

to ascertain equivalence and recognize foreign degree obtained in their campus in India or obtained from abroad. In fact new guidelines for Regulation and recognition of foreign degrees in India from the foreign university campus in India- particularly GIFT -city of Gujarat is matter of debate. The College Post has also made some observations on the Guidelines. But more detailed observation need to be made here. The guidelines mentions about foreign degree obtained in India or abroad by students as full time scholar. It does not recognize degree obtained through distance education mode or online education mode. It also does not recognize degrees if obtained as full time students in foreign university franchise campus in India. This restriction is, therefore a matter of debate. This matter does not seem to have been dealt comprehensively. If the issue is quality of the programme and processes than the matter should be dealt from this perspective not from how a qualification has been earned by the students. We should attempt to ensure quality of learning through a well-defined mechanism of processes and outcome of learning rather than through different mode of education. Simply restricting other modes of education tends to deprive those who cannot afford a full time education programme.

NATIONAL CURRICULUM FRAMEWORK

The language of teaching at the school level has always been a issue. The English language was viewed as an important language to seek success and higher position. Many states even introduced English language at primary level of education. Many English medium schools flourished in Metros and small towns. States even proposed to introduce English language in government schools. The recent announcement of National CurriculumFramework has focussed on mother tongued and regional language at the primary education. It has also recommended two languages at the 10 and 12 level examination. English has, however, is taken along with several Indian languages. Besides, languages the curriculum offers flexibility in choice of streams of studies. There are not many studies about how language affect the learning and learning outcomes. This is because expression of ideas and views has to take support of language. Until a large scale an in-depth study is conducted on this aspect , a general view on the subject would continue to guide the policy making excercises.

Book review...contd. from page 32

study of adsorbents used in industry during upgradation of biogas using pressure swing adsorbents. Upgradation of biogas to rid it of impurities using minimum energy is essential, before it can be used as a fuel. Even hybrid approaches like a combination of pressure swing adsorbents with membranes or with high pressure water scrubbing gives pure methane and are efficient. The third chapter deals with development of urban forestry, i.e. creating a green belt, to sequester carbon dioxide in urban areas. Three case studies two in Tamil Nadu and one in Delhi have been discussed. Apart from carbon sequestration the green belts help in improving micro climates and increase biodiversity. Depending on the urban area, plants have to be chosen for the green cover. The fourth chapter deals with the effect of burning and logging on the rate of soil CO_2 flux and it concludes that CO_2 flux is more in the case of burning. Partially burnt material promotes microbial activity while logging starts decomposition of the rhizome. Natural process also affects CO_2 fluxin the soil. Man made disturbances increases or decreases the carbon dioxide flux in the soil and can affect global climate. The last chapter in this section is a study conducted on the rate of exchange of CO_2 between atmosphere, land and ocean on spatial and temporal basis, taking grid points across India, China, USA, western Europe and rest of the world. The study showed that India and China are major land sinks with large interannual variability. Ocean sinks were relatively constant during 2006-10, but showed 30% variability in the year 2011.

To summarize the first section of the book will be useful to the policy makers who are responsible for managing India s energy security during the transition period from fossil fuels to greener energy at a time when the economy is growing, while the need for keeping carbon concentration within tolerable limits is more than ever before. This book does address some of those issues. Researchers and Industry can find both section 1 and section 2 useful for new opportunities in carbon capture and new areas of utilization besides sequestration. Section 3 is useful for climatologists, scientists associated with agriculture and soil, farmers and policy makers. The volume covers the entire panorama of the carbon sequestration and climate change. Even a general inquisitive reader will find ample areas of interest. As a professional connected with energy related matters and a researcher on climate changes, I find this book very useful particularly in different methods of carbon capture, and its growing areas of utilization besides sequestration.

Gautam Sen, Ex-ED, ONGC and Vice President, Reliance

UNESCO REPORT - ED-TECH TRAGEDY

Natasha Sanger - a US writer on online education reported in New York Times on the key aspects of the UNESCO's latest report Ed-Tech Tragedy said researchers in UNESCO Report argued that "unprecedented" dependence on technology - intended to ensure that children could continue their schooling - worsened disparities and learning loss for hundreds of millions of students around the world, including in Kenya, Brazil, Britain and the United States.

She further states researchers said that "The promotion of remote online learning as the primary solution for pandemic schooling also hindered public discussion of more equitable, lower-tech alternatives, such as regularly providing schoolwork packets for every student, delivering school lessons by radio or television - and reopening schools sooner for in-person classes" that "Available evidence strongly indicates that the bright spots of the ed-tech experiences during the pandemic, while important and deserving of attention, were vastly eclipsed by failure," that"societies must be vigilant about the ways digital tools are reshaping education - is incredibly important,"

The despatch of Sanger brings out following key findings of UNESCO Report:

"The promise of education technology was overstated.

The report's findings challenge the view that digital technologies are synonymous with educational equality and progress.

The report said that when coronavirus cases began spiking in early 2020, the overselling of ed-tech tools helped make remote online learning seem like the most appealing and effective solution for pandemic schooling even as more equitable, lower-tech options were available.

REMOTE ONLINE LEARNING WORSENED EDUCATION DISPARITIES

UNESCO researchers found the shift to remote online learning tended to provide substantial advantages to children in wealthier households while disadvantaging those in lower-income families.

By May 2020, the report said, 60 percent of national remote learning programs "relied exclusively" on internet-connected platforms. But nearly half a billion young people - about half the primary and secondary students worldwide - targeted by those remote learning programs lacked internet connections at home, the report said, excluding them from participating.

According to data and surveys cited in the report, one-third of kindergarten through 12th-grade students in the United States "were cut off from education" in 2020 because of inadequate internet connections or hardware. In 2021 in Pakistan, 30 percent of households said they were aware of remote learning programs while fewer than half of this group had the technology needed to participate.

LEARNING WAS HINDERED AND ALTERED

Student learning outcomes stalled or "declined dramatically" when schools deployed ed tech as a replacement for in-person instruction, the UNESCO researchers said, even when children had access to digital devices and internet connections.

The report also said students learning online spent considerably less time on formal educational tasks - and more time on monotonous digital tasks. It described a daily learning routine "less of discovery and exploration than traversing file-sharing systems, moving through automated learning content, checking for updates on corporate platforms and enduring long video calls."

Remote online learning also limited or curtailed student opportunities for socialization and nonacademic activities, the report said, causing many students to become disengaged or drop out of school.

The report warned that the shift to remote learning also gave a handful of tech platforms - like Google and Zoom - extraordinary influence in schools. These digital systems often imposed private business values and agendas, the report added, that were at odds with the "humanistic" values of public schooling.

REGULATION AND GUARDRAILS ARE NEEDED

To prevent a repeat scenario, the researchers recommended that schools prioritize the best interests of schoolchildren as the central criteria for deploying ed tech.

In practical terms, the researchers called for more regulation and guardrails around online learning tools. They also suggested that districts give teachers more say over which digital tools schools adopt and how they are used."

Source and courtesy - New York Times - Report by Natasha Sanger, September 6, 2023

CLIMATE CHANGE AND GREEN CHEMISTRY OF CO_2 SEQUESTRATION, Editors: Goel, M., Satyanarayana, T., Sudhakar, M., Agrawal, D.P. (Eds.), ISBN 978-981-16-0028-9, https://www.springer.com/gp/book/9789811600289#aboutAuthors

This book Climate Change and Green Chemistry of CO_2 Sequestration edited by MaltiGoel et al is published by Springer Nature as part of their 'Green Energy and Technology' series in collaboration with Climate Change Research Institute. The volume discusses crucial themes of CO_2 sequestration opportunities and green chemistry options for taking Climate Action (SDG13) & for addressing environment sustainability development agenda for India. The book amply illustrates the importance of CO_2 sequestration research and the directions in which this field is advancing in India and abroad.'

The book is organized on three sections namely :

I. CO_2 sequestration opportunities for India s energy security
II. Carbon dioxide capture and green chemistry of its conversions
III. Climate change mitigation through bio route and assimilation of CO_2 fluxes.

The first chapter in section 1 on ' CO_2 sequestration opportunities for India s energy security' deals with the conversions of carbon waste into fuel and biofuel, which can help India to reduce its fuel imports. The second chapter deals with the conflicting requirements of carbon management and providing energy security in India's context. Based on CO_2 emissions factor, the CO_2 reduction in scenarios of high coal, business- as-usual and high renewables were compared and it was noticed that with application of CO_2 sequestration ,carbon dioxide reduction was highest in the first case and progressively decreased as we moved to renewables. An optimal dynamic mix of high carbon, renewables and sequestration including financial issues could help in India's energy policy decision. The third chapter deals with the technical challenges in integrating power derived from renewables in our power grids. Various technical concerns have been flagged, which can help the Central Electrical Authority (CEA).

The fourth chapter deals with computer fluid dynamic simulation of Chemical looping combustion which has emerged as an economical model for point source carbon dioxide capture, during power generation. Based on the simulation studies it has given some recommendations during future simulations including for Indian coal with higher ash content. The fifth chapter deals with capturing carbon dioxide from automobile emissions. Post combustion technology could be integrated with the internal combustion automobiles and could be used for carbon capture. Absorption methods are preferred. The last chapter in this section deals with patent landscapes on carbon dioxide capture.

Most of the technologies either use absorption or adsorption process .and most of the patents have emerged from USA, China, Europe, Korea and Japan. While carbon capture pays back for EOR projects, non EOR projects are financially challenging.

The first chapter in the section 2 on 'Carbon dioxide capture and green chemistry of its conversions' is dealing with conversion of CO_2 into useful chemicals and fuels in Indian context. Electrocatalytic Carbon dioxide conversion visa vie Photo catalytic conversion has been discussed and though the former method is superior it needs integration with renewable energy sources for it to be accepted commercially. Some more technical refinements have also been suggested. The second chapter in this section deals with the carbon dioxide capture and suggests that ionic liquids (which are salts with melting point below 100 C) are better in capturing carbon as compared to conventional absorbents for both flue gas and conventional gas .The effect of cation and anion of ionic liquids on carbon dioxide solubility during physisorption and chemisorption has been discussed at length .The third chapter deals with the challenges of converting carbon dioxide to value added chemicals because CO_2 is chemically stable and needs suitable catalyst and reaction condition. Catalyst which could activate carbon dioxide under milder reaction conditions is the new area of research and hopefully with the discovery of such a catalyst this could be an alternative for utilization of captured carbon dioxide. The fourth chapter summarizes the recent developments, challenges and opportunities in using captured carbon dioxide as a refrigerant for supermarket and cold chain application. Active research in this area is ongoing primarily because CO_2 is ecologically safe for this application. The fifth chapter deals with the various methods for capture of carbon dioxide from point source, ambient air and even in oceans. Cost implications and present state of commerciality in capturing carbon dioxide from direct air has been deliberated at length.

The first chapter in section 3 on 'Climate change mitigation through bio route and assimilation of CO_2 fluxes' deals with the carbon capture from flue gas emitted from industry. Carbonic anhydrase (CA) is a zinc metalloenzyme a biocatalyst for living beings. This chapter reviews developments in utilizing CA' s of prokaryotes in carbon capture technology. Thermo-alkali stable CAs are emerging as efficient in carbon capture. However, lot more needs to be done before industry scale bioreactors are developed. The second chapter in section 3 deals with

Please read further at page 30

seed...

CHEST

CERTIFICATE COURSES ON
VALUES & LIFE COPING SKILLS

MODULE 01 - 2 CREDITS

THIS MODULE IS DIVIDED INTO THREE BROAD UNITS NAMELY:

(1) Value Orientation - Definition, Norms and Values, and Perennial Values-

i. Sincerity
ii. Concern
iii. Seeking to do the best
iv. Sense of thought and action which can harm the individual and the society.
v. Sense of duty
vi. Sense of character

(2) Values in Modern Society - (i) Modernization and Modernity, (ii) Rationalist and liberal model, (iii) Revivalist and Orthodox Model, (iv) Radical and Revolutionary model.

(3) Types of Contemporary Societies - (i) Traditional, (ii) Transitional, (iii) Modern Societies - Ethics and moral foundation and Culture (iv) Post-Modern Society.

- Each of the units has assignments. These will be supplemented with the latest ideas while interacting with specialists.

MODULE 02 - 2 CREDITS

THIS MODULE IS DIVIDED INTO THIRTEEN UNITS NAMELY:

1. Emotional Intelligence
2. Self Esteem
3. Yoga
4. Skills for Quality Life
5. True North Principle
6. Potential for Four Human Endowments
7. Work
8. Sense of Duty
9. Habits of Thrift
10. Environment Protection Policy of India
11. Fundamental Rights and Duties
12. National Security
13. Personal Security with its several sub-aspects.

- Each unit and sub-unit have assignments to be attempted by the participants.

IMPORTANT NOTE-

Courses will be offered in collaboration with the institutions. Also, students can directly enroll for the Certificate Courses.

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