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LESSONS FOR CREATION OF INDIA'S FUTURE

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PROFILE OF THE AUTHOR

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Prof. Ram Takwale is an internationally acclaimed Educationist. He served as the Chairman, National Assessment and Accreditation Council (NAAC), Bangalore. He was the Vice Chancellor of University of Pune, Pune; Yashwantrao Chavan Maharashtra Open University (YCMOU), Nashik; and Indira Gandhi National Open University, New Delhi as Vice Chancellor. He was also the Founder Chairman of Maharashtra Knowledge Corporation. A Physicist by training, he has made enormous contributions the higher education system. He has developed a model of state open university, consolidated and expanded the open and distance education system. He has formulated new ideas in the field of ICT by establishing and leading several ICT based organizations devoted to education.

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The society as a whole is participating in social change by using digital tools and techniques, and by adopting related changes in their life and work. The new education framework and policy (National Education Policy–2020) emphasizes critical thinking and creativity.With the advent of digital age technologies, new processes and models of working and learning are emerging. Major contribution is the digitisation and creation of virtualisation that finally offered cyberspace, a virtual space wherein while the mind can roam and learn globally, the human body is at rest locally. These processes are foundational to the education system. In order to retain the imagination and creativity of humans, it is essential to create a work culture with DIY (Do-It-Yourself) practices in education and must move to higher level of learning through concepts and processes by using aprocess-result based approach. All the lessons lead to a model of New or Forever Innovative Education.

PRELUDE

The first National Education Policy (NEP)-1968 together with the second National Policies i.e. National Policy on Education 1986 & Programmes of Action 1992 were considered and implemented mostly during the period of first machine-based industrial revolution and resulting industrial society. The third NEP–2020 is launched at the time when Digital Machine-based Industrial Revolution is fully moving ahead on its way in its implementation and digital society formation. The radical changes in social transformation will obviously get reflected in the NEP–2020 and pose many fundamental issues and problems. We consider here two major issues: one of right model of education for digital society; and second, the model of development for creating India's future.

DEFINING THE NATIONAL EDUCATION POLICY–2020

"Foundation pillars of this policy are access, equity, quality, affordability, and accountability" (Sec. 0.12 of the policy). The principles on which this policy is based are (Sec. 0.13): flexibility, no rigid separation (between faculties & subjects, academic and vocational courses, etc.), multidisciplinary and holistic education. It emphasises on conceptual understanding, creativity, and critical thinking, on ethics, and human and constitutional values. Besides other factors, finally, it considers that education is a public service and not a commercial activity. It assures access to quality education as a fundamental right for every citizen.

The Crucial statements define the educational framework for India.

The other areas of concern in NEP are 'Adult Education' and 'Technology Use and Integration'. In the digital age and their related changes in social life, revolutionary changes in the society are taking place. The society as a whole is participating in social change by using digital tools and techniques, and by adopting related changes in their life and work. The concept of literacy and numeracy is also changing radically. Literacy is to be linked with techno-social changes, and also to working and employment for one's livelihood. This becomes a dominant feature of literacy and education.

Vision of the National Education Policy–2020 is:

- To offer global best education system rooted in Indian ethos.
- To transform India into a worldwide knowledge superpower.

To achieve this vision, we obviously need a system of *new* education that will link education with the development and empowerment processes, which will enable us to reconstruct the Indian society. The NEP has rightly included technology use and its integration with education and its development processes. A National Educational Alliance for Technology (NEAT) is created as an Indian apex body that will support all the states and educational institutes in their use of digital age technologies to enter into the future. The transition

from one age to another is created due to newer technologies, which impact the life and work of people radically. They are the so called 'disruptive' technologies and must be used to move from existing social 'normal' to a 'new age normal, for achieving social transformation.

NEP–2020 AND FRAMEWORK OF THE INDIAN CONSTITUTION

The Preamble of the Indian Constitution and the Fundamental Duties of every citizen of India offers the larger framework for NEP–2020.

The Preamble prescribes the human values of Liberty, Equality, Fraternity and Justice to all its citizens; and the social organisational principles to constitute India into a Sovereign Socialist Secular Democratic Republic to be secured to all its citizens. This is given by *We, the People of India*, to ourselves.

It also gives the Fundamental Duties of the Constitution, such as '*striving for excellence'* to help rise constantly to higher levels of endeavour and achievement; to develop the scientific temper, humanism and the spirit of inquiry.

Facilities and Limitations of the NEP–2020

The approach employed in NEP–2020 is to offer the Foundational Principles and the Frameworks in some situations that should enable to achieve results expected from implementation of the principles. Educational structures of schooling from KG to 12th standards are 5 (3+2) +3 +3 +4, and College/University structures are 3+1(Honours) +2 (Masters) + PhD.In the earlier policy, +2 of Higher Secondary after 10th standards (5+3+2+***2***) was expected to be vocational diversification. However, it did not succeed and was ultimately added to the university streams, thus defeating the purpose. The new pattern of NEP–2020, adds KG of 3 years to the schooling making it 12+3 =15 years; and the four years (9-12 standards) at the Senior High School level is for the skill education of choice of students by making education multidisciplinary and holistic. Regular

formative assessment for learning is expected to be used than the summative assessment at the term /year-end examinations, which, it is found, is promoting memorisation and coaching culture. Instead, the new education framework emphasizes critical thinking and creativity.

In brief, the Framework and Foundational Principles offer enough freedom and flexibility *to create new models of education* that enables to design processes that can achieve results expected from the principles.

The NEP–2020 has avoided the problem of The Education Commission of India (1964-66) to define the model of *'national development'*. It automatically accepted the Western Model of Education, which was not suitable for the Indian ethos. The Western Model of Education was *Linear* (conveyor belt approach), *Conformist* (requiring ISO standards), and *Class Creating* (Product Class-First, Second, Third & Reject) *(Robinson 2010).* It is unsuitable to create the values and principles given in the Indian Constitution. The Western education model is based on an industrial model of education. It further promoted competition to earn high ranks for those who earn high grades and find bigger and higher paid jobs in the employment markets. It is good that no such model of education and development is prescribed in the NEP–2020. It should promote multiple models; an environment *to let a thousand flowers bloom*. In this context, the central system of examination may have difficulty in creating multiple models of assessment to evaluate any new model of education created by HEI: either by students like Eklavya or by teachers of modern HEI.

MAJOR ISSUES IN IMPLEMENTING VISION OF NEP–2020

Every Higher Education Institution (HEI) – universities, major collegesand cluster of colleges under NEP–2020 is expected to become an autonomous institution within the next 15 years, i.e. by 2035. They will have to become mass universities with global jurisdiction. Their existence at some local place in India has to be linked with

local-global nature of knowledge and development. By using cyber space offered by digital technology, HEIs can be local in a physical area, where they can use the 'learning from global knowledge'. This gives a new principle of learning and creating the much needed *Learn globally and Act locally.*

The Education Commission (1964-66), who's report was titled *Education and National Development*, could not link education directly with development. The report contained proposals of two distinct models:

a. First,the blueprint of which was given in detail was based on 'Education of Our People'. It was an extension of the thought of Gandhian Education, which is linked with social development and employment and emphasised on knowing and working in at least one basic vocational field. This model of education was a non-starter. The reasons of its failure were analysed by JP Naik (Naik, 1982).

b. Another model was following the Western or British Model of Education having hierarchical approach in impacting social structures. The purpose was that education in India should support the path of Indian Industrialisation as was done in Briton and Western countries.

The Education Commission has studied education holistically from early childhood to university education, and adult education to open education and distance or own town education. It formed the basis for the next NEP-1986-92 and supported education development for nearly five decades.

IMPACT OF DIGITAL TECHNOLOGY-USE IN MODERN TIMES

With the advent of digital age technologies, new processes and models of working and learning are emerging. Major contribution is the digitisation and creation of virtualisation that finally offered cyberspace, a virtual space wherein while the mind can roam and learn globally, the human body is at rest locally. This roaming and

interacting in the cyberspace can be digitally tracked, due to the digital technology used in creating global-local networking and supporting it by cloud technology.

First Industrial Revolution had started in the 19th century with the discovery of steam engine, which revolutionised the production, communication (through telegraphy) and transport processes. Automotive process of steam engine was used in steamers, railways, which needed railroads for its transportation, and in factories to develop conveyer belt processes for creating products in terms of goods and services. The First Industrial Revolution of mass production started in Europe, changed the production, marketing and wealth creation processes, and the power it generated created a new and modern world. It hardly lasted the 19th century when energy of steam used in a steam engine was replaced by gasoline and later by electricity. This change has made machines smaller, and during the 20th century, machines entered in the living and working processes of people and their societies. The First Industrial Revolution created a class of people with enormous wealth– the *Class Revolution*. The Second Industrial Revolution with change in energy resources used for machines enabled experts to create small and portable machines. This enabled mass of people to participate in use of machines in their working and living situations. The Second revolution is thus a *Mass Revolution*. This is a characterisation of Industrial revolution brought about by the *First Machine* (Automotive Engine), and *Second Machine* in which engine uses digital technology.

Digital age is often considered to have started when internet services was made public in1995. Since then, the growth rate due to technology use in living and working functions has become so fast that from the earlier one century of change and social impact is now being experienced within 20 years! Changes are both in technologies and in ways of living and working. The Third Digital Industrial Revolution started by Second Machine lasted hardly for two decades (1995-2015) forming a class revolution. First Digital Revolution was succeeded by *mobile digital technologies* during the next two decades (2015-35) and is enabling mass of people to participate in the change. The next change, the Fifth Artificial Intelligence (AI)-

based Digital Industrial Revolution is expected between 2035 to 2055 and continue till later. However, it has already started showing its impact through advanced robots, IOTs (Internet of Things) and Drones, creating an Industrial Revolution with automated and self-controlled movements of advanced engines with digital technology in which AI is being used extensively.

It is predicted that by 2025 nearly 69 per cent people in India will lose their jobs due to technology change. Experts in these fields are predicting that last human being will be out of factory during the 2035-40-year period. Sec 23 of the NEP gives enough emphasis on using AI in various areas of machine learning and its applications. Now plenty of jobs are available with latest technologies using AI and machine learning. New branches of big data and analytics are now emerging fast with multiplicity of apps that were not visualised earlier.

Advanced technologies and AI are creating and changing fast the living and working processes. The education in such a scenario will have different nature and must address the issues of livelihood and creation of future society.

CHALLENGES IN IMPLEMENTING NEP–2020

With these changes having a rate of nearly five times higher, it is difficult to visualise the long-term scenario that technology is creating. Approach to project the past into future is redundant since an entirely new future is getting created. First and second machines are created by employing scientific approach using causality and rationality. They work in the real space. However, the cyberspace is created by the virtualisation process of digital technology for mind and motivation operations in which thinking and learning processes are operating. These processes are foundational to the education system. All the movements of animate and inanimate bodies take place in the real space. Movement of inanimate bodies are fully known by science in which human being is concerned. Human mind has imagination and a creative nature. A new Science of Human Action has to be used to deal with processes in which human body is involved specially

in the digital society, (Takwale, 2018). With these issues, the main challenges are:

1. Linking education with social development and creation of values. This will enable us to use Mahatma Gandhi's approach of *Nai Talim* (New Education) to link education with livelihood by using one of the basic vocations that is very essential to the needs of human living, (Panse, 2007).

2. Digital Technology with AI use will create gadgets that will take away jobs of people working with old technologies. New ways of replacing those jobs with new technology and creating new engines/apps that will take us to the fourth and fifth digital ages.

3. Creating an education model that uses the pedagogy of social reconstruction, by following JP Naik's model of education for creation of future (Naik, 1982). Link education with life-long learning and make education life centric–human life of individuals or groups and communities (Panse, 2007).

4. AI-based digital technologies are creating a new scenario in which new gadgets, such as advanced robots, IOTs or smart things, and drones are going to serve humans in their life situations. When digital machines are working in production, machine communication and transportation, a new scenario of *plenty* and *non-working class* could be created in the new digital society. In order to retain the imagination and creativity of humans, it is essential to create a work culture with DIY (Do-It-Yourself) practices in education for ensuring progress and modernity of the digital society and nation.

LESSONS FOR THE FUTURE CREATION: A MODEL OF NEW EDUCATION

Already we are in the 4th digital industrial society with an ambiance of knowledge everywhere, accessible to anyone, anytime, anywhere. Open resource movement has been adopted by many and forced a lot of them to open their knowledge resources to all for various reasons.

The knowledge revolution is going on. COVID–19 pandemic has forced people to work from home for their life security and has forced for economic reasons to adopt education and working from home by using online education and working. This is creating a new situation; and information-based education is unsuitable in such a scenario.

We must move to higher level of learning through concepts and processes. We follow here the thinking of Mahatma Gandhi in his *Nai Talim (Panse 2007)* and of JP Naik *(Naik 1982)* in his *Lessons for Future Creation*. Going forward, we have to use a process-result based approach to incorporate scientific approach with causality and rationality applied to a system under consideration. All the lessons lead to a model of New or Forever Innovative Education. It is a model that can be applied to a total system under consideration:

1. Process-Result based approach to learning and development.
2. Universal-Global-Local approach to the issues and problems and solutions being considered.
3. Using pedagogy of *Social Reconstruction* with three ways of learning:

   Role-based learning used for the persons in the system;

   b. *Scenario-situation based learning* for creating new scenario to move forward towards new digital society; and

   c. *Problem-solving based learning* identified from issues and problems faced in the situations.

4. *To find path of life by linking education with life processes* and playing roles of actors with their unique actions useful in finding path.

The four lessons forming process Models of New Education essentially contain:

- The *first lesson* for the new age society is *to adopt process-result based approach* in the form:

  Input → Process → Results

Each process consists of series of steps of action, which is a part of process with content. The above process is entirely based on a

scientific approach of causality and rationality; and inputs in terms of motivation and skills are to be used to get required results. Obviously, it works in the real space. Instead of considering the items of information, we consider it in the form of process. The concept like organisation is used in social organisation, in physics and biology, etc. The knowledge is therefore transferable, and learning becomes faster and actionable. Instead of information learning we do process learning. Chain of processes can form a function of human being or the system under consideration. Chain of functions can form a model or role of human being.

- The *second lesson* is of using the processes applicable to the local situations or global situations. In the process of thinking and learning, the body remains local and learning can be done by the brain processes while the mind is roaming in the digital space globally or universally.
- The *third lesson* is to have a Pedagogy of Social Reconstruction. Here, we are following JP Naik's model of education for future creation (Naik, 1982). Pedagogy of Social Reconstruction is divided in terms of its three components: people as actors (role-based learning); places considered in the situation linked with future scenario to be created; and problem-solving based learning.
- The *fourth lesson* is to make education life centric. We approach the problem by defining life process in terms of outcomes of the Four Pillars of Learning offered by UNESCO. This results into the Path of Life with a chain of Processes:

  Learning → Development → Value Creation → Reform / Transform

New Education enables the creation of value by using cooperative and collaborative living and working. These processes enable to create the Social Commons (Commonwealth) to pay for Free & Open Education and Development shared by all.

NATION WITH ITS HUMAN SETTLEMENTS AND THEIR FUTURE

A nation lives in its human settlements. A tribal community was living in Pada, a small settlement of tribal people surviving on natural resources. With the development of experience based agro-science, settlements started living in villages by ensuring their safety and security, and creating food for their livelihood. Agrarian society was living and growing in villages, and continued to live for the last 8-10 thousand years.

The first machine run on steam engine was created first by scientists and engineers in the 18th century. It was used to create railways, steam-ships for sea navigation, and started factories in cities wherein people came in from rural areas for jobs. With factories, the mass production process had begun. This 19th century picture was changed with change in energy resources for machine, and sub-urbanisation started in the 20th century. All these are due to technology changes, the tools and techniques of which were used in living and working functions of a society (Shirky, 2008). Third and fourth digital technology revolutions created new digital processes (based on mobile digital technologies); and now new digital gadgets such as robots; IOTs (internet of things) or smart things and drones thus covering production; and communication and transportation fields of development *(Greengard 2015).* Global networks of Internet connection with 4th and 5th generation communication technologies have inducted AI (Artificial Intelligence) based gadgets at living and working places. They are offering facilitations in creating an entirely new society in which *plenty* and *non-working class* could be created. Future of humans could be ensured by giving each one enough for their minimum bio and social needs (Maslow, 1943) and creating a new culture to live peacefully and creatively in a digital society (Takwale, 2018).

Digital Society's human settlement can be conceived to be a '*Cillage*' or city in a village. Basic needs are constantly changing with the onset of every new age. Maslow's Hierarchy of Needs (Maslow, 1943) can be fulfilled by the factories or workshops which are run by smart robots and things. An entirely different society– a digital

society of the 5th Digital Industrial Revolution – is emerging within the next 10-20 years.

Maslow's hierarchy of needs– Lower and Higher needs– modified for the modern times are:

1. Lower External Needs *Bio Needs*- Water, Food, Clothes, Shelter for every one
    - *Social Needs*- Sense of Belonging and Love
2. Higher Internal Needs:
    - *Scientific Needs*-Causal& Rational Thinking
    - *Aesthetics and Self-Actualisation Needs*

When robots and other technology tools are producing enough to fulfil each one's lower needs, all can be brought on the level of social equality in a society and nation.

Fulfilment of higher needs will need personalised freedom and creativity, so as to develop the new age and new society. Issues like poverty, hierarchy due to different needs and elitism could be addressed by creating a new social culture.

For fulfilling human needs, everyone has to work for fulfilling the lower and higher needs. A culture of DIY or Do-It-Yourself has to be created. Achievements in personalised and socially essential needs can be fulfilled by many and can have higher achievements. This adds competition amongst all to rise to higher achievements.

Man is a thinking animal. And a cause of thinking in brain is either external or internal need, which creates self-motivation. Motivation is a force generated, which could be represented by the mind— a virtual representation of motivation. Mind or motivation directs the body action in real time. The relationship between thinking and acting is important in considering human action or inaction *(Takwale 2018).*

During the 19th and 20th centuries, we had two distinct developmental models: one of capitalist society, and the other of communist society. There are many shades of combination in democratic and socialistic models helping nations to create their distinct culture and society.

Every age has a new culture and different tools and techniques are to be used in life and work of humans—in individual, social and national life. With scientific advancements using digital technologies, every society and country can find path of individual and society dependent on its historical and cultural ethos *(Schwab 2016).*

The 5th Industrial Digital Revolution can help us to reconstruct a society that solves the long-standing problems of elitism, hierarchical nature, and poverty of society *(Naik 1982).* Since advanced robots, smart things and drones will be changing the nature of life and work, a society whose external basic needs of bio and social nature of all could be created and fulfilled by using AI based gadgets *(Takwale 2020).* This needs a national policy to create a society whose minimum physical needs can be solved by the newer AI-based gadgets working in factories and workshops. This can create scenario of *plenty and non-working* class. However, such societies created by nations and civilisations faced problems of self-destructing tendencies and had to adopt entirely different ways for their survival.

The 5th Industrial Society has a different nature. For the first time in Industrial Revolution brought about by the First Machine (auto engine in 1st and 2nd revolutions) and Second Machine (digital engine in 3rd and 4th revolutions), the order of social formation has changed and reversed its nature. Mass Revolution is first and Class Revolution comes later. This has reversed the direction of change in social structures.

Human motivations can also be classified into two: one for fulfilling external needs, and another for internal needs. Everyone can be given the opportunity to be autonomous, free and creative, to change and impact socio-economic and cultural development. This can be considered as the Third Gandhian Model of Development. External basic needs are fulfilled for each one. For higher internal needs, everyone can choose one's own path, individually and in groups/communities, and achieve higher cultural levels in scientific development, aesthetics and in self-actualisation *(Takwale 2020).*

After every change in age and in new society formation, basic needs are changing. In the Digital Age and Society, there are additional

needs for safe and secure living, and humans needs to live and work with new digital technologies are essential, so as to progress in the new modern age.

Human and Hierarchy of Needs: Bio, social, scientific and aesthetics' needs and self-actualisation.

Natural and Environmental Needs: Clean water and air, healthy soil to live and grow food with essential ecology maintained for human living and progressing.

Digital Technological Needs: WiFi, Internet and access gadgets are essential for moving towards the New Normal Society of the New Age.

THIRD MODEL OF DEVELOPMENT FOR INDIA'S FUTURE CREATION

The Education Commission has named its report: *Education and National Development*. While identifying the failures of some of the policies in implementation, JP Naik noted the absence of the Third or Gandhian Type of Model of Development, besides the Capitalistic and Communistic Developments. It appears from above that the Third Model has to wait for the implementation of AI-Based Digital Industrial Revolution. It will require fulfilment of needs of human, natural and digital technologies in a society whose model of development can be based on Gandhian principles. New AI-based society will be decentralised, will use renewable energy, and can help us to take all the techno-development to the village or now *cillage*. Gandhian approach of '*Back to the Villag*e' changes to '*Forward to the Cillage*'.

CONCLUSION

Essentially, the Third Gandhian Model establishes autonomous and self-reliant Cillages in some areas in educational and technological development *(Takwale 2020)*. It connects all with global and universal internet connectivity, and ways of learning from all the world, but creating a culture and ways of developments of its own in peaceful

and humanistic ways. This is because the new education model in the digital society is based on the principles of Mahatma Gandhi's *Nai Talim* and JP Naik's *Model of Future Creation*. The model of New Education in Digital Society and New Model of Development of External and Internal Nature form the basics of the New Normal in the AI-based digital society.

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