

## Futurology of Indian Education— Positivists’ Approach

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### Abstract:

*Success of Education System in India is highly subjective and correlated with futurology of educational institutions that has passed through a long journey as early as Vedic to cutting edge technology era. Its glorious past not only embodies its history of independence with largest democracy of the world but also its citizens are honoured with Nobel prizes in literature, mathematics, physics, and economics. Being second most populated country, India also ranked third in super computers, medical scientists and health practitioners of Indian origin are omnipresent. Indian educational panorama reveals similarity in terms of quality since pre independence till 1990. The road map for a national level education system (was ever achieved) rather it started growing with more variations and discrepant forms later. It took more than three decades for India to ensure parity in terms of specifying duration of school education— 8 years elementary, 2 years of secondary and 2 years of higher secondary level of education prior to implementation of Education for All. Subsequent programmes such as DPEP, SSA and RMSA were implemented in follow up phases to achieve universal access, participation and attainment in school education in a sustained planned manner. For continuous and sustainable development of human resource and making higher education viable, and above all, in order for continuous renewal of*

*success at school level, RUSA- the UGC's Millennium Plan on Indian Higher Education was implemented towards achieving quality higher professional/technical education. More educated nations are more may be their productivity— an assumption could easily be verified from the nations that are ranked at the top 10 in the HDR list and world happiness record. Education is always planned and renewed concurrently with scientific and technological developments, so as is our own education system that has immensely integrated ICTs and by the beginning of the 21<sup>st</sup> century, educational institutions realize potentiality of ICTs an foreseeable part of educational delivery. While ICTs aptly and smartly influence education, these technologies have raised serious concerns and challenges to teachers and learners. Teachers are no more continued to be available to impart learning or lessons face-to-face mode, rather teachers of 21<sup>st</sup> century are titled to be “networked teacher”. This paradigm shift hosts a number of prospects and threats that are being identified by the authors of the present article. This paradigm shift will eventually accelerate the developmental process/growth pattern of educational institutions is a prediction that authors have made in agreement with positivist approach. It is valid and significant to mention that scientific and technological innovations will continue to maintain social growth and national development sustainably through educational institutions. Towards the conclusion authors have mapped a three-dimensional futuristic perspective that includes educational delivery, employable career, and outsourcing human resources for participation and representations at global level. Authors predicted that ICTs will continue to be the major means through which India will be able to stand along with developed nations and within three decades from now India will protect health and fundamental rights of each and every citizen could stabilize its economy and thus will ensure its citizens health, wealth and prosperity. Alike twentieth century, the first century of this millennium will witness positive turmoil in terms of translating policies to practices, implementing action oriented plans, blending policies with empiricism.*

**Key words:** Scientific and Technological Innovations, Social Development, Educational Institutions, ICTs, Positivist approach, Futurology of Education

## **Why futurology of Indian Education System is needed?**

Several precisions govern perceptions of world academe on the role played by ICTs as fundamental tools in the new millennium. Real or virtual views on all sectors in human development and welfare could reveal world population is significantly networked by the means of a computer which is primarily a digital electronic device. Traditional phenomena relating to social system are well proven and purported with social growth and development. Recently formed National Government (NDA Government) has promised three frontiers those need to be well addressed in order to make nation compete with rest of the world. Theses include “Skill based Education, Scaling up Competencies, and Speed/pacing developmental Goals”. Technological revolution has accentuated the need for massive transformation cutting across all sectors in a society and in particular, in the field of education, and in order to achieve targets set by the National government, technological innovations hold key to success. New technologies are widening vistas through which youth unemployment can be dealt firmly. A pluralistic society, incongruent centre-state relationship, scarcity of funds and human resources are stumbling blocks before nation’s progress and to reach at the zone of proximity, technology ought to bring desirable transformations. Lecturing -- taking note based teaching strategy, though prevailing in high frequencies, all possible contexts in education system is yet to be friendly with technology enabled and teacher monitored approach. Students at Higher Education Institutions (HEIs) are rejecting “teachers’ explanations with the plea that such contexts are available in the internet thereby create scopes to adopt innovative means to teach in the class”. In the education sector, experts are continuously renewing their ideas and thus trying to make learning meaningful, permanent, and joyful. While one or two gram(s) electronic based tablet structured device is capable of

storing sufficient information, children carrying kilograms of (school)baggage and bringing a disproportionate home assignments has become an issue that not only make parents to raise their eye brows rather expertise involved in education system is also under a big question mark. Keeping the prevailing trend in view, it is judicious to conclude that in our future endeavor, we shall not only be ensuring utmost parity (in terms of equity and equality) but also prone to be failed in providing mass education with certain level of standard for which technology of and technology in education could continue to be distinct and potential pathway.

### **What benefits do young and adult learners draw concurrently?**

Each young learner of the 21<sup>st</sup> century is essentially benefitted by either laptop, mobile or electronic gadgets and are familiarized with digital electronics based innovations that groomed with an add-on competency, i.e., computer literacy (which is inbuilt and integrated to a significant extent within education system of every nation) and has been immensely supporting fundamental learning competencies (such as, four Rs—reading, writing, arithmetic, and recreation) vis-à-vis higher order learning competencies. Though acquisition and application of competencies and knowledge primarily and solely rely on “will/desire to learn”, “passion for learning”, “urge to learn”— “learning to learn”. This paradigm shift in learning process essentially has warranted higher and faster cognitive functions, and eventually twenty first century learners in general and young learners in particular are capable of acquiring, retaining and applying knowledge and competencies much faster than it was ever before. Those who use ICTs judiciously and prudently feel superior since learners could connect to any sort of ideas over a night. There are couple of benefits that are in agreement with certain ethical norms and

standards and purposefully influencing prosperity through sustainable economic growth and national development. The current technological revolution will bring short term benefits in terms of enriched communication process between learners and teachers. This does not signify that long term benefits are overruled. ICTs will transform Indian economy by the beginning of the third decade of the 21<sup>st</sup> century and will make social growth and national development sustainable. ICTs, especially, social networking forums have brought noticeable changes in politics, and face book became the means of political propagandization (of a newly formed government in Delhi led by Shri Arvind Kejriwal of AAP) which played facilitative role among voters, and unlike other states and UTs, Delhi has largest number educated computer literate population. Studies have rarely carried to determine such trends on facilitative influence of ICTs on voting behavior (only means for bringing political parties to power) which is cardinal for progressive growth of the country through political governance. India is listed at World level because of several reasons—largest democracy, third nation of the world (in super computers), and having abundant human resources (most of them are in elementary/secondary/higher secondary school stage), ICTs will continue to be a divine bliss upon human civilization since functional literates are more capable of drawing benefits in terms of getting further education along with computer literacy training at school level in India. Since children reach at adult stage by 18/19 (years of age) or by higher secondary stage, where Indian school education always prefer teacher supported ICT integrated (blended learning) learning, but beyond higher secondary through young adulthood stage, dependency on teachers support is decreased due to availability of learning material in the virtual world. Professional and technical courses have also started making teachers' explanations more meaningful with the support of virtual presentations. At higher stages of learning (excepting research), teachers support

are seldom warranted, once ICT related competencies are gained individuals are becoming the masters of their destiny.

The four pillars of learning (advocated through “Learning the Treasure Within” envisioned by Delore) depict learning as continuum, and mainly commences with “learning to know”, “learning to do”, “learning to be”, and “learning to live together”. This continuum further explains its inner meaning that learning occurs and transferred from one stage to another and by and large the entire population of the world practice. Therefore, “learning to be” continues to be at the centre stage in the entire continuum. For achievement and growth & development of four pillars of learning, technology enabled digital electronics based scientific innovations could yield more and better results than what we have been achieving so far.

The current applications of search engines and social media to optimize learning among students and teaching communities through a wide varieties of computers, micro computers, tabs, desktops, laptops and i-pods. Concepts are learnt as early as it was ever possible. Progressive approach in education therefore recommended virtual modes of interactions as complementary and supplementary to human learning. The current trend of mobile learning has broadened ways and means of human learning. Acquisition of facts, information and their judicious dissemination has enabled all categories of learners to learn and apply knowledge beyond disciplinary boundaries. Electronics gadgets, video games, simulations are gaining popularity thus replacing face-to-face vis-à-vis teacher centered approach in education. Classrooms are slowly converted into resource centers for enhancing quantum and quality of learning. Equity and equality have been well addressed (role of human beings are minimized) since technology is gender-religion-region-caste sensitive. Therefore, technology of education, such as, assessing entry level of students, innovations in designing academic plans and

curriculum, strategic curricular transaction, monitoring and managing student learning, continuous and comprehensive evaluation— have become essential institutional level inputs for every institution especially higher education institutions (HEIs). Technology in education, is the concept not only restricted to ICT alone (rather include wide range of equipments) but also associated with strategic curricular transaction, and has immerged to provide immense support in maintaining data base on student record, preparing and delivering teaching lessons (interactive), publishing results and retaining evaluation records etc. It is not uncommon or unpopular that scientific and technological innovations have abundant potentialities, and because of such innovations we have reached knowledge (economy) age from Stone Age. About two decades ago or later, information between sender and receiver was costlier than the present age. Instant messengers designed by many software companies making communication faster and of no cost. Classroom pedagogy is currently enabled with ICT and virtual world making teaching-learning much easier, meaningful and interactive. Students' assignments and research work are checked for their genuineness and uniqueness through plagiarized software thus making teaching and research work much faster with greater quality.

It is all the more important for our education system to be at par with developed economy and a smart move could be via ICT only. In what specific changes that ICT has successfully brought in totality not specific to teaching and learning rather in the entire education system could be equally worthy to mention within the present discourse. Administrative efficiency among educational institutions have increased, and institutions are successfully benefitted by inclusion of ICTs. Cutting edge technologies govern knowledge era to glow purposefully to mitigate disparities and inequalities that have been a concern for cohesive society. If technology is used judiciously and respectfully, it will add up to our productivity.

## **What do scientific insights reveal grossly on benefits drawn so far?**

Health, happiness and wealth are three fundamental attributes that have always been at the core of the survival of our civilization. ICTs are alike other types of scientific and technological innovations and therefore have always been kept in the discourses relating to training and education. Technological innovations are then meaningful, resourceful and phenomenal when these are used judiciously to promote personal, professional and social competencies. Behaviorism ( a family of learning theories) advocates that behavioural changes are attributed to a set of conditioned/ partly conditioned/unconditioned stimuli; ICTs are therefore hosting multiple stimuli that are designed and focused towards developing and polishing/tuning learning competencies and learning behaviour. From cognitive theorists perspective (inclusive of schema theories), meaningful learning is attributed to the extent of relationship is established between prior experience of the learner and to-be-learned learning contents, this phenomena of relating past/prior experience of learners with to be learned learning material are much faster and effective when they are exposed through technology enabled learning environment. From neurophysiology perspective, neural networks in the context of acquisition, processing and retrieval of knowledge and information are crucial and therefore ICTs have successfully bringing positive change within “physiological and psychological self” of learners. “Studies suggest that access to the limitless information on the internet has changes the way our memories work. Researcher argues that we now have two memory systems: an old system—our brains—a newer system he calls E-Memory. If E-Memory is indeed the direction in which our memories are evolving, Mobile Learning is critical to effective talent development”

(Robert Clowes 2014 @<http://elearningindustry.com/mobile-learning-meets-e-memory>).

Experiences of authors on trainee teachers and teacher educators of Rajasthan, Uttar Pradesh, Haryana, Punjab, Maharashtra, Himachal Pradesh revealed that trainees intentionally avoid submission of handwritten copy or the manuscript of the assignment reason being they find computer based documents are less erroneous from grammar and spelling points of view. This may be cited as positive change, while negativity of ICTs could be—when students submit plagiarized assignments and get these evaluated. Many of the teachers are not familiar with free plagiarism softwares due which they assess plagiarized material submitted by students. Many of higher learning institutions have made provision of plagiarism checking while there is no uniform policy on it and therefore it has become easy for students to claim marks on the basis of plagiarized material. In days to come, all sorts of institutions will be adopting policies in relation to plagiarized material.

### **How do we rate our own education system?**

Indian Universities during ancient stage, though continue to remain reference points for many scholars of India and abroad; Indian higher education is comparatively much cheaper than Europe and West World Countries, while it is much qualitative than Asian, Arabic, and African countries. This phase or stage of changes in Indian Education could be an opportunity for us to excel further and become exemplary on globe. As leading positivists and progressive educationists prefer to tag this as positive turmoil in Indian situation and within a decade from now since Indian youths will be single largest population of the country and may outrank other neighboring economy. In its real perspective, Indian education is represented by millions of schools, thousands of colleges and hundreds of universities; but unfortunately have we ever coined our own educational

currency; it would have been much scientific. ICTs are not narrowing job opportunities rather they open new vistas—teachers teaching in classroom has been supplemented and complemented by videos, in such situations teachers are utilized twice, as a lively teacher and an e-content writer. What has been in practice is the school education being the jurisdiction of state government, state government owned schools suffer in terms of its productivity; on the other hand, public schools double their productivity and ensure relatively better quality than state government owned schools. School education in any state of India is recognised by State Board, CBSE, ICSE, and International Baccalaureate; neither any one of these nor in totality these school education bodies of national and international repute could bring desired changes by inculcating requisite competencies of each and every child/student. The prevailing theory and practice gap in Indian schools in general (inclusive of public/government/aided) is much wider and such lapse is attributed to accountability at institution level, teachers' level and students' level. As rightly coined by Prof. NMP Verma (on the occasion of Lucknow Social Science Congress at BBAU, Lucknow) that accountability holds the secrecy of prosperity in India, duties are to be practiced more and individual accountability of learners, teachers and administrators are quite significant for each and every educational institution right from elementary to tertiary level. School administrations in principle agree to a huge number of norms and regulations (on paper) while substantial amount of these remain untouched while some schools effectively implement such regulations to the extent to which they have become legendary. Since we practice a wide range of curriculum with assessment schemes, heterogeneity in students' performance is noticed. This heterogeneity can ever be granted as system generated lacunae rather it is attributed to erroneous decision making process. Since traditional jobs are shrinking in its number day by day and new type of jobs are add to the list of

careers or vocations, only high profile learners could succeed in this cut-throat competitive age. Eventually, educated youth unemployment appears to be crucial social issue. Bringing school dropouts back to the system has become a challenge because they will demand for different forms of pedagogy. Since transformations are so faster and high impact based, it has become absolute for individuals and professional to keep on renewing competencies. Since minimum levels of learning are not defined for secondary and higher secondary stage in India, it is seldom possible for labeling these stages with certain definite credits (in terms of academic currency). Though ICSE is the Indian form of school education which is equivalent to schooling system of developed nations, a national form of school education is yet to be designed by Indian scholars and educationists. 10+2+3 pattern and policy on learning three languages at secondary stage are some of the characteristics of Indian schooling system but not the system as whole. In this context, a question is raised—whether learning Arabic is more meaningful than Urdu for Muslim students of India? Developing competencies in Arabic language open up a bunch of jobs with lucrative salaries and perks, Urdu could hardly accommodate entire Muslim student population of India. Similarly, why English alone as a foreign language, why not French or Dutch, and it is well experienced that people who master languages (other than mother tongue) succeed and sustain well across their professional life.

Taking our leading universities and HEIs of national importance into consideration, foremost striking features that are emerging as most noticeable across HEIs include placement of passed out learners, sustainable infrastructure development, scientific & technological innovations, sustained support to policy planning and lower level institutions. Alumni who serve as ambassadors for their parent institutions and become exemplary in the work/job place attributed to which universities stand tall and tagged as “higher learning centers”.

Therefore, Jawaharlal Nehru University, and Delhi University have become preferred destinations for civil service aspirants and successful administrators are primarily from these reputed institutions. IITs and NITs have produced scholars with proven competencies who are currently rich resources for developed world. But overall education system though appears to be colorful, in terms of quality it continues far away from the level of satisfaction. Though UGC has solicited cooperation from HEIs to implement Choice Based Credit System (CBCS), its implementation remains to be highly unsatisfactory. Institutions vary significantly in terms of governance, localities, institutional structures, programmes, staff composition, and number of working hours etc.; and these variations are well noticed across state, central and deemed to be universities( exclusive of a few). Within this discrepant framework, expectations for national parlance in terms of academic credits have surfaced recently in India. The NAAC (continues to be the national level organization responsible for assessment and accreditation of gross performance of HEIs) is yet to define credit parlance for academic transactions.

It may be concluded that we lag in terms of lack of expertise and innovation in course, curriculum and learning design, total quality management, and ability to cope with changes. Despite of these limitations, India Education system has been accorded with laurels for its presence and impact on global knowledge forum.

## **Conclusion**

Three-dimensional futuristic perspective that includes educational delivery, employable career, and outsourcing human resources for participation and representations at global level, professional and technical competency based education for influencing per capita income with sustainable GDP (Gross Domestic Product). Human resources are no more useful

without connectivity to information communication technologies, and thereby will be called as tech savvy human resources whose tech savvy quotients are much needed than ever before.

With regard to futuristic trends in educational delivery, dual mode higher education institutions will be successful in managing learning of students on and off campus. Interestingly, though few of dual mode universities/HEIs have succeeded in integrating ICTs into regular classrooms meaningfully, while perception of stake holders remain consistent with regular class based studies. Though open and distance learning is less than half a century old, its success is as striking as its failure (which is applicable to regular classroom based education). But experiences on NIMS Open Distance Flexible Learning (NODFL) students (exclusively from 2009 till 2014) revealed a noticeable trend— students pursuing about 49 programmes across a basket of disciplines have employment prior to their admission to respective courses. This indicate the success rate as high as cent percent, and this trend has already been identified by researchers and educationists in case of APOU, IGNOU, YCMOU, VMOU, (and many of such institutions of national and state repute). Percentage of such exemplary institutions is not significantly high because of which unemployment has become critical for developing countries including India. At school stage, NIOS and Institutions of Open Schooling at state level have successfully prepared students for technical/professional or higher learning. Dropouts from regular schooling are capable of getting back to education through open schooling where learning has become more independent with a lot of autonomy, highly learner controlled. Personal Contact Programme (PCP) and hands on experience within laboratory continue to be the weakest aspect of distance and open learning due to varied reasons; while ratio between degree holder and job offer is found to be 1:10, in some courses it is as low as 1:0 (barring intra and inter individual

differences). The trends in success and failure in Open and Distance Learning is well noticed across regular mode education. It may be argued that in regular mode education, teachers/instructors are there at least for adequate duration within institutional boundaries due to which learner-teacher interaction is most frequent and more meaningful, but getting adequate number of faculty has become a crucial issue for many of higher education institutions within the country and abroad.

When ICTs have become absolute for educational delivery in technical/professional/higher education institutions, deciding what and how to search and connect knowledge has become important. It is not search engines (such as, Google/Google scholar, Alta vista, web crawl, yahoo, 20 search. com) rather it is the search threads that are critical for which abundant amount of creative abilities and insights/foresights are required. Learning to learn, learning to think, and learning to connect will hold secrets of success while employable career will rely heavily on an ongoing process of learning, unlearning and relearning. This process will have to be adopted to make neural networks continually renewed, and continuous renewal of our thoughts will add more meaning to human survival including learning.

There is no cut short method for making any career more employable, rather it is the accountability of the passed out graduates to connect “what is being learnt and practiced within a span of certain months or years” with “what is being demanded in the job place.” Since human memory is volatile in nature and to reduce this volatility, institutions and students adopt quite huge number of strategies. In the cutting edge technology era, genetic memory is being extended with e-memory and hence neural networks and their meaningful actions and interactions will keep cognitive neuroscience, cognitive psychology and applied psychology bring new insights about learning acquisition process( which is though well defined

but inter and intra individual differences have become quite subjective). Mainly three domains on which all educational interventions rely heavily, in other words, education by and large influences primary three domains—cognitive affective and psychomotor (in isolation as well as integrative). Therefore, our learning and teaching community will be continually be renewing knowledge and competencies either through formal, informal or non-formal modes of learning referring both human and media based sources of knowledge.

Employability of a career could be enhanced to its optimum only when employee takes high accountability on duties and responsibilities to be performed that commensurate with institutional and industry based goals and policies; and employers consider employees as part and parcel of the system. It is not only the contents of various subjects being learnt across courses within a programmes (UG/PG onward), rather how these knowledge and competencies are related to the industry of the current age is equally important. Technical competency based courses and programmes are thereby advised to be disseminated within industrial units. One may be able to design an airbus and fit all parts to make it functional and unless the architect takes as many trials to reach at assuring total quality and send the products with final touch. Placement services in many of higher and technical institutions lack coordination and hardly these services are useful in real terms. Employment of passed out graduates rely heavily on the students and their parents. Institutions after providing training and education for more than few months or years could hardly able to sell out their products. Only in some of the institutions, few number of industries carry out on campus placements towards terminal stage of courses; needless to mention that institutions who educate students should provide right and adequate pathways so that gross unemployment problem could easily be dealt. Right to Information (2005) and Right to Education (2009) are two potential instruments that will

transform the educational delivery and employability in state/central government institutions but private institutions are kept away from the ambit of RTI. Since private/self-financed intuitions provide education and run business based on the demand of public, adequate educational delivery and proper placement will continue to be major activities that will make private institutions sustainable.

Currently secondary and higher secondary schools fail to provide career counseling, in the absence of which passed out students get no clear pathways for establishing their career. In the future days, government and aided schools (secondary and higher secondary) will have to integrate counselling within their educational delivery. Out of more than 600 Higher Education Institutions in India, and thousands of colleges, NCERT and Regional Institutes of Education have been providing professional school counseling courses, and passed out scholars are placed in some reputed schools and NGOs, and many of these products have no employment. In the absence of school policies either by state government or central government, schools are not able to make counseling part and parcel of school education. This hill of Achilles will soon be abolished since government institutions will be facing challenges from parents and students unions. Instead of deploying/recruiting counselors at school and higher learning institutions, school and educational institutions put pressure on subject teachers to counsel some of students who go away from the mainstream. Education and counseling go hand in hand; teachers could play the role of counselors (given an opportunity) but counselors can hardly play role of teachers. Paradigm shifts in education have warranted overhauling of the entire education system and future days will witness an upward quality enhancement.

Job markets depict discrepant scenarios at national and international level. Middle East and sub-Saharan countries African and Asian countries demand cheaper manpower which

could sufficiently be supplied by India. Educational institutions being established in some states demand manpower from adjoining or neighboring states. The interlink between states within our country and international relationship between nations has become absolute to bring amicable changes in our economy.

Keeping above cited trends in Indian education in view, it may be concluded that efforts of the state and central government vested in education in coming two decades (from now) will decide fate of the nation in terms of its improved GDP and per capita income; and undoubtedly India will shine across nations of the world by 2050 provided the current trend of social growth and institutional development is consistently led by scientific and technological innovations.

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