

### **RESEARCH ARTICLE**

# PANDEMIC PARADIGM: BOOTING NATIONAL EDUCATION-STACK WITH PRAGYATA SUBJECT: EDUCATION

#### Sudhir Khullar

Post Graduate Teacher [English], Atomic Energy Junior College, Anushaktinagar Mumbai-400094.

#### Manuscript Info

#### Abstract

*Manuscript History* Received: 25 June 2020 Final Accepted: 30 July 2020 Published: August 2020

Key words:-

Management, Administration, Policy, Cloud-Infrastructure, Psychological Constructs, NEP-2020

An unprecedented pandemic which broke through malevolent vents to lockdown the planet, has gradually crept like a devil into our daily chores and livelihoods. It has compelled us to adopt a new normal of masking, sanitizing, distancing, shielding and ultimately, digitizing work. Digital India - 'Power to Empower' is the wherewithal. Education sector had already taken such empowering steps forward. Faculties and resource persons conduct FDPs to upgrade teachers with appropriate psychological constructs. If it's a stopgap digitization vis-àvis screen-time and seemingly incorrigible internet habits, let's, on the contrary, empower it further (as Plan-B) unto zSpace of augmented and virtual reality because attitudes are changing - misinformed educational content is being speedily replaced with high quality content, assignments, tests and evaluations as teachers have stepped in. A deliberate question was asked to students: 'Draft dialogues between you and your friend while discussing about the benefits of On-line classes'. The responses retold that learning was pleasant due to comfort zone of time, distance and asynchronous learning. Limitations were screen-time and connectivity. A recent survey result published by MHRD, in "Students' Learning Enhancement Guidelines", enlightens us that majority of the states are developing coherent and pleasant learning culture through online classes, and majority of the stakeholders find it joyful. Planners are reducing digital-divides as well as voids between immigrants and aspirant natives. All children must learn. A child-centered Samagra Shiksha, focusing on two T's -Teacher & Technology, must cater to child-specific needs and choices to achieve SDGs 4.1 & 4.5 well before 2030. The new-tech web 2.0 tools must usher in to achieve the expected learning outcomes pending since Kothari Commission and to salvage public, private and government schools / Boards from academic inequalities. With technology-driven, limited centralization to realize federalism, a unique diversity can be uniquely stacked.

\_\_\_\_\_

.....

Copy Right, IJAR, 2020,. All rights reserved.

## Introduction:-

The motivation to write this paper had come after perusing some research works:

**Corresponding Author:- Sudhir Khullar** Address:- Post Graduate Teacher [English], Atomic Energy Junior College, Anushaktinagar Mumbai-400094. 1. Partha Pratim Ray / Indian Journal of Computer Science and Engineering Vol. 1 No. 4 340-352, 'WEB BASED E-LEARNING IN INDIA: THE CUMULATIVE VIEWS OF DIFFERENT ASPECTS'

https://www.researchgate.net/publication/49616230\_Web\_based\_e-

learning\_in\_india\_the\_cumulative\_views\_of\_different\_aspects

2. Online Education In India:2021, A study by KPMG in India (May, 2017)

https://home.kpmg/in/en/home/insights/2017/05/internet-online-education-india.html

3. Evaluation of Evidence-Based Practices in Online Learning, A Meta-Analysis and Review of Online Learning Studies. https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

**The motivation to present** this paper as an extension of idea has stemmed from generalized observations and intensive teaching experience to predict the future outcome of post-pandemic Indian Education System. *Plan-B is required.* 

# NOTE: The proposed digital infrastructure is of seconding nature to keep us pandemic-ready. A robust, formal and uniform virtual multimedia platform can't replace a real classroom setting of lively interactions and 'Learning By Doing'.

- 1. HTTP and suite of protocols are information-givers to the next generation learners at a faster rate. It often becomes doubtful whether the students are able to process information flood as per the Sternberg's information processing of encoding, inferring, mapping, applying, justifying and responding at the same rate (*P-288, Advanced Educational Psychology, S.K. Mangal*). Can one child, one teacher, one book and one pen, as quoted by Malala, really change the world? In the abundant world of knowledge workers it's still an arcane debate as to who will help students to differentiate between a codified 'Know what' or 'Know why', and an **uncodified 'Know who' or 'Know how'**? The answer is one 'Educators'. Irrespective of screen-time and connectivity as the major problems now, the correct on-line teaching with correct knowledge and correctly blended techniques by the rightful deliverers can sustain the new normal. "New technologies involving artificial intelligence, machine learning, block chains, smart boards, hand-held computing devices, adaptive computer testing for student development, and other forms of educational software and hardware will not just change what students learn in the classroom but how they learn, and thus these areas and beyond will require extensive research both on the technological as well as educational fronts". In-text: (NEP-2020, P-56).
- A survey on joyful outcome of online experience on higher secondary students mentioned mixed answers on 2. 'Nays', 'Ayes', 'Both' and 'can't say'. The reason for 'Nays' were mostly attributed to either their preferences for real classroom settings / blended models or their needs for sound platforms of accessibility for good attention span, but more screen time to e-learning causing psychologically stressful health issues has to be critically pondered with respect to learners' engagements with social-media and other learning applications. Blended models can be the first step towards national 'Education Stack' running in tandem with comprehensive revival plans. Many teachers and learners don't find any bad effect on teaching/learning through virtual platforms, on the contrary, they believe them to be fast, concise and accurate with right referential resources across the globe. For the best accountability, affordability, equity and quality in education sector, this value addition is possible, situation is apt, by digitally streamlining the sub-district level resources like VECs (the weakest link) and DIETs' database alongside MIS with a comprehensive grade-subject-assessment-wide NROER, collaboratively researched and administered by NCERT (AAC), NCTE, NIE, RIEs and CIET, together-with all State Apex committees and all Boards, for implementation of continuous learning plans and to refill cluster-centric learning gaps. The on-site support must change to on-line support. The code of conduct and ethics must step-up to refine reflective values. Under the guidelines of National Technology Group of the proposed National Educational Technology Forum (NETF: NEP-2020, P-56 & 57) NROER's Master Resource Pool can deliver learning till the grass-root adequacy through states' respective SROERs (to be proposed and planned). Systemic Knowledge dissemination through center-state cloud interactions will then become more important than a static information tank; guality tools will become more important than a formal quorum/ quantity. Free Software Foundation [FSF] of India and merged OERs will have the power to eliminate proprietary services. Quoted herewith is an open letter of FSF to KITE on 11/07/2020: https://fsf.org.in/news/proprietary-apps-in-schools/

#### Literature Review:-

Constitutionally mandated educational obligations under Articles 15 (1) (3), 21-A, 45, 46 & 51A(K) which are
piloted by MHRD - to reform, direct and equalize education opportunities to all the stakeholders and to fulfil
integrated systemic approach towards Samagra Shiksha - will require bigger and compartmentalized (clustercentric) clearing houses in cloud computing interface to disseminate customized content to learners in locations

ranging from cities, towns and villages to the Special Education Zones. For this, the apex planners like NUEPA, SIEMATs, CABE, EdCIL, CIET-NCERT, SIETs, SCERTs, DoSEL, & NCTE will then be devising new collaborative action research and innovations to affect synchronous/asynchronous academic structures for quality assurance. New CPD models will thence create a novel impact on practice. Adopting ODL models like Canada's (TRU-OL) or SWAYAM from elementary to higher secondary levels can serve as pillars of the new education system and as bulwark against future pandemics.

- 2. Verbatim: 'Platforms (especially online platforms) will be developed so that teachers may share ideas and best practices. Each teacher will be expected to participate in at least 50 hours of CPD opportunities every year for their own professional development, driven by their own interests'. (NEP-2020, page 22)
- 3. A draft report on 'Approaches to School Support and Improvement', submitted to MHRD in June 2011 by the 'Committee to Suggest Indicative Operational Guidelines for Strengthening and Revitalization of Sub-district Level Resource Centers', shows the limited scope of BRCs and CRCs, involving more legwork than actual focus [Pages 7-9, 14, 21 & 22]. As per the data captured and published by SCERT Sikkim, two tables detail distance and job objectives:

A. http://teacher-ed.hbcse.tifr.res.in/documents/brc-crc-guidelines [Reference only]

B. http://www.scertsikkim.in/upload/1488614954Analysis%20of%20Role%20of%20BRC%20in%20Sikkim%2020 17.pdf Table 1 A & B



As per the data collected, 8 schools in Sikkimare within a distance of 10 km to 15 km from BRC. About 6 schools are within ½ km to 5 Kms from BRC. 4 out of total 31 are within the reach of 5 to 20 kms from the BRC and 9 of the schools are at the distance of over 10 km from BRC. 3 mmbers of BRCs are located at the distance of 25 to 30 kms and one BRC has schools at a distance of 40-50 kms under its jurisdiction.



The chart shows that 13 BRCs understands the job objective to be school visits and impections only. About 6 BRCs take their job objective to be attending grain Sabha meetings and 6 BRCs understood as attending school programmes and meetings. 6 BRCs know their job an collection of school data and reporting. 3 BRCs understood their job as conducting and attending meeting with the coordinators and SMC. 3 BRCs are of the view that their job objective is monitoring mid-day meal, organising teacher training, monitoring academic purposes and giving information's and gost, circulars to the HMs.

It is observed that there is no defined job chart and objective for the BRCs in Sikkim which could act as guidelines in their smooth functioning.

Source: SCERT-Sikkim document 'Analysis of the role of BRCs in Sikkim, pages 9 & 10.

Though there are around 6,500 BRCs and 69,000 CRCs performing as Lok Jumbish or Shiksha Karmis etc., much of their acumen is to be realized. It can be done through multilevel administration, capacity building techniques using web tools and with integrated block and cluster development (IBCD) roles meant for all schools - government, private, PPP and for all Boards. **FLOW CHART-1**:

#### Abbreviations:-

- 1. MHRD: Ministry of Human Resource Development [Ministry of Education]
- 2. CABE: Central Advisory Board of Education
- 3. NUEPA: National University of Educational Planning & Administration
- 4. CIET: Central Institute of Educational Technology
- 5. NCERT: National Council of Educational Research and Training
- 6. MeitY: Ministry of Electronics and Information Technology
- 7. NCTE: National Council for Teacher Education
- 8. NTG: National Technology Group
- 9. NROER: National Repository of Open Educational Resources
- 10. TDIL: Technology Development for Indian Languages

- 11. SCERT: State Council of Educational Research & Training
- 12. SIET: State Institute of Educational Technology
- 13. SROER: State Repository of Open Educational Resources [To be proposed & planned]
- 14. PPP: Public-Private Partnership Model
- 15. CEO: Chief/Circle Education Office/r
- 16. DEO: District Education Office/r
- 17. BEO: Block Education Office/r
- 18. IBCD: Integrated Block & Cluster Development
- 19. VEC: Village Education Committee
- 20. SDMC: School Development & Monitoring Committee
- 21. JC: Junior College
- 22. MIS: Management Information System
- 23. PRAGYATA: Plan-Review-Arrange-Guide-Yak-Assign-Track-Appreciate



A repository, not only of comprehensive ICT material but also of students' IEPs/IERs with Permanent Education Report Number [PERN], from 'ONE' nodal agency/ administrator, can deliver innovation, flexible resources and scalable services to all states for further contextualization/customization for the targeted/mapped schools, ultimately the remotest stakeholder, through cloud-based storage, servers, software and to YouTube-like analytics/engagements. PODSCORB, read with PRAGYATA, can become easier at each level with due respect to cost (sharing 60:40 - server-less, IaaS, PaaS & SaaS), investment (phased manner), scale, performance and teaching-learning assessment. Mobiles, tablets, radio/TV (till digital infrastructure is installed), video-conferencing, streaming, integrated and collaborative team teaching, chat-rooms like Microsoft teams, Google Meet, Webex etc., blogs, interactive whiteboards and satellite learning will connect to a subsumed national EducationStack like DIKSHA. JAM trinity and in-kind DBT with necessary E-UCs can eliminate allocation/budgetary problems for connecting online VECs with the apex bodies as well as their respective online IBCDs to access/assess ground reality. Conclusively, an online education plan may require on-site points for reasons like examinations or supervisions; the critical challenge will then be vested upon the multilevel administration on how it researches to bring equilibrium with respect to blended teaching/learning, energized textbook, mentoring groups, serving LDLD/NDLD learners, science-boxes, mobile libraries or content delivery at homes, and tracking continuous learning programmes under 'Alternative Academic Plan' within spatial mappings! It will exceedingly bloom out to a full circle while preferring, realizing and redefining constituent-specific team-roles efficiently, as asked by MHRD and answered by the states in point numbers 61 & 62 in page 13 of MHRD Learning Enhancement Guidelines. https://www.mhrd.gov.in/sites/upload\_files/mhrd/files/Learning\_Enhancement\_0.pdf

#### Strengths & Opportunities:

#### **One-time-investment:**

With its bold step towards 'Aspirational India', the SMSA will adopt OECD-like model by investing 4-5% of the budget in education sector. Web-based tools and applications will be the right investment in phased manner for strengthening digital infrastructure with some terminology comprising 'fees' replaced with bespoke 'user charges' as per the norms already laid in fee/fund structure. Maintenance contracts, cloud-pricing and peer review of grants-in-aid allocated by MHRD for the upkeep, cost, speed, system and cyber-security can be governed as per the rules under 228 - 245 of the GFR - *a matter of separate research*.

#### A comprehensive cloud-based authentic repository:

A learner's android/tablet can access valuable programmes without being in a specific location. The back-end repository authority (NCERT/SCERTs) can analyze and scale respective services as per the specific needs. The repository/ies, in their respective hybrid clouds, can be re-pooled, overlapped, extended, re-edited, reviewed, assorted, updated and channelized as per the e-content contributions by the selected educators from the centre/states. The selected educators can be from those amongst the teachers who pool all the best e-contents to integrate topic-subject wide presentations in the multimedia formats. All teachers will strive to present their best content under the guidance of IBCDs. The on-premises private cloud service of specific Boards/States can automate data dissemination/streaming to the sub-district level management using 'Lite' versions of workstations.

#### **Quality and Equality:**

There is no single platform which gives equity to all stakeholders. For example: DIKSHA VidyaDaan could not yet include all the state boards' contributions, whereas, **Education-stack will integrate with the SMSA. Verbatim**-'The Scheme will help improve the transition rates across the various levels of school education and aid in promoting universal access to children to complete school education. The integration of Teacher Education would facilitate effective convergence and linkages between different support structures in school education through interventions such as a unified training calendar, innovations in pedagogy, mentoring and monitoring, etc. This single scheme will enable the SCERT to become the nodal agency for conduct and monitoring of all in-service training programmes to make it need-focused and dynamic'. **In-text: http://samagra.mhrd.gov.in/about.html** 

Inequality in skills, adequacy and interactivity can be wiped out by constructing a universal platforms like EkStep and DIKSHA.

#### Efficiency in school management and innovations in teaching:

The on-line streaming can give insights, investigations, interpretations and critical analysis of educational reforms in the centre as well as states. It will give faster inputs for an effective management and quality outputs. Innovations in teaching will be aptly noted, incentivized/rewarded. Reformation by supervision on institutional climate, *students' attitudes, counseling, collaborative community/CSO participation, group dynamics and local level administration,* can be implemented more efficiently. Online assessment using specific questionnaires or Organizational Climate Description Questionnaire (OCDQ), Halpin and Croft model can be designed for getting a true and instant feedback on integrity, excellence and morale.

#### Learners' needs are catered well:

Concurrent physical consolidation of annual planning and its review - *from clusters to districts, then states to centre* - is a tortuous task with little accountability. Curriculum designing, infrastructural requirements, quality and equity jointly focus on enrolling and retaining learners. The recent survey by MHRD 'Learning Enhancement Programme' has shown that most of the states have yet to map exact data on LDLD/NDLD learners. Their survey also shows that students' online experience is joyful. With proper spatial mapping and DISE, the local administrators can locate and register schools with the central cloud. Almost all the central programmes - *the creative and critical thinking programmes, skills, AIL etc.* - can be accessed and displayed online across the states. All learners will enjoy equal '**Right to Know and Do'** in multilingual formats, and can attempt online tests - fair competition. Analytics and engagements with the online projects will keep pan-Indian peers 'in loop', and give them unique platforms for showcasing their respective talents to garner appreciations and rewards. Schools will start using indigenous hub of teamwork designed on par with 'Microsoft Teams' which would serve students/teachers with e-notebooks, collaboration space, content library, SharePoint, chats, bots, screen-sharing, presentations, assignments, on-line tests (like MS-365 Forms), scheduling classes etc. Integrated BRCs/CRCs - IBCD can pool school level test papers in each subject area for each grade.

#### **On Mission Mode: Verbatim:**

'School Education has been included as a Mission Mode Project (MMP) under the National e-Governance Plan (NeGP) by the Apex Committee for the NeGP. The MMP is focused on Primary, Secondary, and Higher Secondary education. A MMP by design has to cover a multitude of stakeholders in the ecosystem and arrive at a set of stakeholder centric services that have a measurable outcome/ impact over an agreed project time-frame.' In-text: Detailed Project Report for School Education MMP – Draft Copy, Project Background, Page 9

The connotation of Point 25 in the List III [concurrent list] in the 7<sup>th</sup> Schedule under Article 246 empowers centre as well as the states to jointly agree, focus and participate in channelizing quality education for the learners though innovations and skilled network undisputedly tilt towards the center.

#### Weaknesses and Threats: For a limited period -

- 1) **Data breaches**: Data may fall victim to natural disasters, internal bugs and hackers, but encryption keys will be in the hands of rightful authority NROER/CIET/SCERTs.
- 2) Wireless 4G: With 54.29 % internet users, India is pegged at the 2<sup>nd</sup> position, next only to China. As per the National Digital Communication Policy, NDCP-2018, India is in-the-making of rural optic fibre to connect 600,000 villages with BharatNet; also is committed to its 2022 goals of providing universal connectivity at 50 Mbps to every citizen and 1 Gbps to all Gram Panchayats. Every effort is being taken by several NGOs, CSOs and CSRs to extend internet literacy till the remotest location.
  - https://dot.gov.in/sites/default/files/EnglishPolicy-NDCP.pdf

#### ECCE/ICDS & MDMS not included:

Digital infrastructure is **plan-B.** ECCE will resume post-lockdown. MDMS can provide dry ration to learners with online/offline attendance compliance.

#### **Realization of Samgra Shiksha:**

It will be the toughest challenge to streamline Individual Education Plans & Reports [IEPs and IERs] but will give a permanent solution to the learners like SEDGs and CSWN or to the learners in Special Education Zones when they'll access their learning kits in multilingual formats. New Web 2.0 tools can be designed to engage inclusive learning atmosphere in virtual classes; the next generation belongs to them too! Community radios and audio files can be shared with SEDGs as written in page 7 of PRAGYATA guidelines. For CSWN:

NIOS has developed more than 270 videos in sign language across 7 subjects to provide educational access to learners at secondary level and Yoga courses. Videos can be accesses at https://www.youtube.com/playlist?list=PLUuOqp8QaNB1SkqZURX0RGcaomsPfkDsI Intext:PRAGYATA **Guidelines** Page-37

Several education commissions recommended restructuring and equalizing education opportunities, specially for the marginalized children, also building excellence in the educational system to meet the knowledge challenges of the  $21^{st}$  century. What we sow today will belong to the future societies and their holistic development.

#### Not an antidote or panacea:

The digital infrastructure of cloud service can be a plan either in the offing or a NITI implementation plan by 2030. It can be a support system with blended teaching-learning initiation as its first step. The 2021s' is going to step into a new era of education.

#### **Discussion And Conclusion:-**

Post-independence, several commissions (1948, 1952, 1964-66, NPE-1968, 1986 & POA 1992, NCF-2005 and NEP-2020) have been appointed to survey, study, review and recommend improvements in the different sectors of education. Each commission advocated for equity and quality education for all. It's time to be cloud confident in the changing classroom scenarios. It's time also to redefine and restructure task forces at each level with due respect to NPE1968-1986-POA-1992, UCF-2005 and NEP-2020. All the levels of administrators - *ministries, deputies, Secretaries, Directors, CEOs, DEOs, BOs, BRCCs, CRCCs and VECs* have one vision and mission i.e. to implement NEP-2020 in due course of the next decade. An action task force of academic-technical machinery can resolve and refill education gaps. Though watertight e-learning models and IoT with UIDs can't create a Utopia for myopic vision, a phased and strategic national education-stack can do such miracles in the next decade, which several

previous policies and plans of action couldn't show in the past decades. Though prior and the present researches have shown mixed results of the experimentation conducted on students to find the effect of offline/online mode of learning, it's evident that due to the advent of social media and information flood, the digital natives win; it's a transition phase of millennial changes in teaching learning techniques, so it'll take due course of time. The gradual widening of open schooling, blended models and ODLs will give specific choices to the learners, and assessment will shift from the textual to the highly objective learning in order to acquire learner-specific skills.

The role of teaching is to provide an opportunity to each child to learn to the best of his or her ability and provide learning experiences that develop cognitive qualities, physical well-being and athletic qualities, as also affective and aesthetic qualities. In-text NCF-2005, Page 75.

The evidences and generalized conclusions in favour of national Education-stack stem from news, articles, projects and innovations galore. Each ecosystem has a web of links, presentations and packages. The new normal is yet to disseminate the mentoring tools and techniques for the educators and the learners alike. Psycho-pedagogic experiments have not yet gifted us accurate results as to how can't a positive learning atmosphere intervene to alter internet habits of learners devoting several hours to chatting and surfing!

One nation, one technology policy can help each stakeholder to understand the constitutional value of cooperative and competitive federalism **to uphold and grow.** 

#### **References:-**

- 1. Mangal, S.K. (2002) Advanced Educational Psychology
- 2. NEP-2020
- 3. Open letter of FSF, India to KITE, July 11, 2020: Web-link: https://fsf.org.in/news/proprietary-apps-in-schools/
- 4. A draft report on 'Approaches to School Support and Improvement', June, 2011Web-link http://teachered.hbcse.tifr.res.in/documents/brc-crc-guidelines
- SCERT-SIKKIM 1488614954 Analysis of Role of BRC in Sikkim (2017) Web-link: http://www.scertsikkim.in/upload/1488614954Analysis%20of%20Role%20of%20BRC%20in%20Sikkim%202 017.pdf
- 6. Learning Enhancement Guidelines, MHRD (August 2020) Web-link:
- 7. https://www.mhrd.gov.in/sites/upload\_files/mhrd/files/Learning\_Enhancement\_0.pdf
- 8. PRAGYATA Guidelines (July 2020) Web-link: https://www.mhrd.gov.in/sites/upload\_files/mhrd/files/pragyata-guidelines\_0.pdf
- 9. Samgra Siksha (2018) Web-link: http://samagra.mhrd.gov.in/about.html https://education.stateuniversity.com/pages/2392/School-Climate.html
- 10. Detailed Project Report for School Education MMP: Web-link https://www.mhrd.gov.in/sites/upload\_files/mhrd/files/upload\_document/Education%20MMP.pdf
- 11. NDCP-2018 Web-link:https://dot.gov.in/sites/default/files/EnglishPolicy-NDCP.pdf

   12. Intext:
   PRAGYATA
   Guidelines
   Page-37

   https://www.youtube.com/playlist?list=PLUuOqp8QaNB1SkqZURX0RGcaomsPfkDsI
   Page-37
- Partha Pratim Ray / Indian Journal of Computer Science and Engineering Vol. 1 No. 4 340-352, 'WEB BASED E-LEARNING IN INDIA: THE CUMULATIVE VIEWS OF DIFFERENT ASPECTS'
- 14. https://www.researchgate.net/publication/49616230\_Web\_based\_elearning in india the cumulative views of different aspects
- 15. Online Education In India:2021, A study by KPMG in India (May, 2017)
- 16. https://home.kpmg/in/en/home/insights/2017/05/internet-online-education-india.html
- 17. Evaluation of Evidence-Based Practices in Online Learning, A Meta-Analysis and Review of Online Learning Studies. https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf.