Impact of Technological Deprivation and Covid-19 on Education and Possible Emergence of a New Knowledge Deprived Group in India

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Abstract

This paper investigates the technological readiness and the consequence that could emerge if the appropriate and calculative efforts are not taken in time. A sudden emergence of a pandemic situation as Covid-19 resulted as a major blow specially to a country like India in terms of economical and which in turn affected educational flow. There was a sudden break in the teaching and learning process in educational institutions. Educational institutions in India are closed since march 16 2020 and till this paper has been written the education institutions are yet to open affecting more than 286 million students. The concern to continue the practice of teaching and learning led to the demand of shifting to an online system and this came in a period when the country was least prepared. The country is yet to complete the infrastructure as the report also stated that only 24% of Indian households have internet connection. Finally this paper put forth some suggestions that can be implemented to deal with the aftermath of technological Deprivation.

Terms:

    Covid-19, Pandemic, Digital Divide, Deprivation, Education, Online education, Educational Platform.

Introduction

India is a huge country. Its total area is 3.287 million km². It consists of 29 states and 7 union territories. With a very different set of cultures and traditions. To a nation already reeling under a poor Human Development Index (HDI) as compared to the developed countries the COVID 19 pandemic struck as a thunderbolt. It was disastrous to all the endeavours to improve the HDI.

In recent years the communication technology has recorded a rapid exponential growth, this growth has eased the level of communication and with the integration of new technology called the internet in general spheres of life revolutionized the way humans interact with each other. This change definitely shrunk the physical distance between people but introduced a concept called **Digital Divide**[1]**.** The term Digital Divide was coined by Lloyd Morrisett. By this term he meant a difference in access to technology among socioeconomic groups. Majorly Digital Divide is the result of economically weaker sections of the society, Poverty, socio-economic inequalities does contribute to denial of access to the resources. Relentless efforts of policies around the world including the efforts of UNO has resulted in reduction of socio-economic inequality. The divide has significantly reduced due to the efforts of the government, international bodies and social organization. It

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[1] The term Digital Divide was coined by Lloyd Morrisett. The terms means a difference in access to technology among socioeconomic groups.(https://wiki.p2pfoundation.net/Digital_Divide)

cannot be denied that there is still a huge divide as the major share of opportunities goes to the economically stronger section and while the weaker section struggles to meet their end.

No doubt the Covid-19 pandemic rather placed all the sectors in a deep chaos and uncertainty causing loss of economy, and noticeably impacted the education sector. It exposed the weak infrastructural preparation and methodology for online education. The news reports, and various survey data also highlights that 43,088 villages *(Press Trust of India, 2018)* mobile connections, despite 100% electrification claims of the government, many households lack stable electricity. Lack of investment in technological infrastructure and insufficient training is observed in various reports, though there has been investment and preparation for the digitization of resources as observed in the efforts of the Ministry of Education.

The integration of technology in education revolutionized the way an individual accesses and propagates knowledge throughout the learning community. It has brought in an actual sense of freedom to know, understand and express without boundary. Educators and learners both benefit from these technologies when placed in systems and regulated. The potential to ease the exchange of information placed internet technology at the centre stage in the communication system. Like major developed countries the government of India is also pushing toward the digitization of education.

Objective

- To Highlight facts on unpreparedness in starting online learning among educational Institutions.
- To define technological deprivation in connection with the teaching and learning process
- To explain why there is a possibility of emergence of New knowledge deprived group
- To suggest solutions that can be implemented to bridge/reduce the impact on Covid-19 caused knowledge deprivation.

Govt Initiative towards Digitization of Education

The need of technological infrastructure in education was not felt as it should have been till the outbreak of Covid-19. Yes,there have been steps taken by the Government of India to promote digital education, efforts to make availability of educational resources through various platforms but concerted effort was not made and therefore India was found unprepared. True programs were in place through the National television "Doordarshan", the radio, youtube and without denial they were pretty successful and effective in reaching out to the rural areas. Recently the Ministry of Education had launched the Swayam and some other programs but it fell far from being adequate to meet the needs of the nation.

SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) launched in 2015 offers study materials, Videos, Discussions and online tests has given an opportunity to many to get enrolled in their choice of courses and get professional certificates upon completion. Shagun: Integrated Online Junction, an initiative by the Ministry of Education to improve the education system, by integrating various junctions in one platform. It is designed to improve quality education and for online monitoring of Sarva Shiksha Abhiyan (Ministry of Education, n.d.).

Shagun facilitates platforms like DIKSHA, e-PG Pathshala and NROER[2]. DIKSHA[3] is a portal for teachers to access worksheets, lesson videos, assessment and other materials required for students *(*Government of India, *n.d.).* e-PG Pathshala playing an important role providing an online portal for postgraduates started by the Ministry of Education under NME-ICT (National Mission on Education through ICT) providing more then 700+ ebooks and instructional videos *(Ministry of Education,* n.d.*).* NROER is a repository house of educational content launched in 2013 with the aim to bring resources under a roof. This platform provides educational resources, encourages teachers to be part of online courses and prepare and run their own courses as well.*(Yadav,2014).*

These educational platforms were no doubt a beneficial tool in the hands of teachers and students, a great effort towards filling the gap during the covid-19 lockdown in India. The efforts of Ministry of Education towards reducing the gap and looking for equity was highly appreciated through the PM evidya program during Covid-19 lockdown.

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[2] National Repository of Open Educational Resources
[3] Digital Infrastructure for Knowledge Sharing

Pandemic Lockdown and online education

Lockdown due to COVID-19, was a necessity to reduce and break the spread of the virus among citizens. The students were at high risk as the sociability is very high among the students. Initially there was no certainty of how long the lockdown would continue because data was not adequate. The Ministry of Education constantly monitored the situation and provided guidelines to educational institutions. The ministry also encouraged teachers to get in touch with students to encourage them during their isolation period and help cope up with this unprecedented situation.

The Ministry of education also instructed educational institutions to continue teaching and learning through the use of ICT. It was also advised that students should be informed about the various online Govt resource portals to continue learning.

The Schools, Colleges and University took the advice of the Government and worked on preparing the infrastructure required for online classes. The training sessions were conducted to ensure that teachers learn the online mode of education. This training helped teachers but put pressure on teachers as they had to learn to be efficient in computer skills and operation of tools like live classes, recording lectures, sharing huge files through cloud based drives. This was particularly exhaustive to the non-technical teachers, mostly older generation, who deal most of their work offline and more comfortable with the hard copies around.

Some major concerns in terms of Online Education and Pandemic Lockdown are listed below:

1. A study done by ASSOCHAM and Primus Partners Pvt. Ltd.(2020) Covering 466 students and 483 teachers concluded a very alarming figure of both structural and professional unpreparedness towards online teaching and learning.

   In terms of structural preparedness the survey concludes that alarmingly 64% of students and teachers didn't have access to resources.
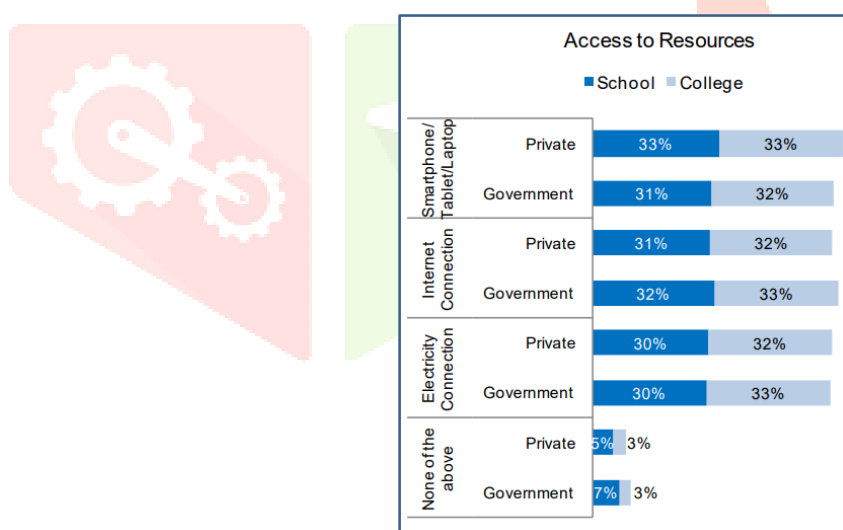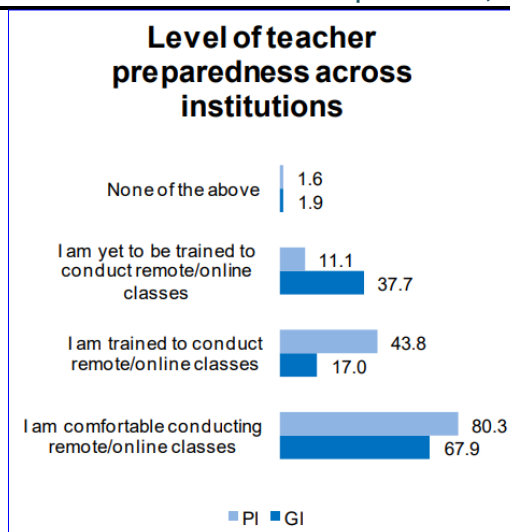

Source: ASSOCHAM and Primus Partners Pvt. Ltd(2020)

2. Regarding the professional preparedness among teachers Specifically in the government institution(GI) is a matter of concern, While Private Institutions(PI) have relatively better figures.

   As per the report of *ASSOCHAM and Primus Partners Pvt. Ltd (2020)*:
   - 37.7% of teachers(GI)responded as they are yet to be trained to conduct online classes in comparison to Private Institutions (PI).
   - 17% (GI) and 43.8%(PI) teachers claimed that they are trained to conduct online classes.

Level of teacher preparedness across institutions

	PI	GI
None of the above	1.6	1.9
I am yet to be trained to conduct remote/online classes	11.1	37.7
I am trained to conduct remote/online classes	43.8	17.0
I am comfortable conducting remote/online classes	80.3	67.9

Source: ASSOCHAM and Primus Partners Pvt. Ltd., 2020

3. The NCERT survey also confirms the need of the swift and sudden transition to online mode of teaching with no or very less technological knowledge and online teaching methodology. The survey covered 34,000 participants which included students, teachers, parents and principals from various schools. *(Nagari, 2020)*.

4. There is a huge lag in preparedness in the incorporating of technology in education.The lack of working knowledge of computers, inefficiency in using digital teaching tools, insufficient knowledge of working with online materials, cloud based sharing etc. are the concerns that can be handled with adequate training. The proper monitored training definitely will encourage teachers and students to gain confidence in the teaching and learning process. As rightly addressed by *König et al.(2020)* It's not only about knowledge and skills but confidence plays an important role and confidence comes with familiarity.

5. With the sudden unplanned closing of educational institutions, the pressure of uncertainty about reopening and physical offline classes brought up concern to parents, students and teachers. Many students feared that they might lose the academic year. In order to carry on the teaching, the teachers were asked to move to an online mode of instructions. As discussed early this brought pressure to teachers to adapt and understand digital platforms in limited time. The quality of online mode of teaching required know-how, infrastructure and finances. With invoking lockdown there was a sharp decline in flow of funds and as per the reports by many news portals *(Baruah, 2020)*, many private schools suffered heavy financial difficulties as parents could not afford to pay the fees. Schools were forced to shut down as they could not afford to sustain due to financial crunches *(SP , 2020)*. The lock down forced people to stay home, with limited finances at hand and the family priority became arranging food for the family. The investment in education becomes secondary when families are hardly managing to feed themself.

6. The step towards teaching through the digital medium was the only preferred medium that granted safety of students. The digital mode of teaching requires all stakeholders but the biggest challenge was the affordability and accessibility to the resources.

7. The other key concern is availability and accessibility of electricity in various parts of India. The common understanding is that any digital device requires power supply. The citizens dependency of power supply is on government, as the central government and state government controls the development. The fact is even after seventy-four years of independence of India, lack of electricity is also a major problem in various parts of India, as all the digital medium requires power supply. The government has made efforts to reach every nook and corner of the country. *D'Cunha (2018)* writes that the Government has made claims to have 100% electrification in India. The work is not complete yet, the condition on which the claims made is based on if 10% of the village household was considered electrified. *Dsouza (2019)* called it a limited success due to various reasons.

8. *Kundu (2020)* under highlighted titled Digital Divide raised concern about digital infrastructure accessibility in India, and reports that only 8% of individuals within the age group of five to twenty-four have computer and internet connection, and not necessarily that they owned the devices. This article

headlines a very strong statement which says *"Indian education can't go online – only 8% of homes with young members have computers with net link."*

9. Another key area of major concern is availability of high speed data connection. The various content available on web and Media libraries (Netflix, Amazon Prime, Youtube etc), requires a High speed and stable connectivity in order to stream in high quality. The unstable internet connection causes delays in reception and distorts the material quality, which hampers learning and losing focus in learning, it can also create frustration and confusion when the audio breaks and images take time to download. The report published by Ericsson in 2016 and quoted by Moon(2016) highlights that delay in streaming online content can raise a significant stress level and heart rate by 38 %. The individual starts to show lack of interest and sign of resignation and distraction.

Essence of Formal Education

Any educational curriculum is always designed in a way that it caters every aspect of learning that is possible. It is also designed in a way that holistic development is achieved *(Stabback, 2016)*. The standard curriculum considers the age and learning capabilities of a child *(Mallick, 2012)*. Concepts are broken down into simpler to complex form. In Each grade a student is expected to learn certain key concepts to proceed further and then the curriculum offers a slightly complex form of concepts. The learning activities are carefully ordered in a sequence so that it fulfills the learning outcome in each stage *(Physicscatalyst ,2018)*. Clark (1995) comments*"Proper sequencing also helps to avoid inconsistencies in the content of the instruction"*. This organized structure then becomes stepping stones for further learning. Building a strong conceptual base is a need of the 21st century. *Wathall (2016, p.2)* referring to Daniel Pink states that, we live in a conceptual Age and this age requires individuals to have skills like critical thinking, problem solving and adaptation to a new environment.

A clear concept will definitely enhance students to transfer their learned skills and work through new challenging situations. According to a study conducted by Gao and Bao in 2012 found that there is significant increase in understanding and transferability of knowledge if the concept is grasped well *(Wathall, 2016, p.3)*. The clear concepts in each stage generates interests in students to take education wholeheartedly. Students show interest in attending classes and show desires to learn next concepts. The love towards the subject increases. Eventually develops the skills sets intended as per the objective of the curriculum.

Critical thinking, problem solving, Collaboration, Communication and adaptability are the top searched skills the employer seeks in the 21st century. *Wathall (2016 cited Hart Research Associates, 2013, p.3)* Skills like Scientific analytical skill are very helpful for an individual to get accepted in millennial society. Acquiring these skill sets takes time. It has various stages, through which an Individual needs to go through. Skills can be learned in two basic ways first by experience and Second by formal training. Acquiring skills through Experience takes time as the skills were not programmed and thought process wise, there are high chances that the person will miss some concepts. For example we would not trust a person who is a self-claimed surgeon or just learned through experience to operate on us.
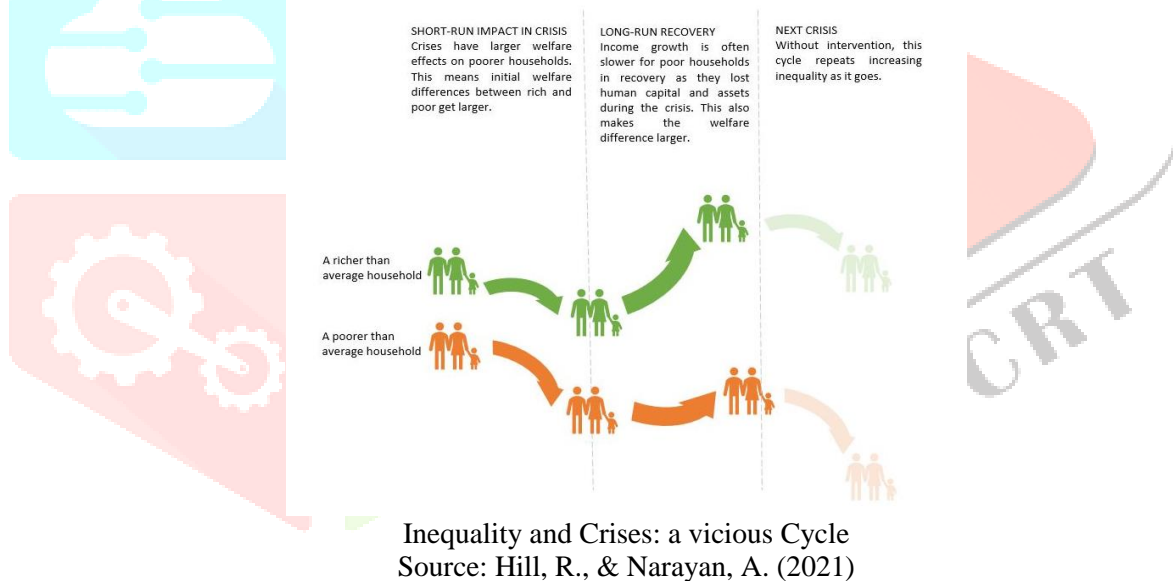
A Formal training is designed in such a way that each and every aspect of the training is covered. The trainee is not allowed to take a short cut, because there are concepts which can be taught at a certain level. For example a Person promoted to do a certain task without clearing a certain important parameter could cause serious damages. A pilot without complete training on a simulator if given to fly could not only endanger his life but his fellow passengers. This proves that a formal education and training is always a preferred way to acquire knowledge. It is observed that people with formal training manage to succeed in productivity and given larger opportunities. This success brings direct economical benefits to an individual economically. Therefore the training institutions and Schools are established in order to bring forth skilled well groomed individuals who would take rational decisions, and be social capital

Possibility of Emergence of a knowledge deprived group

The Covid-19 pandemic is an ongoing situation at hand,and most probably it will be a long haul. It has already broken the backbone of an underdeveloped nation, specially our country's(India) economy with GDP hitting minus growth, which in turn affected all the sectors of our life. The pandemic forced the country to shut down economic activity, which resulted in loss of employment, or loss of salaries. The unorganized sector faced a dead blow, forcing workers and labour to move back to home, the *Press Trust of India (2020)* reported the relative figure to be 10 Million.

Indiatoday (2020) writes that there was a sudden shift from traditional learning to online learning, when the countries like India were least prepared. The format of curriculum needed to be different, and this unpreparedness caused students to be passive learners and lose interest in learning due their low level of attention span. Students on the other hand, were not able to sustain in urban areas as many parents were unable to support them financially. Uncertainty of school/colleges reopening and lack of financial support during the lockdown made their life very difficult. The insolation and distance from family resulted in depression, increasing the suicidal risk among students. Parents faced the trauma of unthinkable worries about their children and with limited income, they arranged finances for their children to return home. With pandemic being far from over, the dilemma within the parents, whether to send their children away from home for studies.

Families below the poverty line and daily wage laborers were hit hard. The families from these categories do not have finance nor the ability to afford schools nor digital devices. it became a choice between managing food, and purchasing essential goods or electronic devices for education

SHORT-RUN IMPACT IN CRISIS
Crises have larger welfare effects on poorer households. This means initial welfare differences between rich and poor get larger.

LONG-RUN RECOVERY
Income growth is often slower for poor households in recovery as they lost human capital and assets during the crisis. This also makes the welfare difference larger.

NEXT CRISIS
Without intervention, this cycle repeats increasing inequality as it goes.

A richer than average household

A poorer than average household

Inequality and Crises: a vicious Cycle
Source: Hill, R., & Narayan, A. (2021)

Inferences can be drawn from many available data, that the learning has been disrupted and students are facing herculean challenges no matter what socioeconomic class they belong to. Based on accessibility patterns these students can be classified into **four categories**.

1. The first one, belongs to the family which are financially sound and live in areas where resources could be accessed easily (High speed Broadband, stable cellular connection, uninterrupted electricity and supportive and well infrastructure educational institutions).
2. The second categories will be the students with sound finances but do not have access to the resources (High speed Broadband, stable cellular connection, uninterrupted electricity and supportive and well infrastructure educational institutions) due to various reasons like, remote locations, geographical trains etc.
3. The third category learners will be the one with a low income family, living in an urban location, with resources floating around, but facing high hit due to pandemic and lockdown, forced to stay home, sharing devices within family members in order to access resources.
4. The Forth categories will hold the students with ultra low finances and no access to the resources whatsoever, the reason being the underdeveloped location, villages without power supply, without cellular tower and effective support from other sources. These categories can be further segregated into two categories. First deprived group who could not attend classes at all and second group who

attended, but the intended curriculum was reduced. The official sites of various boards of India have issued notice of reduction[4] of syllabus by 30%.

The pandemic has not differentiated any class or categories. It affects everyone in one way or another. The worst hit are groups of people, with low income, the sustenance not only becomes tough but the return to stability takes time. The inequalities resulting due the lack of access to resources is felt by educators around the world. *Stolley (2005, p.132)* writes that the impact of stratification (inequalities, social differences) may not be visible immediately, which infers that long term visibility is certain. *Singh and Kazmin (2020)* quoted Karthik Muralidharan *"If you are a first-generation learner, without access to technology and without educated parents, school is everything...If you have lost that, you have nothing. It's almost inevitable that we are going to see an increase in inequality."*

The gap between the haves and the have-nots, the rich and the poor is likely to increase as the young and the low skilled are hit hard. they will lag behind due to lack of knowledge and skill. The loss is more in the lower strata of society, there can be a long term loss for the society. Alarming fact cited *Hill and Narayan (2020)* by this article about the study which conducted among the age group between 14 and 17 years in the year 1916 which show that the evidence " *that the trauma of shock and disrupted schooling adversely affected and produces differences that are observable years later. The vulnerable households in developing nations due to income loss may not send their childrens back to school."*

As discussed earlier in this paper, formal education plays a very important role in each individual's life, it enables human beings to develop critical and analytical skills. Possessing critical and analytical skills can help individuals to make rational judgement, better decision and productive execution, resulting in growth and success in every aspect of life.

The candidates who hold formal education, required qualification and skills are given preferences over those who lack form it. The corporate sector (not limited to corporate sectors) demands skills, only the productive and efficient individuals are hired, they are seen as an asset who could bring profits and growth to the company. Louis Pasteur quotes in this way *"Chance favors the prepared mind''* which holds its ground in the 21st century as well. In the world of high competition, it is only fair that everyone gets a fair chance to equip themself and be prepared for capitalized opportunities. The social inequalities is another evil which is seen growing over the years, depriving the lower strata from equipping themself to compete fairly, and without intervention will deteriorate over time. The learning lag is created by the Covid-19 for the young generation as they lose time in both training and recovering the loss of knowledge will continue, the paying off old debt and carrying forward interest and balance becomes a never ending process can be an analogy from banking world. There is no denying that recovery is possible, but it will require dedication and over-time efforts, again this is in the case of the last three groups, now there is a very big "if" they return to formal education. The ones who will never return, especially in terms of India, whose very large population consist of students, may lack in skill and efficiency to avail high paying jobs and may end up assigned to low paying jobs, which will further delay the efforts to bridge the social inequality gap.

Conclusion

Young people are the future of our county, they make up a large portion of our nation's population. Their well-being should be our priority as they will decide where our nation will stand in centuries to come. A well equipped rational being can take our country towards a better tomorrow, new heights and sustainable future. Covid-19 pandemic has taught us that efforts towards bridging the gap and reducing inequality are one way forward that any country can move on.

The students from all categories no doubt suffered from uncertainty of their degrees, anxiety over isolation, stress and constant fear of getting infected. The blame goes to the inability to foresee the future requirement and snail paced efforts by the world's government policies which got exposed during the Covid-19 pandemic. The result of such insufficient policies caused widening of social inequality and digital divide which brought both the teaching and learning community to a great stress during this period of pandemic crises.

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[4] CBSE/Circular No: Acad 47/2020

Teaching community struggled to find a quick and efficient solution for benefiting their students. Without proper training in digital tools, they spent time and efforts to ease the difficulty of learners. Despite all the possible efforts by the stakeholders of the education system, a huge dissatisfaction will remain in the heart of all the citizens.

There is no justification for the generation who is at loss, due to the lack of preparation and inability to close the wide gap created by various policies. Emergence of a knowledge deprived group is inevitable and all we can do is reduce the impact by any means possible. All the stakeholder will have to collectively work towards bridging the gap.

It will be imperative for the Government of India to focus on adopting some proven successful methods such as three A's form ADII (Australian Digital Inclusion Index) definition of digital inclusion. These three factors refer to Access, Affordability and Ability. Access refers to access to the internet connectivity to every learner. Affordability refers to reducing or supporting students with digital devices and making internet cost cheaper. Government can think of giving subsidies to students to avail devices and internet connection (Hi speed broadband). Ability: providing training so that the online technology at hand can be used effectively *(Temple, 2000)*.

A good portion of the Budget should be invested in teachers development programs which includes training of updated teaching tools and tested effective pedagogical methods for online teaching in school, Colleges and University.

The Government and all stakeholders can work on a war-footing campaign to identify students who were left behind due to digital exclusion and may not return to schools as they have started to work to support their families and Run 3-6 Month monitored coaching with stipend to support their family and education. Use this pandemic experience as a learning opportunity and strengthen the education system and infrastructure not just on papers but on ground reality with careful monitoring.

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