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Position Paper on
The State of Rural School Education
Systems Post-Pandemic

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The ASER 2020 report cites 70% of children as being schooled in Government schools. The same report also notes that the level of learning is very poor in these schools. Partly due to poor quality of teachers, and mostly due to poor pedagogy and cognitive abilities building. The pandemic has significantly aggravated the situation, severely affecting the learning and development of these children.

Prof Raj Reddy Center at IIIT Hyderabad organised a brainstorming meeting to understand the issues, enumerate the needs, and identify the possible solutions. A roundtable meeting on '**AI & Emerging Tech for Grassroots school education post-pandemic**'. Policy makers, grassroot educators and volunteers, government agencies, NGOs, researchers, technologists, corporate CSRs, rural startups and social scientists were invited to the roundtable conference. *This position paper summarises the deliberations of the round table.*



The state of rural school education post pandemic.

Through dialog, members sharing their present/planned work, problems faced relating to school education. understand the challenges dealing with covid (and post covid) in various realms of school education; specifically in rural and government schools enumerate the state of research (immediate relevance), solutions present in industry and startups that could help with grassroots school education explore possibilities to build new solutions/products out of startups/scaleups and research

Broadly the discussion was on the crucial problems/barriers faced by the rural government schools, potential solutions, getting students back to school safely post-pandemic, and current emerging tech possibilities that can be improvised. Concluding with an action plan.

A. Major challenges/hurdles in government/rural schools

The issues faced by rural children are very different from those in urban settings.

Poor internet infrastructure and accessibility

Inability to attend virtual classes and access to the smart devices has been a pressing challenge area for all the rural schools. Even if devices are given away, many students are unaware of how to use them properly. Children who are aware of the usability, again are prone to a lot of negative effects of unrestricted browsing. In addition to that there are major connectivity issues, resulting in distracting the concentration of a child while learning and hence making the content or the pedagogy uninteresting. The internet expenses also makes it more difficult for those rural families to afford it. Has India lost 27 million years of learning, considering each child missing 1.5 years of learning?

Digital literacy gap in rural government teachers

Teachers play the most important role in every students' life, but when they fail to use the latest technology properly, in a time when the world is completely virtual and running on the internet, either children feel that they know better than the teachers or that the teachers themselves are confused and hazy. This lack of awareness not only creates a negative impact on the child, but also makes the teacher feel anxious, helpless and disinvested.



Neglecting the importance of Arts in education

Regardless of the age and economical background, lockdown has locked every child to their four walls. As always, the rural underprivileged remain the most affected, children are forced into labour and depression prevails, especially in girl children. In addition to the digital gap, this alienation and breach is adversely affecting their self confidence and self belief, negatively impacting their behaviour and psychology. Reviving art is the need of the hour, but sadly it is the most neglected area in education.

Failure of generalized learning

Shutdown of schools and no access to technology, is making many rural school going children earn their living to meet their basic needs. They have learnt life skills using unconventional methods. Now they think instead of reading and writing, accompanying their parents to do some professional work will make their future and benefit them in the long term. The complicated concepts in the textbooks and the usage of English language as a medium of instruction adds to their difficulty in finding content relevant to their practical life. Moreover, the traditional ways of learning in the form of rigid curriculum and rote learning has developed a huge disinterest and demotivation in the young minds.

Absence of Extended Learning groups

Community learning or peer learning was one of the most effective ways of educating students of any age group, but restriction in physical interaction has completely stopped this way of learning. Due to the pandemic, the personal touch is missing as now children are detached and are not able to share their ideas, thoughts and emotions with anyone.

Increase in dropout rates

The virtual system of education has broadened the literacy gap. Rural children fail to get real world connection as they are neither able to be a part of physical interactions nor virtual spaces due to lack of access to any relevant learning resource. Hardly even, less than 1/10th of the privileged children complete paid online courses. Looking at the unemployed adults of our



country, today's youth are more inspired to get involved in any kind of local professional work instead of attending online classes. Consequently, students are dropping out of their schools.

B. How do we get kids back to school ensuring safety

Making Mid-Day meal available at schools can be a way to get back students to school

Both physical health and mental health issues of rural children have aggravated due to no healthy mid-day meals that they used to get in their schools. Pandemic has put a stop to their physical activities, playing outdoor games and sports. Exposure to an unhealthy environment and intake of an unhealthy diet is causing deterioration in their health condition. The schools can partially open to make healthy meals available to the students. This can gradually make them accustomed to getting them back to school.

Partial /Half-Day opening of the Schools

Every home environment has its own vulnerability, limitations and crowdedness. Most kids want to run away from their family problems, personal arguments or fights, something they are afraid or ashamed of sharing with their parents. Thus, making it an uncondusive environment to learn which hinders any form of teaching and other learning activities. Therefore, if schools open, they are very much willing to join.

Extended online spaces to facilitate peer to peer learning groups

Physical peer to peer Interaction excites any child to go to school, as it allows them to freely communicate anything with their own age groups of children. Therefore, formalising peer learning will motivate them to get back to school and display a consistent ability to collaborate with others towards a shared educational goal. Online student forums and peer review groups are one of the proven methods to get students invested. Instilling this kind of self-learning/knowledge transfer culture can give birth to student learning online communities for students to leverage from any regional area.



Training/Sensitizing teachers to give psychological support to the students

Children, especially those who come from rural backgrounds, are the ones who have lost most of their learning. Opposite to their very nature, they are locked in houses without anyone to empathize with their needs, what they are going through mentally or psychologically, deprived of all the available online opportunities, labouring with their elder family members. Hence, as soon as the school reopens, teachers should be trained to understand their mind state and then provide suitable support.

Bridge curriculum to ease kids back into school regime

The massive loss of learning has developed a huge gap in the retention of rural school children. So, there should be a bridge course, soon after the reopening of the schools, to help kids retain their learning, and then introduce new topics. At the same time, the curriculum should be reduced and only major or most relevant topics should be taught to the kids.

C. Tech/AI support ideas from the roundtable

Automated tech-tools for continuous evaluation/monitoring and tracking

Though the government has been conducting annual assessments based on academic standards in every grade, it is failing when it comes to monitoring and tracking the progress of the students on ground. This is where the intervention of tech/AI is much needed to make this process teacher as well as student friendly. For e.g. more specifically, a platform/dashboard where a teacher or student has their own credentials can help both the parties to self monitor, track and improve their learning experience might help.



A customised assessment mechanism/tool to measure qualitative skills

A lot of academic assessments are designed to quantify the performance of the students but technology can help to build an assessment system to also quantify qualitative performance/skills like creative thinking and problem solving. The assessment data should also be simplified or presented in a way which can be used by a rural teacher as well as a rural student to understand their current level of performance, track progress and find contextualized solutions to improve.

Design a Hybrid/Blended model of learning through AI

Tech/AI can help develop a fine balance between synchronous & asynchronous learning; teaching & self learning; personalized & differentiated learning with incentives by designing a combined mode of learning. This will allow the learner to learn at their own pace, at any time from anywhere, choose their own preferred way of learning to be able to find relevance and comprehend better, keep them invested and motivated with incentives.

Leveraging teachers and parents in students learning with the help of tech/AI

Teachers are the primary stakeholders who are directly associated with the rural students' learning, so empowering and equipping them with the latest technology will enable digital literacy in them. Therefore, a teacher training intervention model is needed to be built to support their technological need which should be easy to use and accessible to the rural educators.

An Artificial learning buddy system to bridge the need of peer learning through AI

The global lockdown has isolated students in their homes, as a result peer interaction has been restricted. To address this a 'learning buddy' can be built with the help of artificial intelligence, which should allow the students to chat, learn, share, play and interact in real time.



Experiential Learning through virtual technology

Pandemic has given an opportunity to reimagine education, one of which is self learning. Now students having access to the smart devices are able to learn anytime and anywhere. This is an area where tech/AI can create contextualized content by making it experiential for them. This is a process where students do the practical by themselves and learn, hence, making textbooks a medium to read the experiments, watch it or do it and learn.

Develop a Personalized Learning pedagogy with the technical aid

With the current emerging technologies learning can be differentiated or customized for each child according to their strengths, needs, skills and interests. The pedagogy is designed in such a way which matches up with the academic standards of every child. This is a form of reimagining education against generalized learning, which does not meet the needs and weaknesses of students from different learning levels.

Gamification of Learning with the use of technical game-based elements

With the on-line and e-learning taking centre stage as a medium of delivering education, engaging students and driving desirable learning behaviors become critical. Gamification of learning has a scope to meet the need of the hour to capture the interest of the learners, motivate them to continue learning, keep them engaged and invested throughout the learning process by giving them points, badges, and related visible progress mechanics.

D. Summary and Actions needed

The Prof Raj Reddy Centre will take up the efforts to build emerging research-based solutions that can address some of the gaps and needs discussed. Based on this, build the solutions that can help with teacher training, supplement teaching through tools, personalise the assistance for teachers and students, take creative pedagogy to the students through AR/VR and mobile solutions, leverage intelligence to personalise teaching and learning, behavioural & cognitive tools for better targeted interventions, and more. Convergence of Social Sciences, domain project teams, development specialists, product designers and engineering will ensure the right solutions are built to solve relevant problems. Even as every endeavour will be made to create



standards, reusable frameworks, and platforms to enable a much wider impact in the years to come.

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Panelists invited: Naveen Mittal, Commissioner, Collegiate Education & Technical Education at Government of Telangana; Sridhar P, Founding Director, Kautilya School of Public Policy; Ramji Raghavan, Founder, Agastya International Foundation; Vinoda Kailas - Director, Pravaha Foundation; Samyak Chakraborty - Founder, Xbillion Vision Labs; Abhimanyu Saxena - Founder, Scaler Academy; A N Ramachandra - Ex Commissioner, Navodaya Vidyalaya; Brig. Ganesham - Founder, Palle Srujana; Pothu Raju - Head Master, Guntur; Prof. Jayanthi - IIIT, Hyderabad; Kiranmai Pendyala - Head of HR, Western Digital; Pradeep Lokhande - Founder, Rural Relations; Mayur Patnala - Founder, Nirmaan; Payoshni Saraf - Director Alumni Impact, TFI; Ashish Shrivastava - Founder, Shiksharth.

About Prof Raj Reddy Center: This center is an initiative of IIIT Hyderabad to enable research and emerging technology led solutions for grassroots education and public health, with specific emphasis on rural. The problem faced by the bottom of the societal pyramid is huge and needs solutions that can be scalable to billions of underprivileged. Several NGOs have been doing a phenomenal job on ground but NGOs don't have access to research technology. This limits the scale amplification due to dependency on volunteers alone to scale. With access to the tech research institutions, will help leverage the good quality of emerging technologies (like AI and such) to amplify the impact of these organizations' efforts. The centre will pursue two broad directions for high societal impact: Innovations in rural education, and Innovation in Healthcare for the Bottom of the pyramid.