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# NIIAS

## FUTURE OF EDUCATION: THE SCHOOLS OF THE FUTURE



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# Future of Education: The Schools of the Future

*Report of the Stakeholder Workshop*

*Organized by*

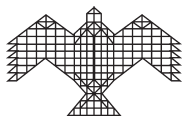
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and  
Future Agenda, UK**

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## FOREWORD

A workshop is useful to produce new insights, and facilitating dialogues leading to new directions and paradigms. Repetition of known facts and concerns is neither inspirational nor productive in the context of the workshop. It has been a key focus for us to ensure that each step we take at NIAS, is meaningful, purposeful and action-oriented.

I am glad that the present workshop has not only generated a lot of new ideas, but has generated action-oriented outcomes. Our work does not end with generating ideas. We need more deliberations in order to identify what we should carry forward as a priority. Different ideas may be carried forward via different routes and all those who have participated in generating the ideas presented in this report should be ready to carry these recommendations forward; of course we shall enable and be a catalyst.

The best insight I gained in the course of this workshop was that the antidote to the challenge of diversity is more diversity, or designed diversity. We should really take advantage of the opportunity to design diversely in order to deal with the challenge of diversity in our country – be it in Education or in any other unsolved challenge.

Another perspective I wish to provide is about taking students closer to Nature. The lap of Mother Nature is the best classroom. At the school level itself, we must embed love for nature, observation of phenomena from nature – as the natural way to learn, innovate and discover while we embrace technology and spend more and more time in a digital space.

I thank the workshop participants for their superb work and seek the full participation of all stakeholders to find the mechanisms to take next steps. I thank Tata Consultancy Services and Karnataka Jnana Aayoga for synergy with NIAS in this unique initiative. I believe the results of our collaborations have created a fertile ground for worthy results.

The workshop has greatly benefited by sharing of your perspectives. The eminent and inspirational presence of Prof CNR Rao, Mohandas Pai, and Secretary Primary & Secondary Education, Govt of Karnataka, has enriched the proceedings in a sustainable manner. We, at NIAS, are grateful for their continued support and encouragement. The participation of experienced and committed persons and institutions has been instrumental in generating high quality recommendations from the workshop.

The workshop recommendations are being shared with the Karnataka Jnana Aayoga & Tata Consultancy Services with the purpose of contributing to state-level and national-level policy making and implementation pathways. We invite stakeholders to take the full benefit of the research infrastructure and committed resources of NIAS to take forward the national agenda of transformation in Education -- of growth, reach and quality with values and ethics.

Baldev Raj  
Director, NIAS  
Bangalore  
28 August 2015



## AUTHORS' PREFACE

Writing this Report has not been an easy task, because it seeks to summarise a wealth of information and insight collected in the course of developing this workshop, as well as during the workshop. Over 100 pages of transcripts have been summarised in about 30 pages.

The speakers and participants of the workshop made possible a very rich dialogue, filled with valuable pointers for the education system.

The report writers' task therefore has been to summarize and extract the central point from wide ranging discussions, notes and recordings. Care has been taken to include all salient observations. Wherever meaningful, observations and insights have been translated into recommendations.

The material is organised thematically as far as possible and the recommendations have been classified under separate headings for ease of use. A total of 35 distinct, non-overlapping recommendations were developed, using the SMART (Specific, Measurable, Actionable, Relevant, Time-bound) guidelines, for preparing concise and usable action items. We have also appended the relevant Workshop Materials.

Not all suggestions are attributed, due to complexity of group exercises and difficulty in precise attribution.

The reader will be heartened to note how certain themes and points have recurred during the course of the day-long proceedings, although care has been taken to avoid needless repetition.

The effort has been to keep the report concise and make it highly usable.

It is hoped that this report will be a useful handbook for all stakeholders.

The summarising, paraphrasing and editing of workshop material, and its translation into workshop recommendations, are solely the responsibility of the authors of this report and therefore any errors or discrepancies that may have arisen in the course of doing so are also entirely the responsibility of the authors.

***Prof Anitha Kurup***  
**NIAS**

***Dr Shailaja D Sharma***  
**Future Agenda**



## EXECUTIVE SUMMARY

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A consultative workshop on the Future of Education, with a focus on the school sector, was undertaken by NIAS, as part of a global foresight series titled Future Agenda. It was the 6<sup>th</sup> workshop on Education, in a global series of 100 workshops on 21 different themes, conducted across 50 countries.

The workshop took place in the context of tectonic changes in the education sector – brought about by the huge increase in numbers of children entering the school system, the possibilities and trends brought about by changing pedagogies including the impact of technology, the changing aspirations of parents and students and the global competitive pressures on the knowledge economy. The workshop aimed at enabling a multi-stakeholder dialogue, with the objective of visualising the schools of the future and the possible direction of change. Reaping the ‘demographic dividend’ requires concerted action, based on planning and foresight.

India has an unprecedented challenge in the area of provisioning school education, as a democracy seeking to deal with a problem of great magnitude as well as diversity. In this journey, we have had successes as well as failures. We will stand to gain if we are able to recognise, replicate and scale up our success stories, for example, in increasing enrolments, delivering good quality education at reasonable costs and enhancing student performance. The impact of technology on pedagogic innovation, as well as scaling, is equally important. In an era of dwindling resources, the successes of public- private partnerships provide us alternatives for school expansion infrastructure and for enhancing school quality.

The need for massive numbers of schools is matched only by the need for massive numbers of well-trained teachers. The challenge of providing excellent training for the large number of teachers and more importantly ways of attracting the best talent to the teaching profession remains a challenge for countries like India with the growing demand for school education. A recurring theme in the discussion was about the need to enhance the status of our teachers and empower them to be active and value-adding participants in the learning process.

It is very clear that the learning process is undergoing great transformations, primarily due to the infusion of technology and the rapid uptake of learning-on-the-go, which started with professional education, but is now entering the school domain also. The needs of students are changing and the teacher has to adapt to these fast changes. The education of the future has to reinvent the role of the teacher, not as a provider of information, but as a curator of information and a facilitator, guide and counsellor of students. The skills and qualifications of teachers are changing and we will need new Public-Private Partnerships to train and retrain teachers to redefine their relevance in this fast changing world.

While we may address scale issues, another key concern is the quality of education, where we have islands of excellence, but overall poor results. Quality can be improved if at a systemic level, we shift government focus from curriculum to well-benchmarked performance standards and criteria. The question of examinations and their role in delivering quality and shaping careers and functioning as a basis for planning is pertinent. Examinations have to account for different ability, aptitude and competency levels. A poor assessment system is currently driving the current education system in India. While examinations are necessary, the challenge is in reforming the assessment system with a greater focus on foundations and skills components. Self-paced learning should also be supported, which means that examination system has to become more flexible. If well-planned, student assessment can provide a wealth of data that is usable in public policy and in particular education planning.

Technology can help in aptitude profiling, which in turn can be used to guide students towards different careers or pathways. There is an overall trend of ‘lifelong learning’, which is breaking down the barriers between classes within a school, between schools and colleges, between different disciplinary areas, and between student life and professional life. The question is how the idea of lifelong learning and the use of internet based technology can be productively leveraged in the service of a high-quality and large-scale school education in India.

The participation of a diverse set of stakeholders at the workshop was done purposively, in order to ensure a rich and balanced dialogue. The workshop was attended by Policy-makers, Non-profit entities engaged in the education sector, Technology providers, Corporations engaged with the sector, Psychologists and Researchers, Educators (Teachers), Educationists (Education experts) and Educational Institution Management representatives. Care was taken in bringing together a set of participants with wide and sufficiently diverse experiences. The workshop was planned so as to assure representation from key stakeholder groups.

Further, the workshop was addressed by eminent persons with a track record of national and global service in the public and private sectors, and wide-ranging engagement with the education sector, via keynote speeches and discussions.

The involvement of Karnataka Jnana Aayoga and Tata Consultancy Services, two organisations who are playing a vital and complementary part in shaping the educational ecosystem, as event sponsors, provided the required boost to the programme.

The programme was conducted in a highly participatory manner, with focus-group discussions of 6-7 participants each, in order to ensure that the contributions of all participants were heard. At the same time, a strong panel of educational leaders was put together, to provide guidance and focus. Thus, the discussions were wide-ranging and focused at the same time. Particular efforts were made to set out the objectives of the workshop in terms of insights and recommendations in pre-identified thematic areas, which greatly enabled the result-orientation of all the participants and of the workshop itself.

## **Recommendations:**

The workshop has resulted in 35 recommendations, which have been classified as below, reflecting some of the recurrent powerful themes that attended upon the discussions:

- Building a Cadre of Teachers & Enhancing Teacher Status
- Reforming the Examination System
- Establishing National Quality Standards
- Making Indian Students Internationally Competitive
- Empowering & Promoting Innovation in Schools
- Replicating Successes
- Education Planning & Public Policy Measures

## **Build a National Cadre of Teachers and Enhance Teacher Status**

1. Adopt a massive mission mode of in-service teacher training in science and humanities at the school level.
2. Develop a national large scale teacher training programmes across the countries allowing private participation with an efficient accreditation system through multiple agencies to maintain high standards. Set up a task force to re-visit and re-define “Teacher Effectiveness” to come up with appropriate metrics covering all the dimensions of teacher effectiveness –



including subject proficiency, ability to use new or external inputs and ability to counsel and guide students. The entire exercise has to be carried out with large scale participation of teachers so that they recognise the need for being effective and will be able to take up agency in the process of change.

3. Redefine and expand the role of teachers, premised on technology-enabled learning. This will require massive ICT-skilling of teachers, and exposure to good practices and role models
4. Declare a ten-year “Decade of Teachers and Teaching” – as a nation-wide campaign to enhance the status of teachers, identify best practices, develop innovative approaches, give recognition, etc.
5. Attract high quality talent to the teaching profession through a systematic high impact media campaign. This could include showcasing role models, and highlighting the education sector as a growth sector of the economy
6. Develop short term and long term career paths for teachers, which enable them to have a vision for themselves and a growth path which includes opportunities for learning, acquiring new qualifications, opportunities for travel and self-development, project work, research collaborations, publications, etc.
7. Devise a mechanism to enable mid-career shift from professional work (Engineers/Doctors/ other graduates) to teaching profession through an assessment and certification process than a mandatory 2 year B Ed / M Ed course with age limits. This will help in getting passionate teachers who would be innovative.
8. Consider School Education as critical component of Nation’s development & progress and therefore, employ high calibre & passionate teachers by providing a highly remunerative career.

## **Examination Reform**

1. Introduce a balanced score-card model for assessment of students, with exam scores complemented by assessment on key behaviours and skills.
2. Review the structure of the national competitive examinations and central board examinations and develop measures to rationalise them with reference to their purpose, so that students may be spared needless stress of multiple entrance exams . This includes creating common benchmark tests which will be used as a proxy for different ability or achievement levels. Additional tests would test only additional requirements.
3. Introduce different aptitude or ability levels in curricula and examinations, instead of setting a singular high-achievement standard for examinations. This will alleviate the problem of score magnification, i.e. a large number of students achieving very high scores, e.g. 90%+, which makes it difficult to distinguish between varying abilities of students. Redefine assessment such that there is a paradigm shift from memorising information to critical assessment of basic foundations and emerging skills. This will necessarily need the education system to work closely with the industry and the broader employment domain.
4. Introduce project work and collaborative work as integral part of the learning methodology early in schools and link them to student performance assessment. This may be linked to learning of professional behaviours (ref. #16 above) and skills (ref. #17 above), as well as values (ref. #20 above).

## **Establish National Quality Standards**

1. Set up a nationally and internationally corroborated/equivalent benchmark or standards for attainments at the various school levels
2. Develop and institute a National accreditation system of multiple agencies to measure school quality with provisions for clear feedback mechanisms. The purpose of the exercise should be constructive rather than only evaluative.

3. Study global education quality rating metrics and identify some key parameters in which are inherent strengths of Indian education system such that it provides a competitive edge in the global scene.
4. Set up high quality National Teacher Eligibility Test for qualifying and selecting teachers

### **Prepare Students to be Internationally Competitive**

1. Make English a compulsory subject from Class I, while retaining the choice for any medium of instruction, to enhance the communication skills in English among Indian students. This will in turn make India competitive in the global market, while democratising and removing the 'elite' status associated with familiarity with English in India
2. By adopting relevant pedagogies, teach behaviours that will drive professionalism in the workforce among teachers. Encourage collaborative learning practices, with or without the use of technology, as it enhances learning outcomes as well as practical and social skills.
3. Ensure that each child has independent access to the digital world, via a low-cost Tablet, as the use of mobile-based and cloud-based technology will be a vital tool for tomorrow's student
4. Encourage the adoption of self-paced learning, with or without the use of technology. This involves breaking up of the curriculum and use of digital technology for learning. This will technology which will provide greater flexibility and continuity between the learning milestones and yearly promotions in the school system.

### **Empower & Promote Innovation in Schools**

1. Decentralise pedagogic practices and allow schools the freedom to experiment with pedagogies and encourage innovations in pedagogy and assessment.; Provide broad national guidelines for the curriculum and allow flexibility for teachers to develop curriculum reflecting the changing world. This will encourage innovation and create models of excellence which will be multiplied by public choice
2. Establish School Districts, with autonomous and empowering localised structures, in place of the centralised school board system. School districts will be more effective to create local relevant curriculum and develop better accountability mechanisms. and School Districts can be required conform to national guidelines and performance benchmarks.
3. Mandate 'open operating systems' so as to curb the introduction of proprietary systems which will increase the cost of education; reward sharing and promote peer-learning among schools. Establish regulation for promoting the dissemination of innovative practices so that no entity can capitalise unfairly or at the expense of others.

### **Replicate Successes**

1. Study the success factors of the 525 Jawahar Navodaya Vidyalayas and identify the sustainable, scalable and replicable components, for inclusion in state-level and national-level planning.
2. Set up 4 Navodaya Vidyalayas serving the 4 parts of Karnataka state; and thereafter seek to set up one Navodaya Vidyalaya per district.
3. Develop gifted education programme and integrate it as part of the NV schools on a pilot basis.
4. Identify Role Model Schools for different good practices, for example, Use of Technology, Empowering Teachers, Creativity via Diversity, Enabling & Achieving Student Aspirations, and Instilling Values & Ethics -- and celebrate & disseminate their success stories. For example, institute Awards in these categories. Where Alumni Networks exist, they can play a large role.

## **Undertake Education Planning & Public Policy Measures**

1. Encourage the deployment of technology for mass-scale aptitude testing and individual-level planning for career choice at high school level. Use the data for large-scale education planning spanning the next 10 years. Use the PPP opportunities to realise the plan.
2. Guarantee 12 years of schooling to all children of the country and allocate public funds to ensure the same
3. Encourage the adoption of MOOCs and other online teaching practices and the formation of online learning communities on a large scale; technology can be leveraged for scaling up.
4. Allow large-scale public-private partnerships in the school system, while regulating the educational ecosystem and the outcomes. PPPs can be introduced in teacher training, proliferating model schools (Navodaya Vidyalaya), technology creation, testing, certification, and other related areas.
5. Encourage the growth of thousands of schools and teacher training institutions, but regulate with high educational performance standards and high operating standards. About 5 crore students are expected to be seeking higher education within the next 10 years and the numbers are growing from year to year, whereas the infrastructure that exists cannot support such growth
6. Massively increase allocation of public funds for the schooling system, to 6% of GDP as recommended in the National Policy on Education (1986). This is a pre-requisite for Indian education system to deliver the quality and quantity of education that is required to transform India's social sector indices from LDC-levels, in the area of education
7. Re-orient and train government cadre to be effective regulators and to frame high quality regulation for the education sector in a consultative manner
8. Encourage the adoption and showcasing of local cultural practices as part of school pedagogy. This is linked to # 32 above, and can be achieved by instituting Awards, for example.
9. Identify top performing schools and encourage them to expand and replicate themselves; set up a national fund with transparent criteria for encouraging and rewarding the best managed schools and incentivising them to grow.
10. Set up a School for Gifted Children with the mandate to nurture genius. India lacks a school model for exceptionally talented children, who can be enabled to learn and create, free from the constraints of the standard system. Thus children can achieve in one year what their peers may achieve in two or three. This should be done with careful planning and should take into account global experiences in this area. The school can be initially set up in a national science campus.

## **Conclusion**

The workshop took into cognizance the existing problems that plague school education in India. However, the discussions during the workshop moved beyond the problems and focused on solutions within the current framework of schools in India. The recommendations generated in the workshop were practical and can be implemented. NIAS is committed to work along with KJA (Karnataka Jnana Aayoga) to take these recommendations to the implementation arm of the State government through a workshop so that they do not remain only on paper. NIAS also proposes to share the report with a focus on the recommendations with all State governments and the Ministry of Human Resource Development which is responsible for school education at the national level. The Report will also be disseminated among private players in school education across the country to facilitate the implementation of the recommendations of the workshop.



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# 1. INTRODUCTION

National Institute of Advanced Studies (NIAS)<sup>1</sup>, Bangalore, along with London-based Future Agenda<sup>2</sup>, a global open foresight platform, organised a multi-stakeholder consultative workshop on the subject “Future of Education”, on 29 July, 2015, at NIAS premises in Bangalore.

The workshop was conducted as part of a 100-workshop global series, focused on the future of the world in 2020. The premise for the global workshop series is that in a rapidly-changing world, organisations and industry verticals are impacted by developments in areas that may not be directly linked to their own. Moreover, the speed of change makes it necessary for all organisations to be dynamically connected with, and open to, external inputs. Further, facilitated dialogues help organisations to learn from one another and better prepare strategies that are suited to a future world.



Multinational corporations and small social enterprises, academic centres, governments and non-profit organisations alike can fruitfully engage in anticipating the future, so as to prepare better organisational strategies, public policy strategies, growth plans, and so on.

The consultative workshop on Future of Education held at NIAS was the 6<sup>th</sup> Education-themed workshop in the global series.

<sup>1</sup> <http://www.nias.res.in/>

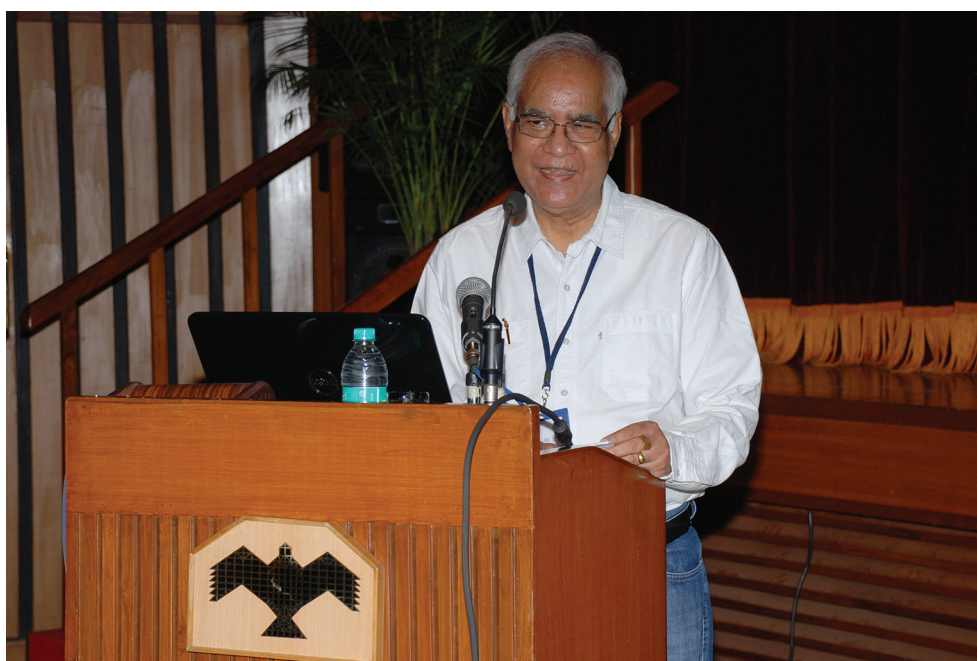
<sup>2</sup> <http://www.futureagenda.org/>

## 1.1 CONTEXT-SETTING

### 1.1.1 Why Future of Education

In India, the education sector has seen major changes in the past decade. These changes have been introduced among other things, by the significant role of technology and the internet, by public preferences in terms of choice of schools, the scale of growth of the private sector, and also by large-scale interventions of government. Students and families in urban areas are availing of an expanded range of options in terms of school education.

However, many of the challenges remain. The questions of access to education and quality of education and educational achievements continue to challenge the educational community. The digital divide continues to create pools of educational haves and have-nots. The promise of a demographic dividend threatens to turn into a curse.



Although massive changes are taking place in the school sector, the host organisations felt that its long-term direction is not adequately discussed or analysed. Both far-reaching advances in curricular approaches, pedagogies and accessibility, and severe stagnation in infrastructure, capacity-building and key resources are to be seen within these incubators of the future. The changes in the school sector are unevenly felt and restricted to certain parts of the country. A large number of schools have not been touched by these changes. There is a pressing need for reforms in the school sector. Therefore it was decided to focus the discussion on the changes to be anticipated in the school sector alone. The discussion was constrained to the topic: Schools of the Future.

With increasing differentiation of formal school education and the rapidly changing school education that brings to fore new players like technology enablers, innovators and entrepreneurs, the educational ecosystem has been forced to deal with the contradictions and interplays between varying aspirations of the different stakeholders. How can formal education operate within this newly defined space, in order to meet the multiple aspirations of the new generation of India, as well as parents and the society at large -- would be the running theme of the consultation.

Mere brainstorming, while it may generate many ideas, does not lead to specific solutions or suggestions. Thus, the purpose of the workshop would not be only to gather and exchange thoughts, but to locate specific challenges to be addressed and distil specific workable recommendations to advance the school sector. The select participation of contributors from the ecosystem to 'propose, debate and find' is chosen as a way to achieve constructive outcomes.

It was determined that garnering the active participation of key corporate bodies and/ or policy makers would strengthen the outcome-orientation of the workshop. The association of Tata Consultancy Services and Karnataka Jnana Aayoga with the programme was a step in this direction.

### **1.1.2 NIAS' work in Education**

The following is the summary of a presentation made by Prof Anitha Kurup, NIAS.

National Institute of Advanced Studies was set up by visionary leaders who sought to bring about a synthesis between physical sciences, social sciences and the humanities, called scientific humanism. The organisations seeks to promote inter-disciplinary research on problems relating to the development of the country, particularly those requiring immediate study and resolution. It also seeks to impart knowledge based on the Institute's research to professionals to broaden their academic and cultural perspectives. NIAS' education programmes are different because of the combination of field engagement, social and cultural critiques and policy analysis. Further, NIAS situates its research work in the complex reality of society and focus on areas that are otherwise receiving little attention.

NIAS' education programme has four divisions: Gifted Education; Women in STEM (Science, Technology, Engineering, Mathematics), Education & Exclusion, and vocational and higher education. There is an estimated 33 lakh gifted children who would be able to achieve their potential if identified and assisted at an early stage. NIAS has developed tools for teachers to identify and work with gifted children. NIAS is now disseminating this work to a wider set of stakeholders including policy makers and corporates.





In a similar vein, NIAS has undertaken studies on women Ph.D.'s and is now extending the work to deepen its understanding of the associated issues related to the women in the STEM disciplines. The organisation is attempting to develop models related to mentoring, networking and building collaborations and preparing research based policy briefs/ documents as forms of supportive mechanisms to promote and retain women in the STEM disciplines.. NIAS is also involved with ethnographic profiling the Adivasi communities in central India, understanding seasonal migration patterns and designing study programmes for Adivasi youth.

In the context of the above work, NIAS engages extensively with schools, teachers, researchers and policy makers. The present workshop is a step in extending and deepening this engagement, with a view to developing specific action items by way of study projects, programme implementation and policy interventions.

### **1.1.3 Summary of Global Future of Education Workshops**

The following observations are taken from the plenary remarks made by Dr Tim Jones, Director, Future Agenda. Nobody can predict the future. The best we can do is anticipate it and if we are going to be best with anticipating the future we need to understand as much what is happening outside our area, outside our country, outside our industry as much as what is happening inside because the future is probably going to be a combination of internal and external drivers. If we can bring those two together then maybe we can have a better view of what may happen and best be better prepared and then hopefully make some more intelligent decisions.

The context behind the Future Agenda program is to talk to as many informed people as possible. There is no single answer as to what will work, or what will happen, but by getting as many informed people to share their different views we can see how those perspectives matter and how they impact in different goals.

One perspective that emerged in many countries was that we need to stop thinking about education as something which is linear and therefore something which people tap into different part of their life. Thus, the segmentation of education into finite compartments is being challenged, with providers who are providing life-long learning, by bringing together and packaging content in different ways. Technology is enabling such a transformation.



In Dubai, one of the interesting things was a strong push back against the problems of teaching everything in English. There were concerns that because English was becoming the standard language for education, there was that polarising local languages because everybody was trying to focus on English as the primary 24/7 education language. Was that pushing the Arabic culture out of the schools and into either only into home or into other areas, was one of the big concerns, and the discussion was around how to balance out the use of local language and culture. The question of locating education within local cultural contexts has also been raised in the current workshop.

In Istanbul, workshop participants felt that the availability of the best educational content was transforming the role of teachers. Maybe the days of teachers standing today in front of people, especially grown-up people and sharing content are gone – since there is very good quality video learning materials on YouTube, or the world’s best accountants teacher is available on the MOOC. Therefore it was suggested that we switch to evolve where teachers are no longer providers of content, but are increasingly coaches using the best content from anywhere in the world but helping students understand either physically in the room or outside the room how best to use the content and how best to learn and how best to navigate.

In Mumbai, one of the insights was that education also included empathy and dealing with failure and we need to make sure we help people with the real lessons of life just as much as an ideal future because we need to have this in balance. Empathy, ethics and understanding ambiguity all need to be part of the education of the future.

In South Africa, the point was made that if children are hungry they are never going to learn. South Africa is spending 15% of its GDP on healthcare and yet is not getting the results that you would expect with that level of investment and one of the issues that came up time and again was that high investment in education is not enough by itself, if we haven’t got the other basic issues of sanitation, hunger, etc. sorted out.

In London, there was a perspective about international measures, if we are increasingly encouraging students to not just be part of one institution but be part of multiple institutions, then the issue of trans-national common standards in educational achievement arises.

Some of the adult learning techniques are also becoming relevant to school teaching, in the context of skill development. Thus there is a case to bring these different perspectives together in planning and technology deployment.

The theme of diversity raises its head in many different ways and some of the suggestions around flexible curriculum keep on being iterated as the direction to go but the question is how to do that whilst maintaining consistency and that’s the dilemma most people seem to be having. For example, how can we have the more agile benchmarking as you weave away from the national stereotypes? How can different societies see teachers as a catalyst for change, not just for education but for health and for economic prosperity – is also a recurrent theme in the global discussion, because it seems to be that that depends on getting the right people into this space, getting their respect, then have so many positive knock-on connotations.

#### **1.1.4 Karnataka government initiatives**

The following observations are extracted from the presentation made by Shri Kapil Mohan, Secretary Primary & Secondary Education, Government of Karnataka

There are about 13 million children in Karnataka state and 5 lakh teachers in about 80,000 schools of which about two-thirds or about 70% is government-run, the rest being private educational institutions. Government also has a regulatory role in the private educational institution space, and

also to some extent, a facilitative role. Government focus has been on delivery of education and many significant interventions have been made by the governments in the past. As far as nominal access to education is concerned, the State has reached some kind of finality in the sense that we do have schools and some very basic infrastructure and access to education is in place.

The issue which is arising out of this massive expansion of educational infrastructure and coming to the fore is -- quality.

In the last four or five years there also has been a trend where the enrolment in the government schools is coming down at the rate of about 1-1/2 to 2% per annum, not only in Karnataka, it's true for the whole country. There could be many factors including language preferences of parents, the other could be quality as well. The reasons are not exactly known, but the trend is clear.

Government reaction has been to incentivise education with mid-day meals scheme, to give uniform, shoes, bicycles, free text books, scholarships and so and so forth. There are schemes for the incentives. There is also a massive program for training the teachers to upgrade their skills as well as a very reduced testing protocol, which allowed most of the students to reach up to SSLC without really being tested. However, testing is required, although it should be non-stressful testing, but without testing, it is not possible to measure quality of education at a gross level. Testing has to be against a uniformly accepted standard, for comparability.



There is a genuine worry that there would be digital divide and if the students, those who are in the rural areas would be left behind. About 5500 schools are being covered initially under the state ICT programme, which would create some infrastructure for basic computer literacy. Even basic internet connectivity is absent in almost 40-50% of the state where most of the government-run schools are located.

A tele-education programme which is a home-grown initiative is being implemented with IIM Bangalore, as a way to bridge the divide. Spare transponder capacity has been utilised for doing tele-education which is personalised to some extent, and help with delivering education without the personal interaction. The programme is being scaled up.



Teachers are also being trained to perform an assistive role and feedback is already being collected. There seems to be relative dissatisfaction with the idea of assisted distance education, however, and the need for a real teacher is being emphasised by the teachers. The experiment is however being scaled up, with the use of satellite technology (EDUSAT) and interaction of the student with the master teacher is being facilitated through mobile phones to address the need for personal interaction.

The twin challenges of computer literacy at the school level, and of using IT for delivery of the education still remains. The ICT programme and tele-education are respectively being used to deal with these challenges.

Government is also trying to introduce skills into the school-level curriculum in grades 9<sup>th</sup> to 12<sup>th</sup> and a pilot is being rolled out in 500 schools. These are for low and medium-level skills. While the courses have been introduced, there is a need to link these skills to actual jobs and employment. Issues like values, ethics and critical thinking are difficult to deliver in a programmatic mode and have to be inculcated in society, via the family, parents, media, etc. Subliminal messages are passed on through the textbooks and the revision of text book index is going on.



There is a lot of interest on a public-private partnership basis in Bangalore, particularly Karnataka, and DSERT has been designated the nodal point for such partnerships. Partnerships which enable the non-programmatic elements of the public education initiatives would be able to complement the government programmes.

All initiatives should pass this three-level test of “sustainable, replicable and scalable”. While pilot trials can be conducted in a limited number of ‘excellent schools’, 1.3 crore children have to be educated in the public sector, therefore it is essential to scale up. Government is building up educational infrastructure particularly for grades 8 to 12, and there are various programmes which are covering gaps in physical infrastructure within a few years. Public Private Partnerships will accelerate the pace.

### **1.1.5 Tata Consultancy Services initiatives: Role of Technology**

The observations in the following section are taken from the opening remarks made by Shri V Mallineni of Tata Consultancy Services.

People have mixed feelings about technology, but the point is that it is here to stay.

Looking back at the developments of the past 20 years in the area of banking, we realise that in earlier times, banking provided only a way for keeping customers' money and retrieving the money. It was generally accepted that there would be long queues at the bank. Today, banks have transformed themselves into full financial services institutions -- a financial advisor. Likewise, the consumer has transformed, to look at banks to consume a range of services including utility payments, investments, insurance services, forex services, trading services, etc. Technology has brought about this transformation over the years.

Initially, technology played merely automated certain bank-related processes within the bank. But the internet has transformed the experience at the consumer end. ATMs and internet banking make the bank available to the customer at all times. Most bank-users now use internet banking and mobile banking.

The next step that is coming is mobile banking. The core functions of banking have not gone away, but transformed to a plethora of services including loans, mutual funds, investments and utility payments. Thus banks simply became a full service provider.

RBI's role has only strengthened in the same period. There is more transparency and uniformity of standards and regulation. Thus we operate in two spaces -- physical and virtual. The same will happen in education because that is how the technology and social behaviour evolves. It is quite independent of individual preferences.

In the 21<sup>st</sup> century education perspective, the student is a continuous life-long learner.

Today, the student one can only be accessing the library or the teacher. Technology enables and creates one more space, the digital space, for learning. Technology enables the slow learner to catch up with the fast learner, by accessing content outside the classroom.

Today, assessment is becoming a learning strategy. Technology provides the means to conduct a quiz or assessment immediately after the learning session, providing immediate feedback and help to overcome difficulties.

Today, there is a challenge on choosing a career, and a reported 70% students have the problem of matching aptitude with further learning programmes. If there are good analytics that are tracked throughout the history of the student from the schooling side, for example, on how the student is progressing in various subjects, or developing his or her interests -- that information will help the parents as well as the students to have a meaningful conversation on aptitude. Large-scale analytics can help prepare concise summaries of such history for millions of students. Without technology and analytics, this is done on a one-one counselling basis, which is not scalable.

As the teacher's role is transforming towards a competency coach, the teacher has to compensate for many social transformations that have taken away the experiential learning component from student life -- especially in the urban nuclear family context. Experiential learning used to happen in the society in the form of social and family functions, which are increasingly being eroded. Thus, the school has to play a role in enhancing skills or competencies, for developing a complete professional for 21<sup>st</sup> century. This includes leadership, entrepreneurship and everything else we are looking for

and this becomes available at one single place. Thus, the teacher as a coach brings relevant inputs through technology whether it is industry recognition or lab integration or community integration. Tools and technologies are now available for the teacher to access teacher aids, or bring in a community subject matter expert to communicate and collaborate. Meetings, discussions and all that we do in the physical space is bound to also become feasible in the digital space.



TCS has undertaken a lot of transformational work for institutions starting from admissions and fees automation because these are all very transactional in nature. There are a number of tools and technologies including complaints management systems and such-like. Much of administrative work is basically providing student data to the boards, meeting the government compliances whether it is child safety norms, RTE, etc. If this is automated, the teacher's space and time is much more available for more academic work and for giving it to the student. This is where technology can help enhance the status of teachers.

With digital evaluation platforms, the movement of the answer sheets can be minimized so that faculty can swiftly evaluate papers and results can be published. Students who want to improve and take a re-test can do so before the academic session starts.

This does not mean that we should adopt all types of technologies without discrimination. For example, 3D-printing technology is available today – but we should ask if it is affordable and most importantly, relevant. Technology adoption has a time cycle. Adopting a technology because it is there and because one can afford it – may result in failure, because the timing is not right and the methodology to which it has to be adapted is not ready. Technology is passive until and unless we build a lot of cognitive inputs and analytics. Then technology has power to build another subconscious mind for human beings on the device. Today our mobile phone is becoming that subconscious mind for us!

Thus, the role of technology is definitely relevant but the choice has to be based on the parameters that are relevant to the context.



## **1.2 KEY NATIONAL CHALLENGES**

In his Inaugural Address, Prof CNR Rao discussed the key national challenges. The following points were made in the course of his talk.

### **1.2.1 Problem Magnitude**

We are a very large country with an extraordinarily large population. No country and no democracy has ever faced the problems of education, removal of poverty, providing good health as India is facing today, no other democracy.

### **1.2.2 Quality of Education**

In the global rating of education quality India is ranked low. Incidentally, America is also not ranked very highly on school education.

### **1.2.3 Low public investment**

The National Policy on Education (1986) recommended an investment of 6% of the GDP on education, but even today it is 2% for all levels of education, including higher education. Both centre and states are investing very little in education. Even the best of secretaries and best of ministers can do very little with such low levels of investment in India. Most of the education, of most of the people, is delivered via government, as the private sector caters to the better-off, who remain a minority. Since the majority of the children are going to be affected by the government investment, education in India cannot improve unless we increase investment.



### **1.2.4 Enhancing Teachers' Status**

Fundamental improvement cannot take place only via curricular changes or infusion of technology. There needs to be investment into the quality of teachers and teaching.

We should do a lot for teachers, including better salaries, but more importantly we should give them more respect and set high performance standards for the teaching profession. Technology is important, but better teachers may be a cheaper solution for the problem, in many cases.

### **1.2.5 Role & Purpose of Examinations**

In India, we have a very good examination system but not an education system. It is really the exams which run the education system, it is not the education system which requires examinations.

Examinations are meant to evaluate students, help them to improve, help them to grade themselves. The current examination system unfortunately is undermining Indian education system. We can give children a better way of facing the society and facing competition than we do.

### **1.2.6 School as a source of all-round development**

Education should help engender all –round development, and not be just exam-driven, but be curiosity driven, employment driven, and driven by professionalism.

### **1.2.7 Linkage with other Social Parameters**

Education is not to be looked at in isolation. When it comes to education and poverty, health, rural India is ranked with the LDCs. Steps should be taken to make people become more health conscious, better aware of everything around them, scientifically literate, and so on. This will have a beneficial effect on education.

### **1.2.8 Education Planning**

In the next ten years 5 crore children will enter higher education. How are we going to advise them of what to study? We cannot give them skill development, unless we are able to effectively match skills with aptitudes and infrastructure. It is high time we make a proper plan for our children, to take these large numbers to make sure those interested develop the right skills, those interested in science go to science, to see that people get the right education after school or during school.

Planning should span the private and public sectors. Failure to plan is a very serious lapse.

### **1.2.9 Develop smart local solutions**

Technology by itself does not assure better educational standards. We need the technology, but should be clever about how to use it in India. Technology should not be deployed mechanically in India – rather it has to be much more clever way of doing things. There is a way, we must find the way.

Mr Mohandas Pai added the following points on this theme in the course of the Valedictory Address:

### **1.2.10 Autonomy for schools**

The school of the future is a school which is fully empowered to decide its own course. The management decides along with the teachers what pedagogy should be there, what should be taught, based on some broad guidelines to bring in a level of commonality in the system. Teachers should be fully empowered to experiment to do new things. The school should become an environment where students can discover for themselves, do many projects, not write down notes by rote. In the projects students come together and experience peer learning which keeps the curiosity alive.



### **1.2.11 Differential Learning**

Some are fast learners and some slow learners in different subjects. If there are certain exams which can be taken in order to secure admission at a University, and the students should be able to take it earlier or later, depending upon their ability and pace. The child should be given an opportunity to decide. This can be done using technology.

We must leverage technology because technology provides a common platform and removes discrimination. Technology removes the challenges of access – which is the challenge of poverty, because poverty determines access. Further, technology gives a child a window to a huge world.

### **1.2.12 Test Appropriately, not Singularly**

We need examinations so as to gauge progress and mark milestones, but the exam doesn't have to be stressful. The student should be able to show a body of work so that he or she can be assessed as a whole, and not only in one sitting. The examination format is outdated and technology allows us to do it differently.

### **1.2.13 School Districts Instead of National / State Level Education Boards**

We need school districts, in place of centralised school boards. The combination of school districts which are autonomous, with empowered schools and public funding can transform the education scene.

### **1.2.14 Public Funding & The Right of Each Child to 12 years of Education**

Government has to fund school education. No child should be left behind. People have a right to go to public or private schools, but each poor child attending private school should get funding and scholarships. In any case, every child should have a right to full funding for 12 years of education and that is not a matter for discussion, not a matter for negotiation. Government has to do it, and it should be the first charge on the tax revenues because all of us live in society for the future of our children.



### **1.2.15 Open Innovation rather than Proprietary Systems**

The education system should be an open operating system, not a closed, proprietary system. An open operating system for experiment is required, because human life is open, the planet is open, nature is open and sustainability can be only brought about through an open system.





## 2. ROLE OF TECHNOLOGY & NEW TEACHING-LEARNING PRACTICES

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### 2.1 PEDAGOGIES

In his plenary observations, Prof. Baldev Raj made the following points:

#### 2.1.1 Experiential Learning

In addition to having a good teacher there needs to be a focus on experiential learning – via which we learn how to deal with failure, how to experiment, and how to enjoy learning.

#### 2.1.2 Culturally-informed Education

Education has to be embedded in local culture, yet, there is no structured way whereby we have incorporated local culture into our education. This remains an area where innovation should be welcomed.

The focused group discussion resulted in the following observations.

#### 2.1.3 Collaborative Learning

One of the big changes, specifically in education, is that learning is becoming more collaborative. This is mainly because the content of learning has become very dynamic. Access to such content is not freely available with everyone, and hence the ability to learn from each other, ability to learn in groups, ability to learn at a dynamic scale is driving learning. Hence collaborative learning is becoming more and more important. Learner here could mean -a teacher or a student. Collaborative learning could be as students with each other, collaboration with the parents, collaboration with experts outside the school system, and with the society and community.



Currently learning is happening in a physical classroom, where there are rows of students and a teacher. This is changing fast, because in a collaborative learning style it is no longer that the teacher is the leader or final authority on the subject. The teacher is more like a facilitator and hence we need a classroom where there are groups of people, where there are students sitting around tables and then each group is collaborating within itself and with other groups, and the teacher is able to engage the students in this collaborative mode.

The advantage of such a system is that it is inclusive, and participatory. Today there are students who are slow learners or who are not very interested in learning or who are backbenchers and they are not engaged well. In the inclusive model, they learn from each other and a teacher is able to engage with every individual student. This is scalable.



Mr Mohandas Pai made additional observations as below:

#### **2.1.4 Address the Scale Problem**

There are 100 million children born every year on this planet, 24 million in India, 16 million in China, about 25 million in Africa and the rest all over the world. If all children go to school for twelve years, it is an enormous number of schools that is required. The traditional method of schooling cannot solve the problem of numbers, because most of the growth is happening in emerging markets or emerging countries which don't have the infrastructure or the schooling or the teachers or the maturity to handle that, whereas in many of the developed countries they have gone through many decades of growth and their population growth rate has stabilized, so they have passed the problem of scale, and can concentrate on quality. Therefore comparisons between countries should be made with caution.

#### **2.1.5 Balanced Score Card for Students**

In differential learning, the child learns at his or her own pace, some learn faster some learn slow. At the end of certain years of learning, the child should be evaluated not only on subject-wise performance, but also on behavioural and overall abilities, aptitudes and experiences. When the



child goes out after 12 years, the marks are seen along with the assessment in critical learning, in creative thinking and so on and can be used to better match student aptitudes with opportunities.

### **2.1.6 Large-Scale Parental Education**

Parental education is required, because a lot of the learning comes through parents. The mother is the most important creative aspect in a child's life. Even today, working mothers continue to teach their children. A child from an uneducated family misses something very critical at home. Large scale parent education is a missing piece.

## **2.2 TRANSFORMATIVE TECHNOLOGY**

### **2.2.1 Online Learning Communiites**

Learning is no longer happening inside classrooms alone. It is happening outside classrooms also and hence virtual classrooms have come up. Whether we like it or not that is the way the world is moving, and hence we must make the best out of it. Learner groups become communities in the virtual world where they can learn from each other, from the teacher outside the virtual classroom and experts who may be inside the school or outside the country!



It is better to embrace MOOCs and different technologies which are coming in, as learning systems are going more and more online and becoming collaborative.

### **2.2.2 Mobile-based Tools or “Learning on the go”**

Mobile access is something which is very critical, because with cheap smart phones and 4G coming in, learning-on-the-go will become predominant.

Technology can also be used to keep up communication with parents regularly, which is very critical.

### **2.2.3 Teacher Readiness for the Digital World**



Mr Mohandas Pai in his valedictory address made the following additional points:-

### **2.2.5 Harnessing the Disruptive Power of the Internet**

Education has two components, the first component is the regulatory aspect of curriculum, structure and exams, etc. The second is the learning aspect. The regulatory aspect has become ossified, static, and rigid, whereas the learning aspect is getting disrupted in a very significant way.

The internet on a single platform has brought together the accumulated knowledge of human civilization of the last 5000 years in one single source. Everyday thousands and millions of people are adding content to it. This is a knowledge explosion, or an information explosion.

Therefore, education has to move from information dissemination to problem solving and answering questions. This arrangement meets the needs of the child because the child is always curious. The curiosity has to be kept alive in a manner whereby the child discovers by itself and goes to a mentor or a teacher to answer some questions. The child will look at some information and various aspects before he or she starts asking questions. If the child has a device for accessing the internet, the child will discover and learn on his or her own -- many things. Therefore, we have to accept the internet and see how to best leverage it to serve our curriculum and give students access.

### **2.2.6 A Tablet for Each Child**

The key question is how to make collaborative learning happen. We must bring in a digital experience to education and make sure every child gets a tablet connected to the web, to digital India. We should do it as a one-time measure so the child gets independent access with adequate adult controls. This will help India leap-frog the infrastructure problem.





### 3. CHANGING ROLES OF TEACHERS & STUDENTS

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The focus group discussion began with the acknowledgement that technology does not or should not bypass the teacher. At a time when we only have 7 million teachers with 1 teacher for 60/64 students in many schools, teacher shortage is a serious issue. In the discussion on changing roles of teachers and students, we need to discuss issues beyond technology.

Suggestions that emerged from the discussion were as follows:

1. There is need for continuous professional development of teachers, as well as providing incentives for good teachers. However, these incentives must not be based only on results of students in examinations.
2. We need to recognise that technology is only an enabler. It cannot substitute or replace good quality teachers. Strengths of technology should be however fully harnessed – in achieving scale, lowering burden on teachers, achieving speed, standardisation, demonstration of difficult concepts, integration of information, etc.
3. It is crucial to increase respectability for teaching as a profession.



#### 3.1. TEACHER DEVELOPMENT

The needs of students today are not only for a job, but also to find a place for themselves within society. The student is looking for context from the teacher. Teacher has to learn new things and funnel that towards the student. We need teachers who can synthesise information and facilitate learning for students.

Within school education, adults override the interests of the child. In other fields, market forces drive change. This is often not the case in education- because the ultimate consumer- is at the bottom of an implicit hierarchy. At the same time, there is a lot of inertia and lack of motivation in the teaching community. Thus, change is driven by external forces but less by an internal momentum and direction within the education system.

### **3.1.1 “Teacher-centric” vs “Learner-centric”**

How can school education be improved? Should we be teacher centric or student centric? If the school system is teacher-centric, the teacher and technology can be child or learner-centric. There are certain laws that align with human growth and development. Our education systems must seek to align with this natural process. At different age groups, there are different needs of exploration. It is this that school systems must seek to address.

Prof CNR Rao added the following points to this theme:

### **3.1.2 Teacher Training at High School level**

The problem with content in India is that there are very few teachers to teach it well, especially in higher education, starting with high schools. Apart from content knowledge, the way of teaching, methodology, stating the objectives – etc. should be covered in teacher training. Training the teachers in a large way should be a priority, if we wish to improve the schools.

The Focus Group added these observations to the discussion on this point:

### **3.1.3 Promote Evidence-based Professional Development Programmes**

A lot of times, governments, SCRTS, LCRTS, DSERTS etc. offer training and professional development, including in-service training -- but it is not evidence based. There is no evidence of how much of the crores of rupees that have been spent actually have brought about change in classroom practices.

### **3.1.4 Permit competing Teacher qualification and certification schemes**

Teacher training is completely government-regulated in our country and one must have alternative routes to teacher qualification and certification including online ones of high quality. The United States, UK, various other countries have alternative routes to teacher certification, but in India we have only three ways (Graduation + B.Ed., Std 12 + D.Ed., Experience + distance B.Ed), whereas India needs the most number of school teachers in the world.

### **3.1.5 Align Learning Processes with Stages of Child Development**

Teachers need to be able to align learning processes and curriculum to the stages of child and human development. A lot of the times our curriculum, our textbooks are completely misaligned to what children need to know and able to do at different ages, whether it is 6 years, 10 years, 12 years, 15 years etc., so teachers need to know how to align learning process to child development stages. Teachers need should be promoting enquiry, critical based thinks and questioning among students.

### **3.1.6 Liberalise Teacher Training and Establish High Quality National Eligibility Test**

Enhance teaching training on a war footing. Open up initial teaching training to organizations with sound credentials, using a strengthened national teacher eligibility test for teacher's certification and quality control process. It does not matter what kind of teacher training or which organization has trained the teacher as long as every person who has been trained go through a national teacher

eligibility test of a high quality they should be given a teacher certification rather than going through only the B.Ed-D.Ed routes.



## **3.2 TEACHERS & TECHNOLOGY**

The following points were made in the focus group.

### **3.2.1 Redefine how Teacher, Technology and Student interact**

In an age when information is easily available to students through technology, the role of the teacher is bound to change. The teacher will have to be more of a facilitator. In urban areas, families are becoming more democratic. So, it is but natural that children will expect more democratic classroom environments.

We need to talk about the essence of the profession of teaching. Technology can only be an enabler. We must not confuse the presence of technology with quality teaching.

### **3.2.2 “Teacher-proofing” vs “Teacher-enabling”**

Schools and governments often consider using ICT as a means of bypassing the teacher.

Technology should be used not to downgrade the skill requirements of teachers but to upgrade them. The new ‘facilitator’ role should not translate into the teacher being a bystander.

### **3.2.3 Who is driving technology adoption?**

Technology providers by themselves may not be able to drive the best use of technology in education – educators should be in the driving seat.

## **3.3. TEACHER STATUS**

Teacher Status was one of the top themes that emerged in the workshop. Below are some observations from the Focus Group.

### **3.3.1 Current Classroom Scenario**

Teachers are dominant in the class and students are passive. The teachers' own notions of good learning and good teaching practices are outdated. At best, they remain mechanical and exam oriented, even in some of the best institutions across the country. Teachers are unable to use technology as an enabler.

Administrative and non-content related responsibilities, when given to teachers, further reduce their status. Low pay further aggravates the situation. Parents are becoming more demanding -- both rural and urban-- and teachers are in the line of fire.

Teachers lack autonomy to take decisions in class, and yet are responsible for developing the new generation of young creative thinkers. If they themselves do not have the capacity to think and solve problems within their own setting, they are not likely to be able to actually nurture the same in children. Autonomy and accountability go hand in hand.

Teachers are made accountable for everything but with very little autonomy or voice. Correspondingly, teachers do not know how to give voice to children. Teachers lack a sense of pride and professional identity, a lack of self-worth. Teacher training, both D.Ed and B.Ed that is now mandated under RTE, is suboptimal at best. There is no planned need-based continuous professional development.

Teachers do not have a career path. Most teachers just carry on doing the same thing for as long as they choose to just stay as teachers and some of them may even get out of teaching.

Without much guidance, students learn by rote for exams and that seems to work within the exam-driven system. Even preschool children have exams. Students do not trust their teachers' capabilities both in terms of content knowledge as well as their skills to engage with them in meaningful ways.

### **3.3.2 Teacher Effectiveness Metrics**

We need to provide incentives to teachers who perform well. But how do we measure performance? Results of students may not be the best way to do it. If a school allows a teacher to be creative, and respects her or his independence, it is more likely that the teacher will respect her students and create conducive learning environments.

### **3.3.3 Attract High Quality Talent into Teaching**

Change the image of teaching from a stayed poorly paid career to a vibrant exciting contemporary one, starting wherever we can – in the private sector, in Navodaya Schools, or wherever there is an opportunity. Build exciting role models for young people, and celebrate them, leveraging the social media.

### **3.3.4 Redefine the idea of “Good Teacher” – replace Old Ideas with Contemporary ones**

All current norms of good teachers and teaching need to be turned on the head. That is the only way we can actually re-examine the whole idea of teachers and teaching. Students should be able to think, question, discuss, debate, analyze, articulate ideas both in writing as well verbally, because these are important skills, not just for the world of work but just to engage with other people. Students should be learning from teachers who are kind, fair and knowledgeable and who listen to them. A teacher must be able to listen to different points of view from the students. All schools must be inclusive places where children of different abilities as well as disabilities are able to learn in a conducive environment, with a sensitive teacher.



### 3.3.5 Conduct Media Campaign to Re-imagine the Teacher

Well thought out sensitive media campaigns to enhance the image of teaching and teachers can help. Several years ago the UK government did that and attracted a lot of young people into the teaching profession, and we need more teachers than any country.





## 4. EVOLVING STUDENT ASPIRATIONS

The focus group on this thematic area proposed three main aspirations among students across schools in India – employability, social status and mobility and acceptance/dignity among their peers. Some participants emphasised the fact that these aspirations usually overlap and hence cannot be expressed in isolation from each other. It was also noted that complex factors influence students as they determine their aspirations, while they move from one stage of education to other.

Further, the group discussed the present situation for the overwhelming bulk of students: students/children have limited or no choice in their aspirations, often influential adults determine student aspirations – portraying a situation where ‘students don’t know what they want’. Today, there exists a clear difference of aspirations among students across varied context and background – students (and parents) in the urban and rural locations have different sets of aspirations, similarly there are differences in aspirations among girls and boys. The group suggested that there is a strong linkage between students’ experience/exposure in school and its learning environment to the aspirations instilled in them.



The group members put forward few insights into the elements of a transition pathway for students.

### 4.1 NURTURING ASPIRATIONS

- Nurture student aspirations by bringing in relevant online content in a curated fashion to enhance the students’ learning experiences and exposure.
- Evolve multi-disciplinary curriculum in the pre-primary/primary schools
- Aspirations should be a part of school, student and parents discussions/deliberations, it should be comprehensive process
- Enhance self-esteem of the student, which is an important factor in enabling them to aspire, through child-centered play/activities
- Build strong linkages with higher education institutions to schools and vice-versa was also highlighted.

According to the group, to achieve the above-mentioned proposal, they need to provide hands-on-experience or experiential learning to all the students– real life apprenticeships in addition to skill development. Further, there is a need for awareness programmes for parents/teachers/community via dialogue. It would help to create consortia of schools (network of schools) to nurture student aspirations.

The group members suggested a gradual transition from self-centered aspirations based on economic orientations to more pro-social altruistic aspiration model among students in the schools today. This could be achieved through peer-to-peer interaction both inside and outside the school environment. This means that the students should feel sufficiently empowered to talk about ‘how society should be organised’ or how things should be done in the adult world.

The discussion points included the following insights:

## **4.2 TRANSFORMING SCENARIO**

### **4.2.1 Focus is on Exam Outcomes**

Currently, student aspirations are influenced by parents and peers. Students often don’t know what they want, or what they may aspire to. They are not confident about their future, or well-informed about choices and options, or pathways to success. A gradual transition is occurring towards children’s choices, but this is only in small pockets. There is diversity in aspiration, urban, rural, gender and socioeconomic status related. But aspirations are mainly articulated in examination-oriented terms, towards qualifications. They are not encouraged to think beyond examinations. Employability however, remains the key destination for learning.

### **4.2.2 Promote Multi-disciplinary thinking and Project work in Schools**

Multi-disciplinary curriculum at all school levels and collaborative project work starting early in school years will help in developing confidence among children and trigger innovativeness and goal-orientation. Small research initiatives will help towards empowering students, linking higher education institutions to schools and within schools, not treating high school as a separate entity. Real life experiences such as field visits, apprenticeship for older children, activities and play initiated by the students will be relevant.





Mr Mohandas Pai added the following:

#### **4.2.3 Create Opportunities for Interaction with Outside World**

Student aspirations turn change with time. Students decide based upon their limited experiences and as they grow older they decide what they want. In order to allow student aspiration to flourish they must be allowed to go in a voyage of discovery in the school, so school has to be an open system. Students should meet interesting persons, go for nature walks, be exposed to good documentaries, etc., for example, documentaries can be extraordinary teaching material of very high quality. Students anywhere should see such material and be allowed to dream. They must have access to the best teaching material, go on a wireless discovery.

The key thing is that the school should connect to the outside. School teachers should take children to museums, to plays, outside experiences and bring the outside world in so that children decide and raise their own aspiration in an open system. Most children depend on parents because of lack of experience, but now more and more people are doing what they want.



## 5. Working with Diversity

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The following points were made in the focus group discussion recommendations:

Diversity (in student ability, socio-economic level) already exists in the majority of schooling contexts, however it needs to be leveraged to benefit children and those entrusted with the education of children.

Celebrate diversity in a classroom, encourage children to talk about how they think. This leads to peer learning/teaching. Build the child's self-esteem in a diverse classroom by counselling, rewards and positive strokes.

The focus group summarised its recommendations with the following observations:

Living with diversity is a requirement of the world today. Whether it is political, philosophical or economic diversity, these percolate down to the miniscule level in the classroom also. In order to carry along a very effective classroom situation where the future schools can become very strong and each individual participant, whether the teacher or the student can become contributors to society, two points, viz. curriculum design and the role of the government have to be addressed.

Curriculum design:

- Actively promote diverse domains of development; build flexibility for learning
- Rather than a common national curriculum, regional curricula and school districts should be encouraged
- Curriculum design should encourage innovation

Role of Government:

- Relax restrictions in pedagogy and curriculum but regulate working conditions of teachers
- Build accountability



## **5.1 INSTITUTIONAL ASPECTS**

### **5.1.1 Challenge of working with Diversity**

With respect to gender, there are studies that show that girls perform better in a girls only classroom. Therefore, promotion of diversity may always not be desired always as non-diverse environments have their own benefits.

In a school where there is a fisherman's child and a scientist's child in the same classroom, the children who are from a higher social class are able to learn faster. Therefore the fisherman's child struggles to improve his self-worth and self-image.

The peer-learning and collaborative learning environments offer avenues to benefit from diversity amongst the learners.

### **5.1.2 Design Curriculum to Allow different Ability Levels**

Our curriculum does not address diversity issue- different ability levels of children is not addressed in a classroom.

### **5.1.3 Test out Diverse Pedagogies**

Diversity is not an end in itself. A rural school may not be diverse in terms of student socio economic backgrounds. Our objectives should be based on the student needs in the classroom. The example was given of a Isha Vidya school in Karnataka, which functions on the lines of the Gandhian method, as a self-sustaining model. Students manage the hostel, and classroom. These may be difficult to scale up. But there can be learnings from such successful experiments.

### **5.1.4 Should the government run schools, or regulate the education system?**

Government is not necessarily the most efficient or effective school operator. However, government must fund education massively and ensure that all children have the right to compulsory education for 12 years. Government should set and measure educational outcomes, but it does not need to run schools. Government's role is to check and prevent mal-practices. If school education is properly funded, it can be run by more capable private sector organisations.

On this point a dissenting note was also sounded, saying that centres of excellence exist which cannot cater to promoting mass education. The government legislation is absolutely imperative.

### **5.1.5 Are examinations designed to Include or to Exclude?**

The role of testing must be looked into- our testing mechanisms are designed to exclude instead of include. There is shortage of opportunity and that's why examinations are designed to keep people out, rather than to measure ability. We need many more schools and colleges, if we want to reform the examination system.

### **5.1.6 Let diverse Curricula & diverse Pedagogies co-exist**

Many international curricula were discussed as being very good and very effective. They are restricted to high-paying private schools. The students there are offered flexibility within subjects among what topics to choose, and go on to study in highly reputed colleges abroad. The present CBSE-I is an initiative which matches the IB Curriculum. But the problem is there is no awareness in the public, nor is there uptake from the university. The school curricula cannot be reformed in isolation of university practices.

## **5.2 APPROACHES TO ACCOMMODATE AND LEVERAGE LEARNER DIVERSITY**

### **5.2.1 Seek Excellence in each Individual**

Now we are in the era of human excellence. We must adopt a diversified approach in a classroom and go well beyond books. We must look at excellence of individuals and this will help us increase our human resources and excellence in jobs.

### **5.2.2 Promote Innovation and Adaptability**

Diversity is moving beyond the vocational subject framework. Although the nature of work has changed, our children are poorly prepared to adapt as they are still educated within a very regimented vocational framework. Schools have to evolve in their thinking and introduce; subjects like sports, fine arts and music as treat them as serious subjects to be pursued. Disciplinary barriers should be more flexible, and the traditional disciplines should be augmented. Today people are looking to employ those who have diverse knowledge.

#### ***Permit curricular flexibility and encourage competition***

Flexibility may be given to individual institutions to frame and execute curriculum keeping in mind the social, economic, cultural, ethnic and local conditions to meet the requirements of the 21<sup>st</sup> century. A uniform national pattern of curriculum does not work effectively. Autonomy has worked well in higher education institutions in India and some of those learnings are transferable.

### **5.2.4 Combine global and local perspectives and skills**

Curriculum should include requirements for students to work with global communities. At the same time, the curriculum should include the ethnicity of the people in the locality, the cultural background, socioeconomic background and also the social requirements.

### **5.2.5 Promote curricular diversity and innovation**

Curriculum should include or involve unique practices, and scope for innovation and trailblazing. Trailblazing includes tolerance of failure, and room to improve practices and performance. If curriculum diversity is competitive the education output will also be refined.

Mr Mohandas Pai added the following observations:

In nature we see that sustainability comes from diversity. So must resist the trend to a very standardized monotonous school education where experience wants to be same. Administrators prefer sameness, but sameness may not be desirable from an educational outcomes standpoint.

### **5.2.6 Emphasize local content**

Curriculum must be local community-centric because we have got to learn from the community, we stay there and we have to understand the local situation very well. Going with nature, understanding the place of work is a very important thing. We can do this in a very different way.

Schooling should be local-- not national, not state-level, not international. Because schooling is based upon the local culture, local understanding, on top of this a knowledge ecosystem, so schooling is local.

Schooling depends upon socioeconomic conditions. Children from educated families, children from poor families, children from slums, children from rich -- are all very different. When we put them all together, how do we make sure each child is enabled to come up to a minimum standard, we have to



think through how it has to be done with greater care and possibly you know greater coordination? This is the job of educators.



### 5.2.7 A School is Not a Gated Community

There were schools in the past, where your classmates may be children of butchers, school teachers, businessmen, rich people, some cleaners, everybody else, and the students didn't know the difference. The students didn't understand religion, didn't know the differences. All ate together, all worked together and did everything together. Peers could be from different levels of society and yet would have great respect for one another. The diversity in the school should represent the society around us. Schools cannot be like gated communities. The entire society should be there in representing the different sort of way so when they go out, they understand how to live among everybody else and don't become distant from your own kinsmen.

### 5.2.8 School Boards instead of State Boards to promote Innovation

We must have school boards instead of state boards. Every district should have a school board and much of the control and mechanism should be the school board because the district can control. We have 640 districts, with approximately 20 lakh population in each district. With 15% children, we have 3 lakh children in a district, which is a small enough number. District must be empowered with a district board. The districts can compete on education. Districts should have the autonomy to go to the schools and tell them to experiment and innovate. This will give freedom and many diverse innovations will come up, rather than something coming from the top. There might be broad guidelines, within the guidelines the school have to be autonomous.

### 5.2.9 Create a School for Gifted Children

We need a school for gifted children. Gifted children can come together in one school where they are peers and study at their own pace. They may become doctors at 15, or graduate from school at 11, with no restrictive structures. Let them go at their own pace, let them do what they want,

learn and it may be done in places like a national science campus where the best professors come in cloistered atmosphere which is safe for them.

#### **5.2.10 Quality of School depends on Quality of School Managemnt**

Why are some schools good? Why are some schools bad? The reason is management.

The top management must have a vision, work on it, be open, be liberal, and allow talent to flower. If they are closed and standardize and inhibit people, quality will suffer.

In the earlier era in the 60s and 70s, government schools were very good because the brightest people went there and the education inspector was a man of reputation. Things have unfortunately changed. Therefore we must encourage good schools to expand freely because management is important. If we have hundreds of good schools, and allow them to freely expand, incentivise them to expand because they bring good management, they can build world-class institutions.



## 6. GOING BEYOND KNOWLEDGE & SKILLS – INTO VALUES & ETHICS

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Beyond knowledge and skills, how do we make sure that values and ethics are embedded into our mainstream curriculum? The focus group summarised its observations as below:

### 6.1 INSTITUTIONAL MEASURES

#### 6.1.1 The Intent of the Education System in terms of Values is not clear

It is very difficult to say what we want to see children as in 2030, but we were certain about certain learned behaviors we do want to see. We wish to groom contributors to the economy and society and not just consumers. However, we lack intention specificity in the area of values and ethics.

#### 6.1.2 Not Moralising, but Participatory development of Values

Values are not concrete and not easy to measure but are transmitted by everyone in the system. Schools can look at promoting ownership of values, in which the programme participants take ownership and find way of having a dialogue from bottom up and top downwards.

Values have individual connotation and context, so rather than moralise to them, students should themselves own and decide for themselves in small clusters or groups and then commit themselves to action within that particular sphere. Teachers will then be able to define that and find space within the structure to develop experiences that nurture those values, transmit them, evolve them, generate them in their day-to-day transaction.

Cluster Resource Centres could take up such programmes across schools. The outcomes what we expect from this value education is it demonstrate values, the children will demonstrate the values what they have imbibed and the school will be able to articulate the values and there will be a value education policy. It is up to the school to measure whatever they learn, what we have given as measure what they treasure and whenever the child inculcates the values, you celebrate the values, appreciate the children and give incentive to the children.

Such a programme can start with a feasibility study.

#### 6.1.3 Values begin at the Top

Values are not necessarily explicitly taught, but they are to be lived. Values cannot be developed bottom-up, but they should be driven top-down. The school management has to live the values that the school children are being expected to follow. The way the school is managed, the manner of interaction between the different people involved in the school, including children, seniors, teachers, non-teaching staff, school management, etc. is the main source of values for the students, rather than books. Thus, value education is a function of the quality of school management, the school purpose and mission. Values are linked with excellence in school education and its reward will be in the overall reputation of the school and the long-term success of the children. School alumni also play an important role in articulating the values of the school.



#### **6.1.4 Encourage School-goers to perform Community Service**

Collaborating with society and community is a critical part of the learning experience. In every government school, we should enable every student to participate in one community project because that is something which really makes the student do something for his or her society. As society is becoming more and more materialistic, more and more tech oriented and less and less playful, so you need to engage the student back to community. So, bringing them back to the community, through community projects will help them find their balance.

### **6.2 OTHER APPROACHES**

Mr Mohandas Pai added the following observations on the subject:

#### **6.2.1 The Value of the Home**

Values are something your parents teach, and are learnt at the mother's knees. Values are learnt from the way a father acts, siblings behave, mother talks, and so on. We learn values while in the arm of the mother, going around seeing things. We learn how to treat people for example.

#### **6.2.2 The Value of Story-telling**

In our traditional culture, stories are a major source of values. Our ancient stories are not bad things, they teach us culture. As Indians, we are born in a particular ethos and the values have come through a particular system. Values have to come from the family and from society.

In the classroom, values become synthetic statements unless you experience it yourself.

#### **6.2.3 Values come from Resolving Moral Dilemmas**

Values come when you experience what is called the moral dilemma. You face a dilemma at a point of time which way it should take then how do you decide. Case studies can play a role here.



## 7. WAY FORWARD & CONCLUSION

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The above sections have provided detailed accounts of the discussions that transpired at the workshop, albeit in a highly summarised form.

Sufficient detail has been captured so as to not lose the essence of the discussions.

### 7.1 DISCUSSION SUMMARY

The discussions focused on the themes of Teachers, Students, Examinations, Technology, Education Policy, Quality and Scale. India has massive challenge – of delivering good quality education to children on the most massive scale, in a democratic setup, where private and public education co-exist and compete and the demands of diverse social and ethnic groups impinge upon curriculum and delivery. A concerted effort is required to deal with this massive challenge and the present time is opportune.

The subject of Teachers – their Status, their Development, Transformation and Enablement, including the creation of favourable infrastructure for teacher training and development, consumed the lion's share of the attention and energy of the discussants. It is clear that role of the Teacher will be transformed over the next several years and the transformation is already visible with the penetration of ICT into schools. However, the transformation is by no means about the decline of the role of teacher, but about a positive transformation and enablement. India's demographic dividend will remain a dream if we don't have a massive cadre of trained teachers, who are well-enabled to adopt ICT and the internet and leverage technology and information in the classroom, but also to function more effectively as a guide to students. The teacher training infrastructure is currently acting as a bottleneck and needs to be revamped.



Students need teachers who can help them navigate the world of information effectively. They also need teachers who can show them a compass for life, help them choose well and take good decisions. They no longer need teachers who are purely and only subject matter experts, as subject matter is now widely available at the click of a button. This changed requirement has massive implications for teacher training and existing institutional arrangements. Indian students have to acquire the skills needed for modern day jobs and tasks, which includes collaborative behaviours, ability to access knowledge from multiple sources, ability to structure ideas, solve problems in diverse domains, and to communicate effectively.

Technology is here to stay. Those who delay embracing technology will end up playing catch up. Technology above all makes it possible to deliver scale – scale of provisioning of education, scale of teacher training, scale of standardised measurement and testing, scale of administrative efficiency, and so on. By transferring mundane administrative tasks to the computer, teachers can be freed up for higher value-added and non-mechanical work. ICT offers the opportunity deliver massive aptitude classification and match students better with higher studies and job opportunities, delivering efficiency in the higher education system. The internet revolutionises learning by making learning continuous, and disrupts the traditional classroom and school model. It enables differentiation of the pacing of learning, permitting gifted children to progress faster. These potentialities of the internet and ICT should be leveraged to leapfrog our education system to the front line.

The examination system is holding the education system hostage. The examination system, unless fundamentally reformed, cannot free up the education system. The examination system has been designed for a world of high demand and short supply of higher education. It can be overcome today, by the use of ICT – both to deliver examinations and assessments differently, but also to analyse the outcomes and guide the student population into different and more productive vocational and higher study streams. There is also the real possibility to re-design examinations and standardise them.

The massive demand for education – both student education and teacher education – cannot be achieved without leveraging modern technology. Certain types of infrastructure cost can be avoided by developing modern internet infrastructure which can be leveraged for many uses.

The allocation of adequate public funds to school education is the first step in education planning. India cannot be a dynamic and internationally competitive economy without high quality social indices, particularly in education. Allocation of 6% of GDP to education is required to guarantee 12 years of education to students and to deliver the other requisite infrastructure in terms of schools, teachers, and so on. The role of state should increasingly be to enable, rather than to restrict. Quality standard-setting and certification should receive far more attention, while the role of the private sector in delivery of education should be promoted. The state should guarantee school education for all children.

Education quality depends upon good management and high standards. Encouraging district-level boards and competition among the districts will foster better quality. Teacher training has to be made competitive, whereas teacher certification can be the function of government.

## **7.2 WAY FORWARD**

A succinct summary of the discussions are presented in the following section, in the form of 35 concise recommendations.

The recommendations are addressed to all stakeholders. However, government is the single stakeholder with the largest leverage. Actions by government in the area of planning, public

provisioning, decentralisation, liberalisation, etc. will enable other stakeholders to play their part.

Schools who are early adopters of innovative methods can demonstrate successes and failures and accelerate the national learning curve by sharing their findings.

Technology providers and corporations have already garnered experience by working with schools and are a source of detailed insight into systems that work. They have a large role to play in taking India's schools to the cutting edge.

Therefore the action items listed in the following section are addressed primarily to Government, School Managements and Corporates in the education sector, as well as Research and Advocacy bodies including national academic centres and non-profit organisations.

It is imperative that the momentum of this workshop be maintained. The engagement of Karnataka Jnana Aayoga in making use of these findings in shaping its action agenda will be critical. All the other stakeholders will be required to continue to collaborate on this journey as the recommendations move from paper to practice.



## 8. RECOMMENDATIONS:

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### 8.1 BUILD A NATIONAL CADRE OF TEACHERS AND ENHANCE TEACHER STATUS

- 8.1.1 Adopt a massive mission mode of in-service teacher training in science and humanities at the school level.
- 8.1.2 Develop a national large scale teacher training programmes across the countries allowing private participation with an efficient accreditation system through multiple agencies to maintain high standards. Set up a task force to re-visit and re-define “Teacher Effectiveness” to come up with appropriate metrics covering all the dimensions of teacher effectiveness – including subject proficiency, ability to use new or external inputs and ability to counsel and guide students. The entire exercise has to be carried out with large scale participation of teachers so that they recognise the need for being effective and will be able to take up agency in the process of change.
- 8.1.3 Redefine and expand the role of teachers, premised on technology-enabled learning. This will require massive ICT-skilling of teachers, and exposure to good practices and role models.
- 8.1.4 Declare a ten-year “Decade of Teachers and Teaching” – as a nation-wide campaign to enhance the status of teachers, identify best practices, develop innovative approaches, give recognition, etc.
- 8.1.5 Attract high quality talent to the teaching profession through a systematic high impact media campaign. This could include showcasing role models, and highlighting the education sector as a growth sector of the economy
- 8.1.6 Develop short term and long term career paths for teachers, which enable them to have a vision for themselves and a growth path which includes opportunities for learning, acquiring new qualifications, opportunities for travel and self-development, project work, research collaborations, publications, etc.
- 8.1.7 Devise a mechanism to enable mid-career shift from professional work (Engineers/Doctors/ other graduates) to teaching profession through an assessment and certification process than a mandatory 2 year B Ed / M Ed course with age limits. This will help in getting passionate teachers who would be innovative.
- 8.1.8 Consider School Education as critical component of national development & progress and therefore, employ high calibre & passionate teachers by providing a highly remunerative career.

### 8.2 UNDERTAKE EXAMINATION REFORM

- 8.2.1 Introduce a balanced score-card model for assessment of students, with exam scores complemented by assessment on key behaviours and skills.
- 8.2.2 Review the structure of the national competitive examinations and central board examinations and develop measures to rationalise them with reference to their purpose, so that students may be spared needless stress of multiple entrance exams . This includes creating common benchmark tests which will be used as a proxy for different ability or achievement levels. Additional tests would test only additional requirements.
- 8.2.3 Introduce different aptitude or ability levels in curricula and examinations, instead of setting a singular high-achievement standard for examinations. This will alleviate the



problem of score magnification, i.e. a large number of students achieving very high scores, e.g. 90%+, which makes it difficult to distinguish between varying abilities of students. Redefine assessment such that there is a paradigm shift from memorising information to critical assessment of basic foundations and emerging skills. This will necessarily need the education system to work closely with the industry and the broader employment domain.

- 8.2.4 Introduce project work and collaborative work as integral part of the learning methodology early in schools and link them to student performance assessment. This may be linked to learning of professional behaviours (ref. #16 above) and skills (ref. #17 above), as well as values (ref. #20 above).

### **8.3 ESTABLISH NATIONAL QUALITY STANDARDS**

- 8.3.1 Set up a nationally and internationally corroborated/equivalent benchmark or standards for attainments at the various school levels
- 8.3.2 Develop and institute a a National accreditation system of multiple agencies to measure school quality with provisions for clear feedback mechanisms. The purpose of the exercise should be constructive rather than only evaluative.
- 8.3.3 Study global education quality rating metrics and identify some key parameters in which are inherent strengths of Indian education system such that it provides a competitive edge in the global scene.
- 8.3.4 Set up high quality National Teacher Eligibility Test for qualifying and selecting teachers

### **8.4 MAKE INDIAN STUDENTS INTERNATIONALLY COMPETITIVE**

- 8.4.1 Make English a compulsory subject from Class I, while retaining the choice for any medium of instruction, to enhance the communication skills in English among Indian students. This will in turn make India competitive in the global market, while democratising and removing the 'elite' status associated with familiarity with English in India
- 8.4.2 By adopting relevant pedagogies, teach behaviours that will drive professionalism in the workforce among teachers. Encourage collaborative learning practices, with or without the use of technology, as it enhances learning outcomes as well as practical and social skills.
- 8.4.3 Ensure that each child has independent access to the digital world, via a low-cost Tablet, as the use of mobile-based and cloud-based technology will be a vital tool for tomorrow's student
- 8.4.4 Encourage the adoption of self-paced learning, with or without the use of technology. This involves breaking up of the curriculum and use of digital technology for learning. This will technology which will provide greater flexibility and continuity between the learning milestones and yearly promotions in the school system.

### **8.5 EMPOWER & PROMOTE INNOVATION IN SCHOOLS**

- 8.5.1 Decentralise pedagogic practices and allow schools the freedom to experiment with pedagogies and encourage innovations in pedagogy and assessment.; Provide broad national guidelines for the curriculum and allow flexibility for teachers to develop curriculum reflecting the changing world. This will encourage innovation and create models of excellence which will be multiplied by public choice
- 8.5.2 Establish School Districts, with autonomous and empowering localised structures, in place of the centralised school board system. School districts will be more effective to create local

relevant curriculum and develop better accountability mechanisms. and School Districts can be required conform to national guidelines and performance benchmarks.

- 8.5.3 Mandate ‘open operating systems’ so as to curb the introduction of proprietary systems which will increase the cost of education; reward sharing and promote peer-learning among schools. Establish regulation for promoting the dissemination of innovative practices so that no entity can capitalise unfairly or at the expense of others.

## **8.6 REPLICATE SUCCESSES**

- 8.6.1 Study the success factors of the 525 Jawahar Navodayar Vidyalayas and identify the sustainable, scalable and replicable components, for inclusion in state-level and national-level planning.
- 8.6.2 Set up 4 Navodaya Vidyalayas serving the 4 parts of Karnataka state; and thereafter seek to set up one Navodaya Vidyalaya per district.
- 8.6.3 Develop gifted education programme and integrate it as part of the NV schools on a pilot basis.
- 8.6.4 Identify Role Model Schools for different good practices, for example, Use of Technology, Empowering Teachers, Creativity via Diversity, Enabling & Achieving Student Aspirations, and Instilling Values & Ethics -- and celebrate & disseminate their success stories. For example, institute Awards in these categories. Where Alumni Networks exist, they can play a large role.

## **8.7 UNDERTAKE EDUCATION PLANNING & PUBLIC POLICY MEASURES**

- 8.7.1 Encourage the deployment of technology for mass-scale aptitude testing and individual-level planning for career choice at high school level. Use the data for large-scale education planning spanning the next 10 years. Use the PPP opportunities to realise the plan.
- 8.7.2 Guarantee 12 years of schooling to all children of the country and allocate public funds to ensure the same
- 8.7.3 Encourage the adoption of MOOCs and other online teaching practices and the formation of online learning communities on a large scale; technology can be leveraged for scaling up.
- 8.7.4 Allow large-scale public-private partnerships in the school system, while regulating the educational ecosystem and the outcomes. PPPs can be introduced in teacher training, proliferating model schools (Navodaya Vidyalaya), technology creation, testing, certification, and other related areas.
- 8.7.5 Encourage the growth of thousands of schools and teacher training institutions, but regulate with high educational performance standards and high operating standards. About 5 crore students are expected to be seeking higher education within the next 10 years and the numbers are growing from year to year, whereas the infrastructure that exists cannot support such growth
- 8.7.6 Massively increase allocation of public funds for the schooling system, to 6% of GDP as recommended in the National Policy on Education (1986). This is a pre-requisite for Indian education system to deliver the quality and quantity of education that is required to transform India's social sector indices from LDC-levels, in the area of education
- 8.7.7 Re-orient and train government cadre to be effective regulators and to frame high quality regulation for the education sector in a consultative manner

- 8.7.8 Encourage the adoption and showcasing of local cultural practices as part of school pedagogy. This is linked to # 32 above, and can be achieved by instituting Awards, for example.
- 8.7.9 Identify top performing schools and encourage them to expand and replicate themselves; set up a national fund with transparent criteria for encouraging and rewarding the best managed schools and incentivising them to grow.
- 8.7.10 Set up a School for Gifted Children with the mandate to nurture genius. India lacks a school model for exceptionally talented children, who can be enabled to learn and create, free from the constraints of the standard system. Thus children can achieve in one year what their peers may achieve in two or three. This should be done with careful planning and should take into account global experiences in this area. The school can be initially set up in a national science campus.

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- Shri Mohandas Pai, who presided over the Valedictory Session with detailed comments and observations many of which are captured herewith
- Shri Kapil Mohan Principal Secretary , Primary and Secondary Education, Karnataka Government, who focused on the initiatives of government and the challenges therein
- Mr. Venkat Rao Malineni, Head of TCS iON, who highlighted the role of technology in shaping the future of education
- Dr. Tim Jones, Director, Future Agenda 2020, who shared the global insights which were helpful in understanding the larger picture of change
- The Participants – who shared their thoughts and opinions (the participants are listed in Appendix II)
- Team moderators who prepared summaries of the focus group discussions– Shri V. Mahadevan of TCS iON, Ms. Maya Menon of Teacher Foundation, Ms. Seetha Murthy of Silver Oaks School, Hyderabad, Prof. Malavika Kapur of NIAS and Mr. Jeby Cherian of ISHA foundation
- NIAS Doctoral Students who acted as Workshop Rapporteurs – Mr Ajay Chandra, Ms. Anupama Bittianda, Mr. Chetan Singai, Ms. Savitha Suresh

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## **APPENDIX I: LIST OF KEYNOTE SPEAKERS**

List of Keynote Speakers (Alphabetic Order)	
1	Baldev Raj, Prof., Director, National Institute of Advanced Studies, Bangalore
2	CNR Rao, Prof., Hony. President, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore
3	Kapil Mohan, IAS, Principal Secretary Primary & Secondary Education, Government of Karnataka
4	Mohandas Pai, Chairman, Manipal Global Education Services Pvt Ltd
5	Tim Jones, Director, Future Agenda, UK
6	Venkatarao Mallineni - Business Head, iON Education, TCS



## APPENDIX II: LIST OF PARTICIPANTS

List of Participants (Alphabetic Order)	
1	Abhijit Kar, Scientific Officer, Jagadis Bose National Science Talent Search, Kolkata
2	Ajay Chandra, Researcher, NIAS
3	Anitha Kurup, Professor, NIAS
4	Anu Bittianda, Researcher, NIAS
5	BVA Rao, Montessori, Former VC, VIT University & Former Professor - IIT Madras
6	Chetan Singai, Researcher, NIAS
7	Deepak K, Karnataka Knowledge Commission, Govt of Karnataka
8	Girish E., Principal, PSG Public School, Coimbatore
9	Jaya Swaminathan, XYO Learning
10	Jeby Cherian, Isha Foundation
11	Jerry George Mathew, Clarence School
12	Jose Cherian M , Associate professor and HOD, School of Education, Christ University
13	Kalai Selvi, Deputy Principal, Vidya Shilp Academy
14	Kartik Yadav, IIMB
15	Kiran Pai, Chairperson, Connectivate
16	KN Bhat, KV Institute of Science
17	M P Vijayakumar, Bannari Amman School
18	Mahadevan Venkatakrishnan - Product Head, K12, TCS
19	Malavika Kapur, Professor, NIAS
20	Maya Menon, Teachers Foundation, Bangalore
21	Rittika C Parruck, Asst Director Education, British Council, New Delhi
22	Nandagopalan N C, Secretary, PSG Sarvajana Higher Secondary School, Coimbatore
23	Prakasha G, Assistant Professor, School of Education, Christ University
24	Ponsankari, Mrs.G., PGT, KV, IISC
25	Savitha Suresh, Researcher, NIAS
26	Seetha Murthy, Principal, Silver Oaks, Hyderabad
27	Shailaja D Sharma, Director, SSense Intelligence & Member, Future Agenda, Bangalore
28	Shivali Tukdeo, Assistant Professor, School of Social Sciences, NIAS
29	Sooraj Divakaran, TCS iON
30	Sudhir Ramachandran, Connectivate, Bangalore
31	Venugopal B. Menon, Professor and HOD, International studies, Christ University
32	Vijayaganesan, G., Atomic Energy Central School, Kalpakkam
33	Vijaykumar Krishnamurthy, Isha Foundation
34	V.S.Varma, Professor & Advisor Planning, AUD, Delhi

## APPENDIX III: WORKSHOP CONCEPT NOTE

### “THE FUTURE OF EDUCATION”

#### *A workshop on the future of school education in a changing India, in the FutureAgenda series*

Dramatic changes are anticipated in the future of education and learning in general. Knowledge will be obsolete as information is ubiquitous. Educators will increasingly leverage the potential of children to learn in self-organised environments, enabled by technology. The education system in most countries is obsolete, having been designed for a world that has changed. The school will become the place to develop core skills – emotional intelligence, leadership, critical thinking. These and many more insights have emerged from the Future of Education workshops held since January 2015. After discussions in Hong Kong, Dubai, South Africa, UK, Istanbul and Washington the topic will be brought to a climax in Bengaluru.

FutureAgenda 2015 is a programme of 100 workshops on 21 selected topics, ranging from Future of Trade to Future of Old Age, being held in more than 25 cities on all 5 continents. At the present it has crossed the halfway mark with over 50 workshops held in 19 countries. FutureAgenda was launched in 2010 to enable stakeholders -- with foresight based on facilitated dialogue. The top 100 insights from 2015 will be disseminated to FutureAgenda hosts, partners and collaborators, who will in turn use them to create their own thought pieces and organisational strategies.

The world is rapidly changing. The future cannot be predicted as an extrapolation of the present. The number of variables affecting the future profile of every domain has increased greatly, making it necessary for stakeholders to incorporate trends and innovations in other domains into their planning. Also, planning timelines have shortened, making it necessary for faster decision-making. These behaviours are necessary for organisations to avoid rapid obsolescence and to remain relevant. In India, the education sector has seen major changes in the past decade. These changes have been introduced among other things, by the significant role of technology and the internet, by public preferences in terms of choice of schools, the scale of growth of the private sector, and also by large-scale interventions of government. Students and families in urban areas are availing of an expanded range of options in terms of school education.

However, many of the challenges remain. The questions of access to education and quality of education and educational achievements continue to challenge the educational community. The digital divide continues to create pools of educational haves and have-nots. The promise of a demographic dividend threatens to turn into a curse.

In this context, the following questions are pertinent to a discussion on the future of education:-

1. How are the roles of the teacher and the classroom going to change with the introduction of virtual learning? How would an optimal mix of real and virtual learning experiences be achieved?
2. Will technology-enabled learning extend the digital divide into the world of K-12 education, creating new classes of educational haves and have-nots?
3. How will knowledge and values be inculcated, as skills get greater emphasis? Will skills be imparted at the cost of other learned behaviours?
4. How would Indian students compete in the global economy, not only as low-cost skilled labour, but as shapers of the future world?
5. How will India and world match the changing and diverse aspirations of the youth and children?

6. Do we have a plan for the future citizens and in that context are we doing the right things to prepare our children for the future India and the world?

NIAS is organising a stakeholder workshop to explore some of these dimensions of the future of education. The purpose of the meeting is to generate a debate rather than seek singular solutions to the complex problems facing school education in India and the world.

In this world of increasing differentiation of formal school education and the rapidly changing school education that brings to fore new players like technology enablers, innovators and entrepreneurs, the educational ecosystem has been forced to deal with the contradictions and interplays between varying aspirations of the different stakeholders. How can formal education operate within this newly defined space, in order to meet the multiple aspirations of the new generation of India, as well as parents and the society at large -- will be the running theme of this consultation

Participants will bring diverse perspectives to the above questions, enabling a free exchange of ideas and development of fresh perspectives. The workshop is intended to foster dialogue and enable cross-pollination of ideas, thereby giving all participants insights into the changing world of education, which will be useful in shaping policies, programmes and activities. The consultation aims to forge a direction towards the transformation that is necessary. How can this be done? What can we provide as part of our formal education that will make a real difference with an advantage for our young citizens?

The select participation of contributors from the ecosystem to 'propose, debate and find' is chosen as a way to achieve constructive outcomes.

For a compilation of FutureAgenda's insights from previous Future of Education workshops, visit:

<https://www.flickr.com/photos/131046472@N07/16434503892/in/album-72157650614894722/>

## **APPENDIX IV: THEMATIC FOCUS AREAS**

### **List of Thematic Focus Groups**

#### **1. Emerging Teaching & Learning Practices**

Pedagogic practices are being transformed by technology. However, technology is not the only source of transformations. Changing expectations of stakeholders and changing behavioural patterns are also forcing the pace and shape of change. Education is increasingly becoming student centric. Changing pedagogic practices to increase student participation is the focus of the day. Explosion of information through technology has made it imperative for teachers to learn and impart skills which will help students intelligently navigate this vast volume of information. Just-in-time learning, which was once regarded as suitable only to working professionals, is now becoming ubiquitous. Inter-disciplinary modes of studying and learning are breaking down the barriers between subjects. How will these emerging practices evolve and what transformations should educators and policy makers be preparing for?

#### **2. Working with Diversity**

Diversity comes in many forms. Economic and social disparities are usually addressed via the concept of inclusion. However, there are also other disparities, for example, disparities in learning abilities, aptitudes and preferences. The goal of school education via the right to education will have to include responses to children of varying abilities. How does the current formal education respond to gifted children on one end of the spectrum and the children with learning disabilities on the other end of the spectrum? Educators may need to make a paradigm shift, to move away from standard teaching practices that are geared towards the 'average learner'. What are the new pedagogic practices that empower a teacher to cater to this diverse set of learners? Will we have to strike a balance in many more respects, as every child enters the arena of learning, with his or her own needs? What are the kinds of diversity we should be thinking about, and how are we placed to embrace all of those diversities?

#### **3. Changing Roles - of Teachers & Students**

The teaching-learning process has been typified in many ways, even though every teacher-student engagement is unique. For example, we have the gurukul model and we have the mass education model. Today, we also have massive online courses and e-learning solutions, where the teacher may be remote, or may be acting as a facilitator rather than an instructor. Are the dynamics of interaction between teachers and students changing? If yes, what are those changes? Which of these changes are likely to be long-lasting?

#### **4. Student Aspirations**

The picture of the world is changing. Every third person in the world would be an Indian or Chinese, by 2020. The educational platform is fast expanding with geographical boundaries disappearing. The student of today needs to be equipped with skills that will help him/her to access global opportunities in the work space. The interfacing of cultures also need specific training as Indian students increasingly work with people of different cultures. The nature of global jobs and migration of people is altering global demographics. Earlier, Indian students only migrated for higher education, but the age of academic migration is dropping steadily. As computers take over human jobs, the skills required are changing. What do Indian school-goers aspire to? Of course, there will be a lot of

variability in their aspirations, but what are the ingredients that are now emerging on the horizon? How can we address these new needs via curricula, testing practices and institutions?

### **5. Beyond Knowledge & Skills -- into Values & Ethics**

In the din around knowledge and skills, are we missing a key ingredient of education - instilling values and ethics? Is our education process and lifestyle orienting itself more and more to pragmatic arrangements of skills for jobs, but not enough towards behaviours and character-building? What are we currently doing towards character-building? What are the sources of values and ethics that students look towards - today and in the future? How well will the educational system leverage these sources? How does one seamlessly work through building capacities of students in the area of knowledge, skills, values and ethics? How can schools create such spaces as part of the curriculum?



## APPENDIX V: EVENT AGENDA



**National Institute of Advanced Studies**  
Indian Institute of Science Campus, Bangalore 560 012



*Consultative Workshop on*  
**"Future of Education: The Schools of the Future"**  
*29 July, 2015*  
**National Institute of Advanced Studies (NIAS), Bangalore**

### AGENDA

9:00–9:30	Arrival, Registrations & Mutual Introductions
	<b>Inaugural Session</b>
9:30 –9:40	Welcome Address and Objectives of the Workshop – <i>Prof Baldev Raj, Director, NIAS</i>
9:40–9:50	Findings from the Global Series – <i>Dr Tim Jones, Director, Future Agenda</i>
9:50 –10:00	The Role of Technology in Education – <i>Shri Venkatarao Mallineni, Business Head, iON Education, TCS</i>
10:00–10:15	Government of Karnataka Education Planning, <i>Shri Kapil Mohan, Secretary, Department of Education, Government of Karnataka</i>
10:15–10:40	Inaugural Address – <i>Prof CNR Rao, National Research Professor, Linus Pauling Research Professor &amp; Honorary President, JNCASR</i>
10:40–10:55	Facilitated Q.A session
10:55–11:00	Vote of Thanks, <i>Prof Anitha Kurup, NIAS</i>
11:00–11:20	Networking Tea Break
	<b>Theme-wise Focus Group Discussion</b>
11:20–11:30	NIAS Education Initiatives and Workshop Context Setting, <i>Prof Anitha Kurup, NIAS</i>
11:30–12:00	House Rules & Introduction of Themes, <i>Dr Shailaja D Sharma, Future Agenda</i>
	Theme-leaders introduce and form groups
12:00–1:00	Break-out discussions
1:00–2:00	Networking lunch and inter-group informal discussions
	<b>Plenary</b>
2:00–2:30	Finalisation of Group Recommendations
2:30–3:30	Plenary with Group presentations, with Q/A following each presentation
3:30 – 4:00	Networking tea break/ Theme Moderators work on workshop summary
	<b>Valedictory Session</b>
4:00–4:35	Theme Moderators present the workshop recommendations to Panel
4:35–4:50	Valedictory Address – <i>Shri T V Mohandas Pai, Chairman, Manipal Global Education</i>
4:50–5:00	Vote of Thanks, <i>Dr Shailaja D Sharma</i>



