

ENABLING EFFECTIVE SCHOOL TO WORK TRANSITIONS:

COVID-19 AND BEYOND



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Acknowledgements

For several decades now, there has been considerable emphasis on the need for 21st Century Skills. When we conceptualized this study, the disruption caused by the pandemic made it more evident than ever that the way we work and live will go through pivotal shifts. Thus, making these skills imperative for a young generation of learners entering work. The NEP 2020's mandate and resolve further provide an impetus for these skills to be brought to the center of our education delivery systems. We conducted the study, therefore, with the following intent. First, to understand what the disruption meant in the economy for young learners and, second, to investigate how we may integrate 21st Century Skills in the education system.

This research would not have been possible without the contributions of several people. First and foremost, we would like to thank the learners, teachers, and education functionaries who gave us their precious time. These have provided insights into contextual challenges, solutions, and barriers they face.

We would also like to thank experts in academia, industry, and practice and implementation, who brought incisive insights into workplace trends and a deep understanding of 21st Century skills and towards integration in schools.

Further, our understanding of the systems-change approach for a system as complex as the public education system would not have been possible without the contributions of organizations who work at the grassroots. We are thankful to Kaivalya Education Foundation, Aavishkaar, Lend a Hand India, Reap Benefit, and Flow India for sharing their knowledge towards in-depth case studies.

Finally, this research would not have been possible without the deep commitment from HT Parekh Foundation. We are thankful for their extensive support through all phases of the research study.

Thank you also to the readers. We hope you find this an engaging read.

About HT Parekh Foundation:

The H T Parekh Foundation is the philanthropic arm of HDFC Limited, established in 2012, the birth centenary of its Founder Shri H.T. Parekh, to commemorate his significant contribution toward the development sector in India. It is a progressive, impact-driven, philanthropic foundation, guided by the principles of inclusion, commitment, excellence, integrity, and respect.

The Foundation envisions an inclusive India where vulnerable communities have the access and opportunity to transform their lives and move from a state of surviving to thriving. Since its inception, the Foundation has worked across rural and urban India with a focus in Healthcare, Education, Livelihoods, Sustainable Habitats, and Persons with Disabilities (PwDs). With a focus on strengthening the education ecosystem, the Foundation supports interventions, programmes, and research that have the potential to improve education.

About Quest Alliance:

Quest Alliance is a not-for-profit based in Bangalore, India, and works with children and youth to enable a seamless school-to-work transition. At the core of our approach is empowering young people to build self-learning pathways for 21st century skills using education technology. Our work includes building capacities of the ecosystem including teachers, principals and governments.

We design scalable solutions that enable educators and system leaders to address critical gaps in India's education and skills training ecosystem. This is done through programmes with diverse partners that promote effective and responsible use of technology to scale initiatives in education, employability, and entrepreneurship. As we scale our programs, technology continues to play a key role to reach the 4 million learners we have set out to impact in the next 3 years.

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Abbreviations

APEC:	Asia-Pacific Economic Cooperation
ASER:	Annual Status of Education Report
ATC21S:	Assessing and Teaching of 21st Century Skills
ATL:	Atal Tinkering Labs
CCSSO:	Council of Chief State School Officers
CMIE:	Centre for Monitoring Indian Economy
DeSeCo:	Definition and Selection of Competencies
DFC:	Design for Change
ELSP:	Employability and Life Skills Program
EMC:	Entrepreneurship mindset curriculum
ESG:	Environment, Social and Governance
ICT:	Information and Communication Technologies
ILO:	International Labour Organisation
MHRD:	Ministry of Human Resource Development
MIT:	Massachusetts Institute of Technology
MSME:	Micro, Small and Medium Enterprises
NEP:	National Education Policy
NGA	National Governors Association
NPSDE:	National Policy on Skill Development and Entrepreneurship
NSDA:	National Skill Development Agency
NSDC:	National Skill Development Corporation

OECD:	Organization for Economic Co-operation and Development
P21:	Partnership for 21st Century Skills
PLI:	Production Linked Incentive
PMGDISHA:	Pradhan Mantri Gramin Digital Saksharta Abhiyan
PPP:	Public–Private Partnership
RCT:	Randomised Control Trials
SCERT:	State Council of Educational Research and Training
SEEL:	Social Emotional Ethical Learning
STAR:	Standards Training Assessment and Reward
TC:	Training Centre
TSPs:	Training Service Providers
UNESCO:	United Nations Educational, Scientific and Cultural Organization
UNICEF:	United Nations Children’s Fund
VTPs:	Vocational Training providers

Introduction:

Background and context to research

School-to-work transitions are defined as periods or paths that young people (aged 15 to 29 years) begin to undertake towards the end of schooling until settling into their first employment of choice¹. This transition from a school (or education) to work makes for an exciting time, bringing with it the prospect of economic independence and upward social mobility. For socially and economically vulnerable youth however, this transition poses challenges ranging from lack of access to resources and opportunities for growth, to systemic barriers related to gender, caste and economic status - among others.²

This period of transition is a critical juncture in the lives of young people and has a bearing on the future employment opportunities, as well as social and financial well-being. In particular, the early years in the workforce set a precedent for future employment, career opportunities and earning trajectories. In India where a large share of the population is still young, it is critical that young women and men are supported by opportunities that help them flourish

in a robust and fast growing economy. Under the context of the COVID-19 pandemic and the economic impact it has on young people's lives, this study focuses on better understanding how young people could be supported as they transition towards chosen and aspired career trajectories.

The study makes a distinction between "difficult" and "successful" transitions. A difficult, or an unsuccessful or non-sustainable transition would be where a young person is forced to take up unproductive, low-paid and insecure work or drop out of the labour force to wait for better employment and life.³

A successful transition, on the other hand, is characterised by qualitative elements of 'productive employment' (yielding sufficient returns to men and women, to permit them and their dependents a level of consumption above the poverty line) and 'decent work' which is productive, delivers a fair income, and provides security in the workplace and social protection for workers and their families).⁴

The changing economic and workplace trends exacerbated by the COVID-19 pandemic, brings a range of unique opportunities and challenges for youth, which can be realised and addressed through successful school to work transitions and equipping them with the right skills needed for the 21st century.

Against this context, the study is a two-part research inquiry. The first part is based on the hypotheses that to address the crisis of learning disruptions and the ensuing challenges learners are facing, it is critical to use a systems change approach in integrating 21st century skills across learning ecosystems.



Theme 1:

Integrating 21st century skills in secondary school ecosystem

On 29 July 2020, India adopted a new National Education Policy⁵ (NEP, 2020). About two months later, while addressing students in the Student Education Conclave, Prime Minister Modi said, “We have to lead our students with 21st century skills.

These 21st century skills will be – Critical Thinking, Creativity, Collaboration, Curiosity and Communication.”

The NEP signalled that the Indian educational policy climate is progressively accepting the need to replace the transmission model of education (teacher-centered approach) with one that is based on 21st century skill integration. There is a growing realisation that success will be achieved not when students rote learn and reproduce textbooks, but instead when they learn to synthesise and apply knowledge.

However, the key question remains – how can the education system gear schooling processes and prepare teachers to deliver the 21st century model of education? Within this one overarching question, there are several aspects that need addressing, ranging from changing mindsets of educators and parents to teacher recruitment and training to school infrastructure and standardised assessments.

India has one of the largest school education systems in the world, with 1.5 million schools, 8.5 million teachers and about 250 million students⁶. Enabling successful school to work transition is critical for building healthy and thriving communities. In addition to stimulating economic growth in different regions, equipping young people with skills to navigate the future will ensure the economic, psychological, and social wellbeing of young people. If aspirations are not met with opportunities for productive work, it can result in adverse consequences like increased economic vulnerability, distress migration, poor mental health and unsafe behaviours among young people. At present, data from the International Labour Organization (ILO) indicate that while the unemployment rate in India has stubbornly persisted at a little over 5 percent, the youth unemployment rate – a definite marker of school to work transition – has consistently risen and is estimated to be at 32.5 percent⁷; underscoring the significance of this study and its implications to enable successful school to work transitions.

The discourse around the future of work predicts that about half of the present jobs in India will be affected by automation. However, enough new jobs would be generated to offset any net displacement.⁸ Such a scenario presents both a risk and an opportunity.

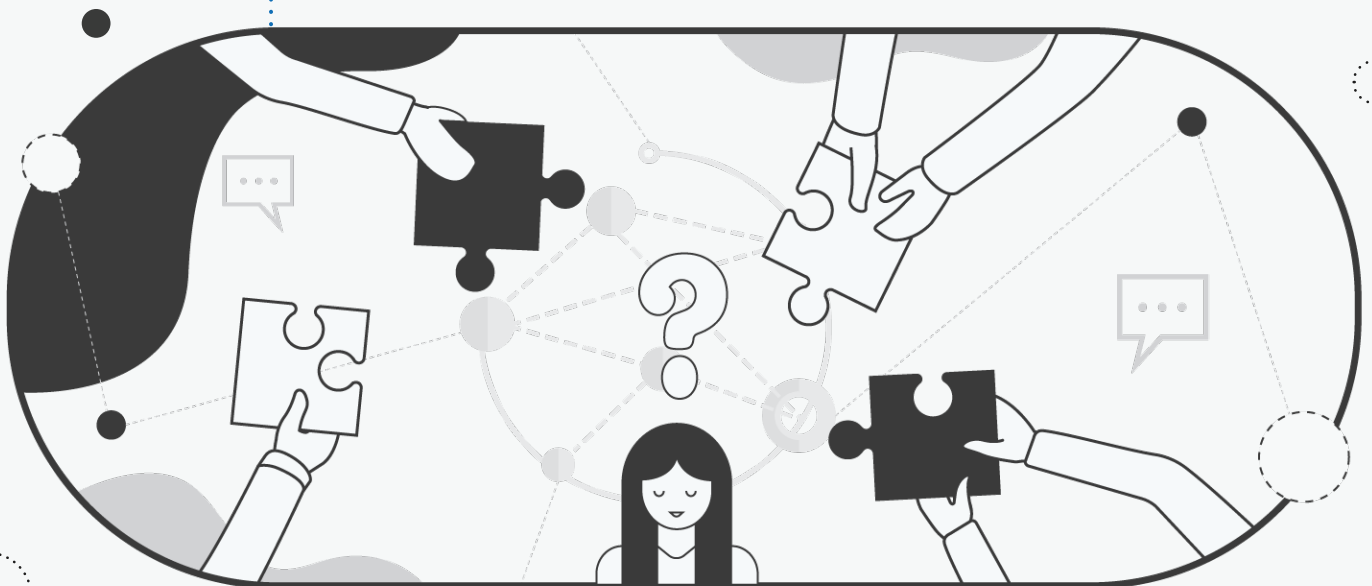
The risk poses widening of disparities and under/unemployment for a large number of workers. Couple this with the widespread socio-economic inequalities in the country, some groups are at a greater disadvantage than others. To realise their full potential, billions of young people facing the deep-rooted disadvantages of caste, class, gender and poverty need and aspire to break free from these structural inequities. Competencies like problem solving, critical thinking and collaboration will enable disadvantaged youth to move out of poverty, protect themselves from economic and social vulnerability, and enhance mental well being. A 21st century skills model of education will also contribute significantly to achievement of social justice, enhance participation in democratic institutions, and create mindsets which will prioritise the issue of climate crisis, promote sustainable development and global peace.

In this study, we deep dive into a range of these issues and seek to understand the challenges and possibilities of integrating 21st century skills into the Indian secondary school ecosystem through systems change. In the process, we also present the evolution of 21st century skills over the years. We bring in multiple perspectives, from teachers, implementation experts, functionaries of the education department at various levels, academics, funders and document five proven intervention models to learn and understand their change prepositions.

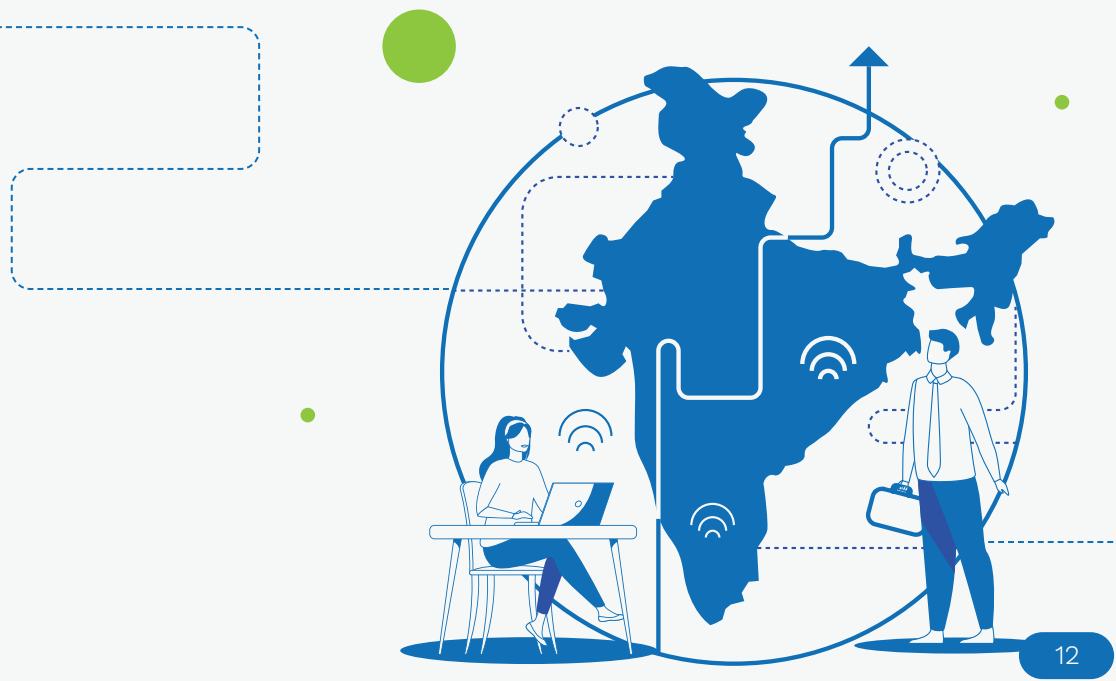
2.1 Research Methodology and Approach

The goals of this study are to

- ▼ Understand age-specific 21st century competencies and cross-skill competencies that are future ready.
- ▼ Identify enablers of educational system change, including the role of key stakeholders, their relationships, rules for interaction; additionally an investigation to understand the current state of affairs, and challenges to implement 21st century skills in the ecosystem.
- ▼ Analyse existing models of system change interventions and arrive at change prepositions and strategies of intervention that aim to promote the desired change.



Using qualitative methods of enquiry and data collection, the study covered a sample of 47 participants, that included experts, school level stakeholders (such as teachers, headmasters) and non-profit programs working towards building seamless 21st century education systems. The latter have also been covered using the case study approach, to highlight the diverse range of strategies needed in different contexts.



2.2 21st century skills for a post-Covid world

1. Concept and frameworks on 21st century skills

In this section, we present the evolution of 21st century skills over the years to highlight how the definitions themselves have evolved in line with the changing nature of the world we inhabit.

Although the discourse around 21st century skills has increasingly grown, these are not ‘new’ skills. Skills like critical thinking or problem solving have been relevant throughout the progress of human civilisation.

However, with changes in the economy and world, led by technological advancements, these skills along with information technology and media skills are being recognised as even more significant for individual and collective success.

2. Evolution of 21st century skills

One of the earliest frameworks on 21st century skills was formulated by the World Health Organisation in 1999 as it listed five crucial life skills. However, a wider set of skills emerged and gained momentum after the Partnership for 21st Century Skills (P21) - a coalition of educators, policymakers, and business leaders - was formed in 2002 in the United States. It proposed a comprehensive 'Framework for 21st Century Learning', which emphasised essential skills and competencies for successful life in the 21st century⁹.

.....

The three broad types of skills under this framework are given below.



Learning & innovation skills

Required for gaining new knowledge.

Include 4Cs i.e. Critical Thinking, Creativity & Innovation, Collaboration, Communication



Literacy skills

Help in creating new knowledge.

Include three sub-skills known as IMT i.e. information literacy, media literacy and technology literacy



Life Skills

Required for everyday life success.

Include a group of four skills known as FLIPS: Flexibility and Adaptability, Leadership and Responsibility, Initiative and Self-Direction, Social and Cross-Cultural Interaction

In 2005, the Organisation for Economic Co-operation and Development (OECD), identified three types of ‘transformative competencies’¹⁰:

Creating new value	Reconciling tensions and dilemmas	Taking responsibility
<p>Innovation for improving lives or developing new ideas/insights/ techniques/ strategies/solutions to solve problems</p> <p>Include using skills such as collaboration, communication, teamwork, Innovation</p>	<p>Making connections or relations between opposing or incompatible positions, ideas or logics.</p> <p>Understand others’ positions to develop one’s arguments, find solutions, ways to reconcile</p>	<p>ability to reflect upon or evaluate one’s own actions and understanding consequences or its impact on others and the world</p> <p>Mature agency - assess one’s responsibility in considerations to personal, ethical, and societal goals</p>

In 2020, the Central Board of Secondary Education (CBSE), India released a handbook on 21st century skills and adopted the idea of age-level appropriate skill development from 3-18 years¹¹. These skills and their details have been adopted from core life skills defined by the WHO in 1999 and P21 Framework and include skills like creativity, communication, critical thinking, self-awareness among others as shown below.



The table captures learning outcomes as it pertains to the 14-18 age group only. The learning outcomes prove useful for practitioners to understand how 21st century skill acquisition could be observed and further developed in a secondary school classroom.

Core Skills (WHO, 1999)	21st Century Skills (P21)	Learning Outcomes (CBSE Handbook)
<ul style="list-style-type: none"> • Self-Awareness • Decision making • Problem Solving • Managing Emotions • Empathy 	<ul style="list-style-type: none"> • Social Skills • Critical Thinking, • Creative Thinking, • Communication, • Information/ Technology/ Media Literacy 	<ul style="list-style-type: none"> • Relates to various experiences of growing up that have contributed to their development • Demonstrates and expresses comfort with all aspects of their personality (including individual differences) • Accesses information and analyzes it to distinguish between facts and myths • Questions/ Challenges myths and demonstrates behaviour informed by scientific thinking • Demonstrates individual and social identity that s/he values
<ul style="list-style-type: none"> • Empathy, • Self Awareness, • Managing Emotions, • Problem Solving, • Interpersonal relationships 	<ul style="list-style-type: none"> • Critical Thinking, • Communication, • Creative Thinking 	<ul style="list-style-type: none"> • Makes healthy choices related to hygiene, nutrition and physical activity • Analyzes different influences and makes informed and responsible choices (in the interest of self and others) • Demonstrates skills to manage emotions effectively • Minimizes stress by identifying and delivering on realistic expectations • Recognizes, resists, challenges, seeks help, reports concerns and incidents of safety and security related to self and others • Analyzes thoughts and does not engage in behaviours that compromise safety and security of self and others • Demonstrates responsible behaviours that minimize risk and reduce harm • Accesses and provides support individually and collectively when required

Core Skills (WHO, 1999)	21st Century Skills (P21)	Learning Outcomes (CBSE Handbook)
<ul style="list-style-type: none"> • Empathy, • Self Awareness, • Managing Emotions, • Problem Solving, • Interpersonal relationships 	<ul style="list-style-type: none"> • Communication, • Creative Thinking, • Critical Thinking 	<ul style="list-style-type: none"> • Exhibits personal and interpersonal skills necessary for independent living • Identifies goals, motivates self, plans and manages resources to achieve them • Motivates self and team members to achieve shared goals • Exhibits language to communicate about their skills, knowledge and career potential.

► **1999 - World Health Organisation**

Decision Making | Creative critical thinking | Communication | Interpersonal skills | Self awareness | Empathy | Coping with emotions and stress

► **2002 - Partnership for 21st Century Skills (P21)**

Learning skills (Critical thinking, Creativity, communication) | Literacy Skills (Information, Media, and Technology literacy) | Life Skills (Flexibility and adaptability, Leadership and responsibility, Initiative and self Direction, Social and cross Interaction)

► **2005 - Organization for economic co operation and development**

3 transformative competencies | Communication | Information | Ethical | Social impact

► **2020 - Central Board Secondary education (CBSE)**

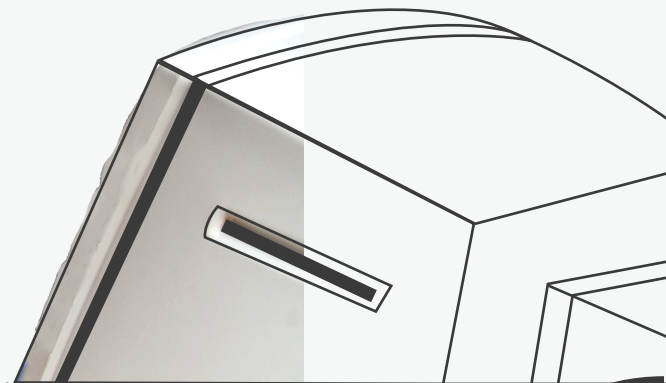
Age appropriate skills development mapped across 3-18 years

In spite of having a number of frameworks and definitions in literature, we run a risk of viewing 21st century skills as an ‘umbrella of skills’ under which various groups can argue for ‘almost any type of knowledge’.

Most experts emphasised a considerable overlap between 21st century skills, life skills, and social and emotional learning. All these were perceived as sets of ideas which are crucial, part of the same progressive thinking where different terminologies have incidentally evolved and are being used based on organisational and personal preferences.

However, experts also described different frameworks of 21st century skills as beneficial, key to representing diversity and building scope for contextualisation. They further highlighted that any definition must be adapted to suit the place, context, and background, i.e. locally formulated and understood instead of being seen as an overarching prescription. For example, in the process of nurturing empathy, the tools needed for someone from a violent background might be very different from that of an individual from a healthy family.

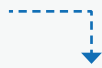
In this study we were able to elicit the conceptual definitions of these skills, and draw out the interconnections between these skills as well.



3. Defining 21st century skills in 2021

Our findings reaffirm that 21st century education must equip students with knowledge, skills, attitudes and competencies needed to succeed in the new tech-driven, global world while providing opportunities for practicing them in various contexts.

Participants of our study agreed that 21st century skills are subject agnostic – they can be integrated and built through any delivery method: academic subjects, music, art, sports, culture, adventure education and so on. This clearly implies that what is key is the integration of any definition into content and pedagogy; with form of learning being inconsequential.



However, it is key to note that interventions designed to take these skills to learners must be cognizant of the contexts of the learners. Our study found that emphasis should be on highly contextual interpretation of all skills. In addition, the definition of the skill itself may change based on the location of the child.

For example, how resilience is understood could vary from meaning ‘resistance’ in some contexts especially if there is an instance of violence to ‘ability to bounce back’ in others to ‘skill of protecting oneself from adversity’ in several other contexts.

Despite this broad agreement, it is important to highlight some specific differences as well. One implementation expert argued that the 21st century is a time bound concept and a more dynamic concept than others, readily evolving with economic, social and technological changes. According to him, focusing on what skills are needed from decade to decade was more relevant than grouping skills needed every century. Another expert argued that the needs of 21st century human life are not related to employment alone.

She contended that, “Buy-ins by learners are essential. Willingness to learn must be built in the learner and one must then help them with access and ways to learn”. This will require opportunities to expand the social, cultural and economic capital of all learners.

**Accordingly,
the goal of
education
should move
beyond the
employment
lens and
focus on
individual
and collective
needs,
priorities.**



“Educational institutions prioritize skills for financial security. This is what our educational systems do. However, as individuals we also need Belonging and Connection, Play and Leisure, Meaning Making, Peace and Justice, Resilient Communities and Sustainable world”

- Jaya Ramchandani

Impact of COVID-19 pandemic on 21st century skills

The education system was arguably one of the worst affected (after health and economy) by the COVID-19 pandemic. School shutdowns led to a complete halt of all educational activities for a high proportion of learners and widened educational inequalities, especially for poor, rural girls. Mastering 21st century skills will prove to be critical during times of crisis. In particular, the evidence suggests the emergence of 21st century skills such as digital skills, resilience, initiative, collaboration as critical aspects to navigate the uncertainties that arise when traditional methods of learning are impacted.

Digital skills

Several efforts to leverage digital tools to continue learning were initiated in response to the pandemic. Classes were held on Zoom, videos of lessons were shared on WhatsApp and YouTube, radio and televised programs were started in all states covered in the study, namely Odisha, Karnataka, Assam and Andhra Pradesh. A vast amount of e-content was also generated in regional languages. Teachers reported that Odisha started an app – named Madhu – with educational content in Oriya. Thus, based on their experience, teachers in the sample equivocally state that digital skills have become more important than before.

The enduring digital divide however has left behind vulnerable populations of students – especially girls – unable to access lessons or acquire digital skills.



A government school teacher working with grades 9 and 10 in Gujarat highlighted that,

“Even if students had devices, network issues were problematic. Many didn’t have smartphones.”

This was a reality across other geographies as well. A teacher from Telangana pointed out that despite creating digital content, lack of devices prevented many girls from engaging in learning,

“We made WhatsApp groups for every class. We had digital lessons transmitted by the government on TV, YouTube. Many girls didn’t have required devices. They didn’t have smart phones and had internet issues.”

In Assam, the lack of access was significantly higher: A government school teacher of Class 6, 7 and 8 said,

“Of the total 78 students – only 4 had android mobile. Others didn’t have access at all.”

Resilience, collaboration, and leadership

Besides digital skills, skills commonly referred to as socio-emotional learning emerged as critical against unprecedented stressors like pandemics and other such crises. Experts in the sample felt that resilience is the single most important skill that has gained greater significance during the COVID-19 pandemic. One expert remarked that in her observation children who had life skills better navigated the pandemic despite it having a severe impact on various aspects of life.



“During the pandemic, where pressures on adolescent girls and boys both have significantly increased – to work or to get married – children with 21st century skills have demonstrated better ability to negotiate the stressors”.

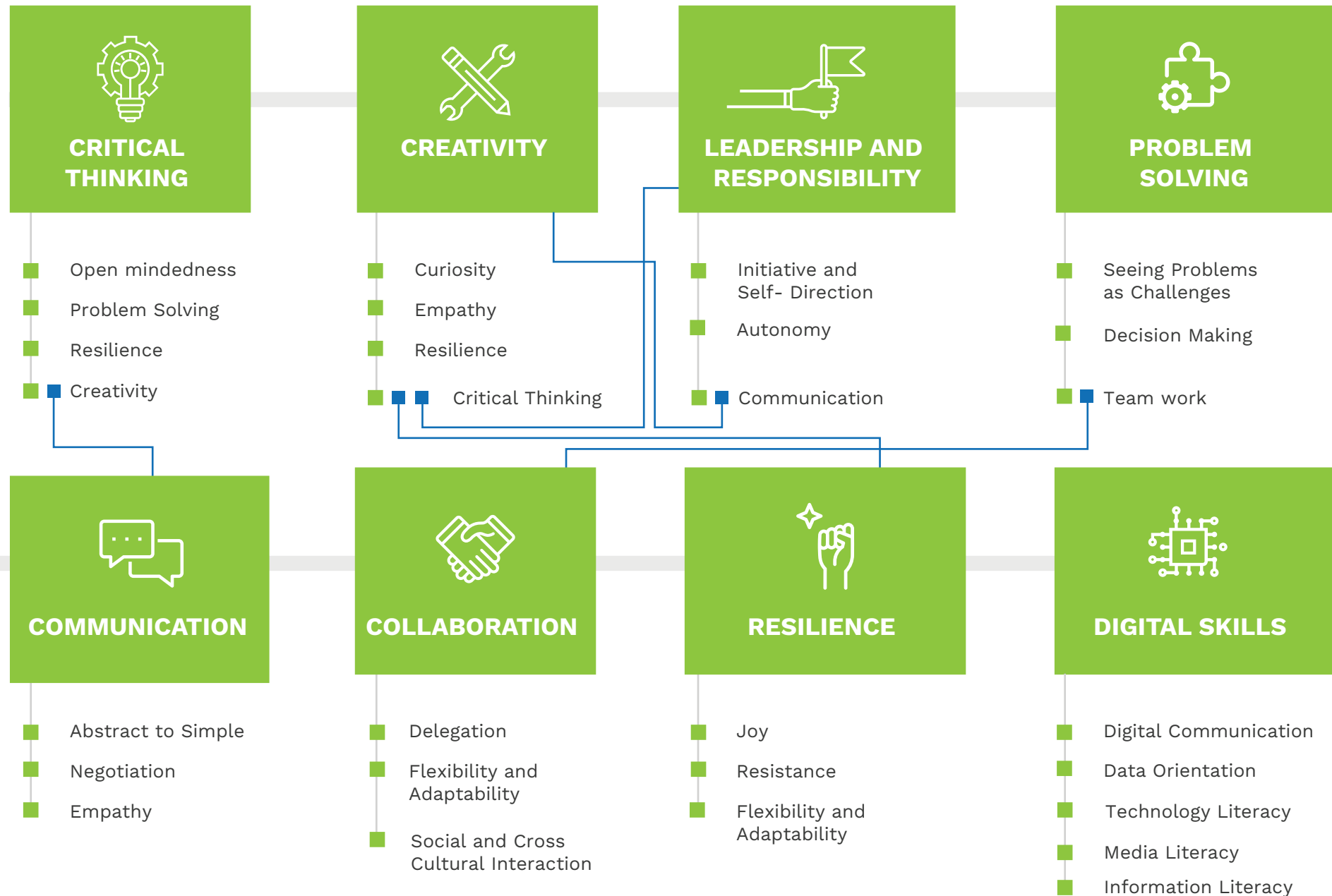
- Sucheta Bhat,
CEO of Dream A Dream

Another expert also mentioned joy as a sub-skill of resilience which is becoming significant. Other important skills included remote team management and collaboration, particularly cross-cultural collaboration i.e. ability to work with those who have a different value system than ours. Initiative also emerged as a much needed skill in post pandemic scenarios where pressures to work for livelihoods and continue education was high for adolescent learners.

Besides some skills gaining more prominence, it was clear that the need for all 21st century skills have become more urgent during the pandemic.



As an outcome from this study, the following table presents the 21st century skills and their interdependent skills.



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Note: Some of the skills listed as 21st century skills repeat themselves as interdependent skills in relation to another skill. The idea of 21st century skills vs interdependent skills becomes fluid and is interpreted differently across various contexts, usage and situations. Thus, a straightjacketed approach to teaching 21st century skills might not work and might require a deeper integration into everyday practices in our lives.

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2.3 Enablers for educational system change

For a very long time, through various policies and recommendations, at a system level many initiatives have tried to incorporate these skills in the school ecosystem. As part of this study, we aimed to understand the current models that attempt to integrate 21st century skills in the school ecosystem, as well as the gaps and challenges in doing so. The following section presents an opportunity to understand where the education sector stands as of today.

1. Current policy and programmes on 21st century skills in India

From the national curriculum framework (NCF) to the newly released National Education Policy (NEP 2020), the public education system of India acknowledges 21st century skills as essential aspects of education. However, NEP 2020 draws connections between the changing realities of the world, and the ensuing changes needed in how we practice education in the country.



Realities

Technological advancements replacing routine jobs with skilled ones

Aim of education must include development of 21st century skills

Changes Needed

Revamping structure and governance of education

Reorient curriculum and pedagogy to integrate 21st century skills at each stage of learning

There are two initiatives that have attempted integrating 21st century skills partially.



Atal Tinkering Mission

- NITI Aayog
- School grants - Atal Tinkering labs
- Explore, Tweak, Innovate, and Improve

Skills: Creativity, Curiosity, Teamwork, Innovation

Happiness and Entrepreneurship mindset curriculum

- Delhi Govt.
- Grades 1-8 Happiness
- Grades 9-10 Entrepreneurship
- Socio-emotional learning, and mindfulness

Skills: Critical thinking, Problem solving

2. Barriers to integration of 21st century skills

Although policy documents and political discourse in India have specifically begun to use the term ‘21st century skills’ there is still a long way to go. A 2015 study by UNESCO helped infer three policy challenges in integrating 21st century skills in classrooms, and can be organised along three categories:

1. **Definitional** - pertaining to common definitions and understanding of the skills amongst educators
2. **Operational** - integrating them in the existing structure of schooling and curricular designs
3. **Systemic** - pertaining to resistance to adopt newer pedagogy, shifting mindsets, innovations

The table below lists the challenges of realising policy priority to 21st century skills at the micro level:



Definitional

- Lack of capacity in scope of skills
- Lack of clarity in the desired outcomes of teaching of these skills



Operational

- Lack of assessment mechanisms
- Insufficient teaching/learning material guides
- Lack of incentives
- Insufficient capacity of teachers
- Lack of budget (policy-budget inconsistency)
- Additional burden on teachers



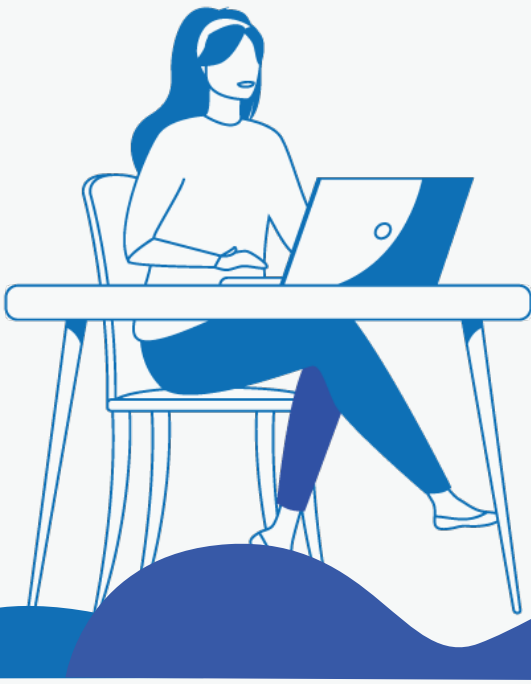
Systematic

- Large class size
- Pressure to achieve academic success
- Inconsistency with high stake exams
- Lack of understanding among parents and other stakeholders
- Overall school/community culture

3. Where the school system currently stands

A critical finding of the study has been the lack of familiarity with 21st century skills terminology among Block Education Officers(BEOs)¹²/ District Education Officers(DEOs)¹³. However, this cannot be immediately linked with poor awareness in the system. Most stakeholders interviewed under the study spoke with an understanding of allied concepts such as life-skills, soft skills and ‘personality development’. Furthermore, once the concept was described to them, they could clearly articulate its relevance for current times. For instance, they described these skills as critical to navigating the changing economy, increasing competitiveness, technological advancement, breakdown of traditional support structures and need for long-term thinking and preparedness.

A concerning finding of the study, however, is that over half of the education system participants in the sample believe that these skills were alternative to or exclusive of academic intelligence. To quote, “not everyone is good in studies, so this might help them succeed in something else”. ‘Something else’ was understood as occupations involving sports and art as against the occupations which they believed required higher academic brilliance (such as doctor/ engineer/civil servant).

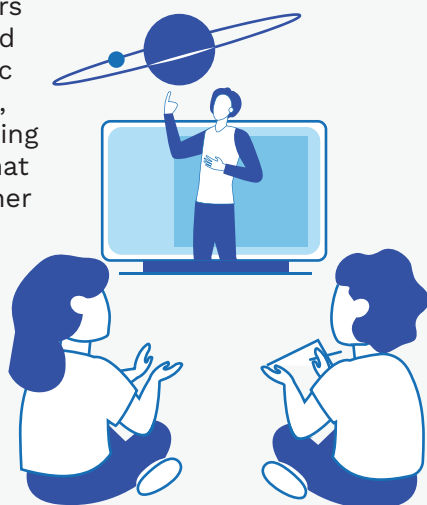


Definitional barriers

School stakeholders', specifically teachers and BEOs/DEOs' understanding of 21st century skills can be summarised as following:

1

Creativity: Several teachers consider this as innate and interpret it through artistic activities such as drawing, chart making, rangoli making and pottery. They argue that since there is no art teacher in government schools, these can be promoted at the more resourceful cluster levels where interested students can participate. Creativity is also considered more valuable for academically weak students who may want to pursue an art-related career option.



“They have to decorate the classroom, we have class wise annual magazine so they have to identify a topic and do something. Best ones are awarded. They themselves take out that magazine – decorate it with a sketch pen and so on”

- Government School Teacher, Odisha

“Some are interested in studies, some in art. So there are basic differences between abilities and interests of students”

- Government School Teacher, Assam

2

Critical thinking abilities that can be developed through discussion based, activity based and project based learning methods.



“We give them situations. Even in regular class in the last five/ten minutes we discuss situations. We give them examples of their own fight with fears and ask them what they would do. We ask them what would you do if you witness a road accident and things like this”

- Government School Teacher, Karnataka

A significant number of teachers limited the scope of critical thinking to debate competitions or mathematical problem solving.



3

Leadership: Leadership was also described as innate by several teachers. Those presenting these skills were seen as fit for roles of class monitors, student council members, captain of sports teams, to help them further develop their capacities. A teacher from Andhra Pradesh gave an example in which students are given leadership opportunities during events.



“Leadership is inborn, a few may acquire it. Some children become class monitors, participate in NCC – leaders emerge from there. Annual sports has three groups, with group leaders and every year there is a different leader. So this way we give opportunities to many students to lead”.

- Government School Teacher, Andhra Pradesh

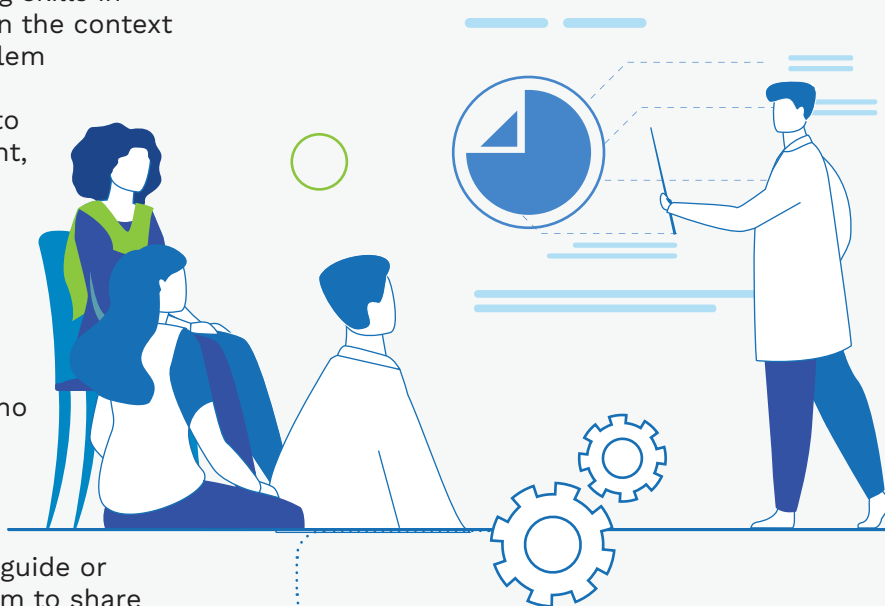
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Problem solving: Many teachers in the sample show limited ability to articulate the need for problem solving skills in learners. Some interpret it in the context of school or local civic problem solving by learners, where learners may be motivated to do better waste management, stop throwing trash in schools/communities or conserve water and energy.

Linking leadership to one off events or a chosen few is limiting to inculcate leadership amongst all students.

5

Collaboration: Teachers find collaboration as a highly relevant skill for learners, who need to do group work, and project activities. Teachers described their role in promoting collaboration through the framework of a guide or mentor who encourages them to share responsibilities, show accountability and strengthen inter-group communication.



6

Communication skills have been interpreted by most teachers in two ways:
a) learners’ comfort with seeking responses to queries in the classroom and
b) expressing his/her views during classroom discussions.



“We give them a topic/situation for discussion and we engage in developing communication through that discussion. This is how they present themselves and as teachers we interpret them without judgment”.

- Government School Teacher, Assam

7

Digital skills: There is a huge interest and buy-in for building digital excellence among learners from teachers and other educational functionaries. However they point to a lack of access to digital devices in students and opportunities for digital skill building.

Compared to this, experts speak of how 21st century skills are relevant for all students. They are just for those learners who already display these skills, nor are they useful only for those who want to pursue certain subjects and professions.

Interconnectedness, Interdependence and Transferability¹⁴ of skills

All sets of stakeholders covered by the study acknowledged 21st century skills to be interconnected and complimentary.



- Critical thinking, for instance, was described as the ability to analyse and communicate one's ideas, with problem solving as one of the key underlying processes. Findings further indicated critical thinking to include the process of overcoming egocentrism, ability to work with others, value and collaborate with them to achieve intended outcomes/ goals
- Interconnectedness refers to several skills involved in conjunction while displaying one behaviour. For instance, learners taking initiative involves several internal processes all of which may not be apparent but happen together. Related processes also include effective communication and collaboration.
- Conversely, these skills are also interdependent which essentially means that competence in one skill is dependent on competence in the other. For instance, collaboration requires skills of communication; resilience involves critical thinking among others.

A key finding of the study therefore, is that 21st century skills are inherently connected, interdependent and cross-cutting with the only good reason to compartmentalise them being operational, specifically for the purpose of assessments whereby each of the skills can be observed, analyzed and measured.

The consensus on transferability, on the other hand, was found to be weak. One expert feels 21st century skills are not particularly transferable so they need to be practiced in all areas of the curriculum and need to be built into the school day of the child. Another expert feels that within 21st century skills and their sub-skills, there are domain specific as well as domain neutral skills. For instance, critical thinking in solving a math problem is a domain specific skill, with unclear evidence on its transferability to different contexts. But critical thinking in certain other contexts, like the ability to recognise an argument and be able to make a judgment on it, is domain neutral, allowing for applicability across situations.

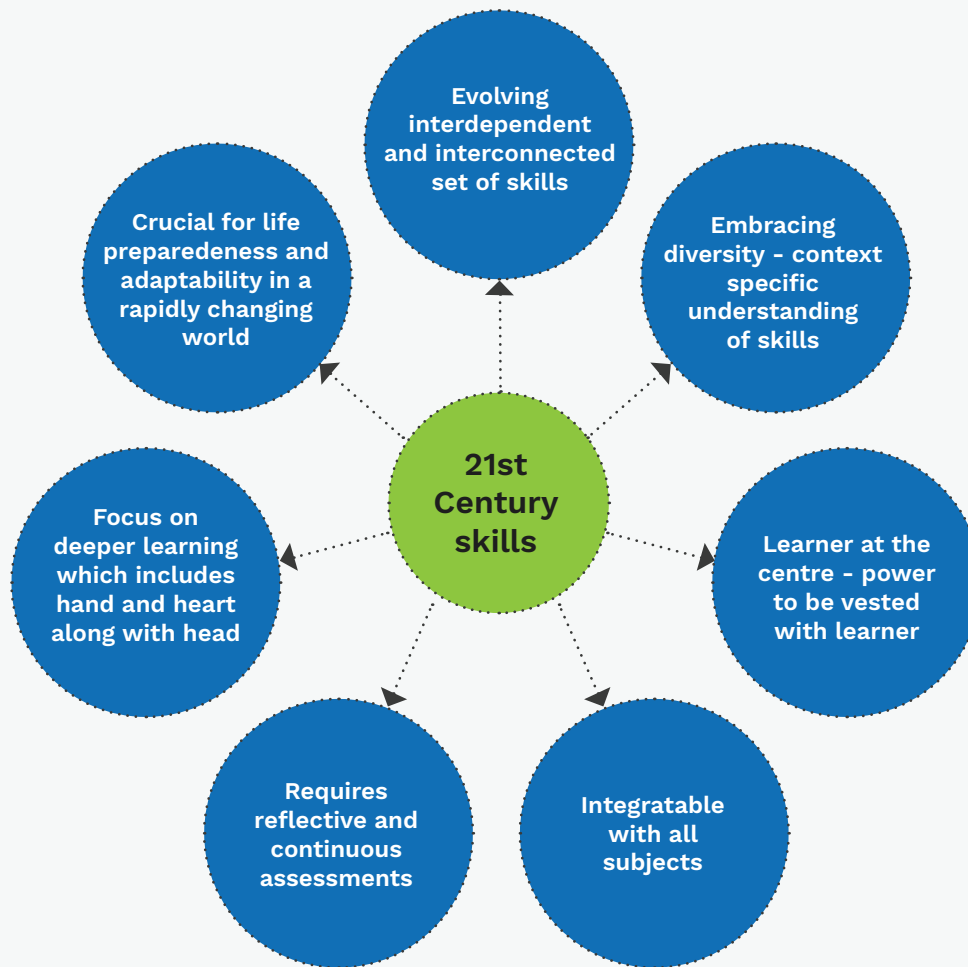
While 21st century skills are often termed 'transferable skills' in most literature, there is a need for further research on core skills and interdependent skills to fully understand how these skills are applied in different contexts. Further inquiry into how we can ensure long lasting transfer of skills is also needed.

Experts generally agreed that the duration of engagement, depth of activation programs, immersive experiences, designing for failure, and having witness to one's experiences and nature of experience, power of methodology determines how long a skill will last and how it will be utilised across contexts. In one case it was pointed out that the sheer intensity of the outdoor/adventure education programs may have transformative impact and lead to enduring skill activation.

Transferability of 21st century skills could be ensured using creative pedagogies, which provide opportunities for the child, throughout the day, to develop these skills both inside and outside of classrooms.

These findings highlight the complex nature in which 21st century skills manifest and are used in different situations. The following visual captures the multiple facets governing 21st century skills.





Caption:
Breaking down complexities
to understand 21st Century skills



Operational barriers

Lack of incentives

It is possible that this perception is linked to the earlier finding of 21st century skills as lying outside of mainstream education or their compartmentalization as a separate subject and the overall burden amongst system stakeholders. For instance, several stakeholders' responses reflect the shared burden of system failures: delayed recruitment of teachers, large class sizes, administrative work over and above teaching time, poor wages, age linked promotions, lack of cash incentives for innovation, parent mind-sets towards syllabus completion (therefore lack of demand for 21st century skills) and the association of 21st century skill-building as being resource intensive for the government school system.

Need for capacity building

It is important to note that teachers did not receive any gender or 21st century skills based training. The assessment mechanisms in the system were driven against academic outcomes alone. In the current context of the pandemic and the challenging shift to digital learning that the system has had to make, there is even less space for system stakeholders to be engaged over building enabling environments.

Lack of assessments

Interviews with education system stakeholders clearly shows that they cannot imagine assessments beyond traditional exams and teacher observations. Thus the challenge is to develop contextual assessments. Findings suggest that assessments for 21st century skills need to be contextualized at two levels:

1. community/geographical and cultural context, depending on what each of the skills mean in a given context and
2. Customised to the learner, considering their different starting points and individual growth trajectories.



Systemic barriers

Limited resources

With a population of 253 million adolescents, making resources available to every learner and teacher is a huge financial and logistical challenge for the public education system in India. Several experts suggest a 'graded approach' where skills and capacities are built over time, cluster by cluster. This approach is guided by the need for a substantial overhaul of the system, with changes at all subsystem and actor levels. Experts emphasise the importance of demonstrating models for successful integration of 21st century skills - rather than to endeavor to scale them.

A government official argued that "if they have a budget for developing 15,000 schools of excellence, then it must be evenly distributed. Thus, they can allow every block to train 2 teachers per skill: 2 for critical thinking, 2 for creativity and likewise for other skills". He reiterated that the choice of who these two teachers will be will be based on ability and interest.

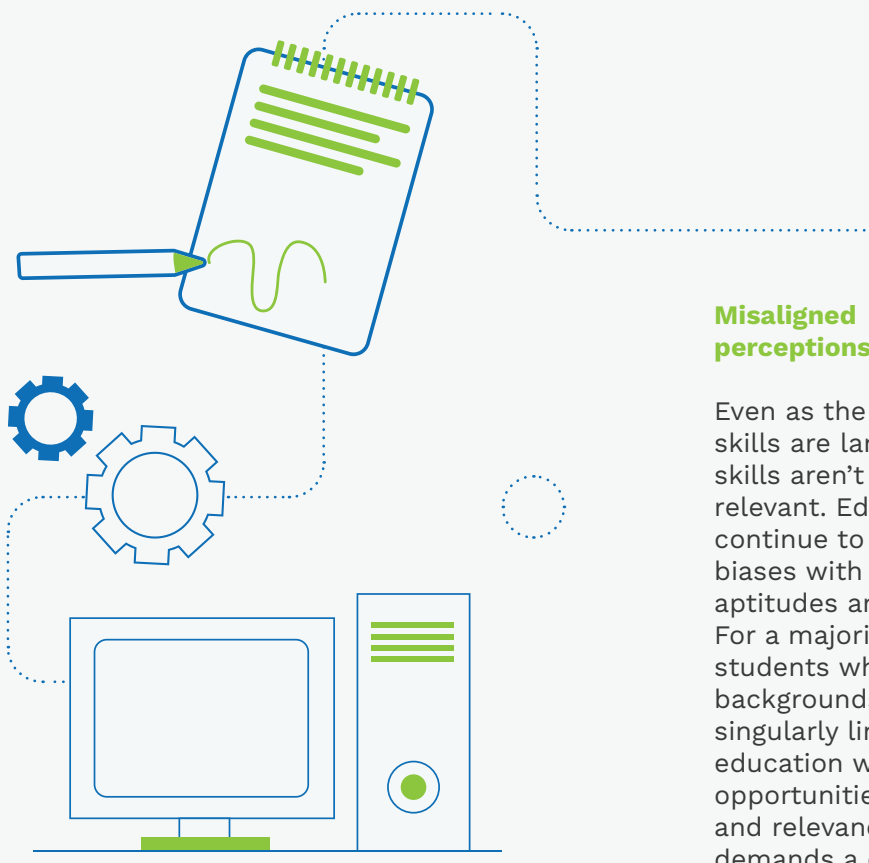


Understanding roles

Education system stakeholders describe the teacher-learner relationship through the analogy of the parent-child relationship. Some stakeholders, for instance, expressed that they cared for students like their own children and learners respected them at par with their parents. In this way, mutual trust, love and respect were pointed as being critical to this relationship. However, despite agreement over the importance of 21st century skills, the role of teachers with regards to building these skills was unclear for most stakeholders. Several teachers, for instance, clearly described schools as 'formal' spaces that should be focused on preparing students for careers versus focusing on developing skills for 'personality development' which should be the primary responsibility of their families.

Teachers also referred to a parent level challenge of low or no demand for these skills in their children. As is the case with several stakeholders, parents perceive these skills as being co-curricular or outside of mainstream education and learning.

In the same vein, most BEO and DEOs also expressed a lack of time and space to practice educational leadership. They described their roles as primarily administrative due to the burden of administrative responsibilities (such as monitoring systems, issuing salaries and conducting inspections). This was substantiated by experts who highlighted that while BEO and DEOs are expected to serve as academic leaders, their current roles and work in the system do not equip them to play this role at all.



Our findings therefore point towards an urgent need for an intervention focused on building skills for 21st century skill enablement among key stakeholders in the public education system. This further calls for a review of strategies which could be employed to overcome the systemic, operational, and definitional barriers in integrating 21st century skills in the education system. A systems change approach presents a solution towards addressing these barriers effectively.

Misaligned perceptions

Even as the significance of 21st century skills are largely well understood, these skills aren't perceived as universally relevant. Education system stakeholders continue to present ability based biases with undue emphasis on 'innate aptitudes and interests' in learners. For a majority of government school students who come from disadvantaged backgrounds, parents and teachers singularly link a completed school education with income generating opportunities in the future. The benefits and relevance of 21st century skills demands a cultural shift in perceptions among all system stakeholders, including parents, educators, BEO/DEOs and NGO partners supporting their work.

Infrastructure gaps

Outdated or dysfunctional computers are an infrastructural hindrance. In addition to this, inspection and monitoring by block and district level officials continue to be focused on attendance and cleanliness, with little or no emphasis on pedagogical processes. Study participants concede that the education system is marked by severe lags - delay in arrival of sanctioned funds, teacher appointment, poor teacher-student ratios in classrooms.

All of these challenges have only been exacerbated by the pandemic-related school closures of 2020-21, overturning improvements made through reforms in the last decade.

4. The need for a systems-change approach

A systems change approach allows us to understand key barriers at multiple levels of the system and the key levers of change for sustainable change. The discourse around systems change, as against structured piecemeal approach, has been gaining ground since the last two decades.

Definitions

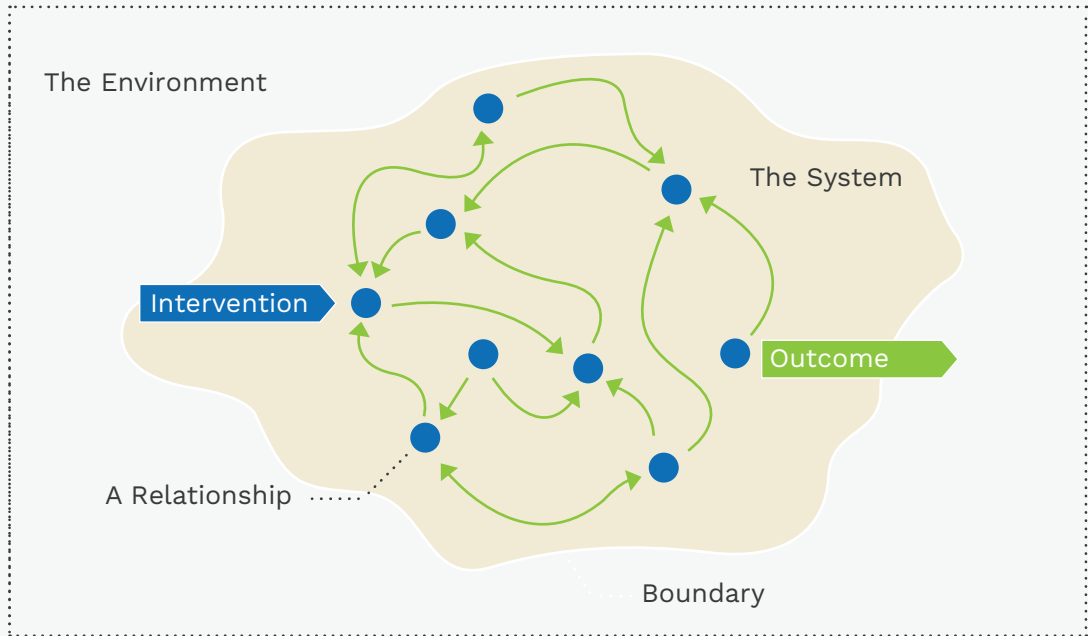
Systems change can be defined as:

an intentional process designed to alter the status quo by shifting the function or structure of an identified system with purposeful interventions. It is a journey which can require a radical change in people's attitudes as well as in the ways people work.

Systems change aims to bring about lasting change by altering underlying structures and supporting mechanisms which make the system operate in a particular way. These can include policies, routines, relationships, resources, power structures and values.”¹⁵

-
- System change is a critical reflection approach where the changers need to constantly consider what change is needed, why, and how it will be affected.
-
- It involves deep shifts in attitudes, norms and exercise of power.
-
- Often the change is fraught with complexities and contradictions, requiring long term action and evaluation.
-
- Thus the journey of system change is not a sequential input and outcome but an ongoing process of innovation, critical reflection and learning.
-

The figure below illustrates the intervention and outcome of a system, with its actors and their relationship.



The image depicts a system with a flexible boundary as there are many factors that affect the education system (like global or local health crisis, prevailing gender norms, needs of economy and such). It is thus difficult to precisely ascertain where the system begins and ends.

This outcome requires that parents, teachers, learners, school staff, education department functionaries and political leaders commit themselves to a shared purpose and strive together to build new ecosystems. The system also needs to be agile, continuously adapting to the changing needs of young learners.

The framework

Several frameworks have explored the ways or steps of system change, suggesting practical principles to the practitioners. The model below describes one such model that this study bases itself on:

Six conditions of system change by Kania, Kramer and Senge (2018)

Kania, Kramer and Senge (2018)¹⁶ reviewed multiple frameworks of system change and arrived at six conditions of system change. These have been defined below, followed by a graphical representation:

Policies:

Government, institutional and organizational rules, regulations, and priorities that guide the entity's own and others' actions.

Practices:

Espoused activities of institutions, coalitions, networks, and other entities targeted to improving social and environmental progress. Also, within the entity, the procedures, guidelines, or informal shared habits that comprise their work.

Resource Flows:

How money, people, knowledge, information, and other assets such as infrastructure are allocated and distributed.

Relationships & Connections:

Quality of connections and communication occurring among actors in the system, especially among those with differing histories and viewpoints.

Power Dynamics:

The distribution of decision-making power, authority, and both formal and informal influence among individuals and organizations.

Mental Models:

Habits of thought—deeply held beliefs and assumptions and taken-for-granted ways of operating that influence how we think, what we do, and how we talk.

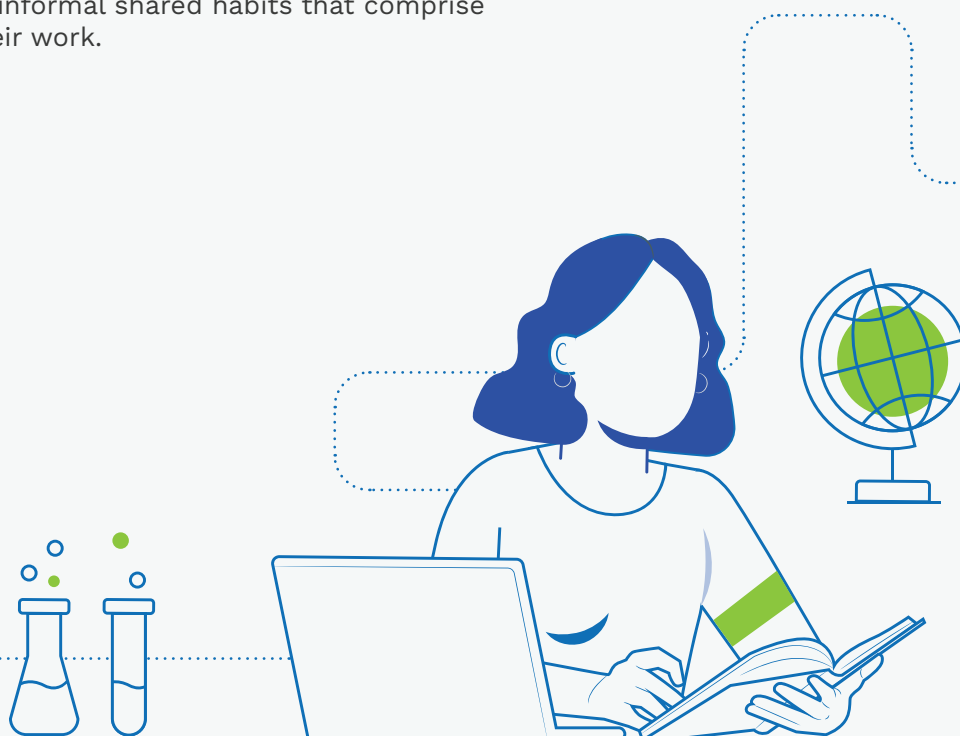
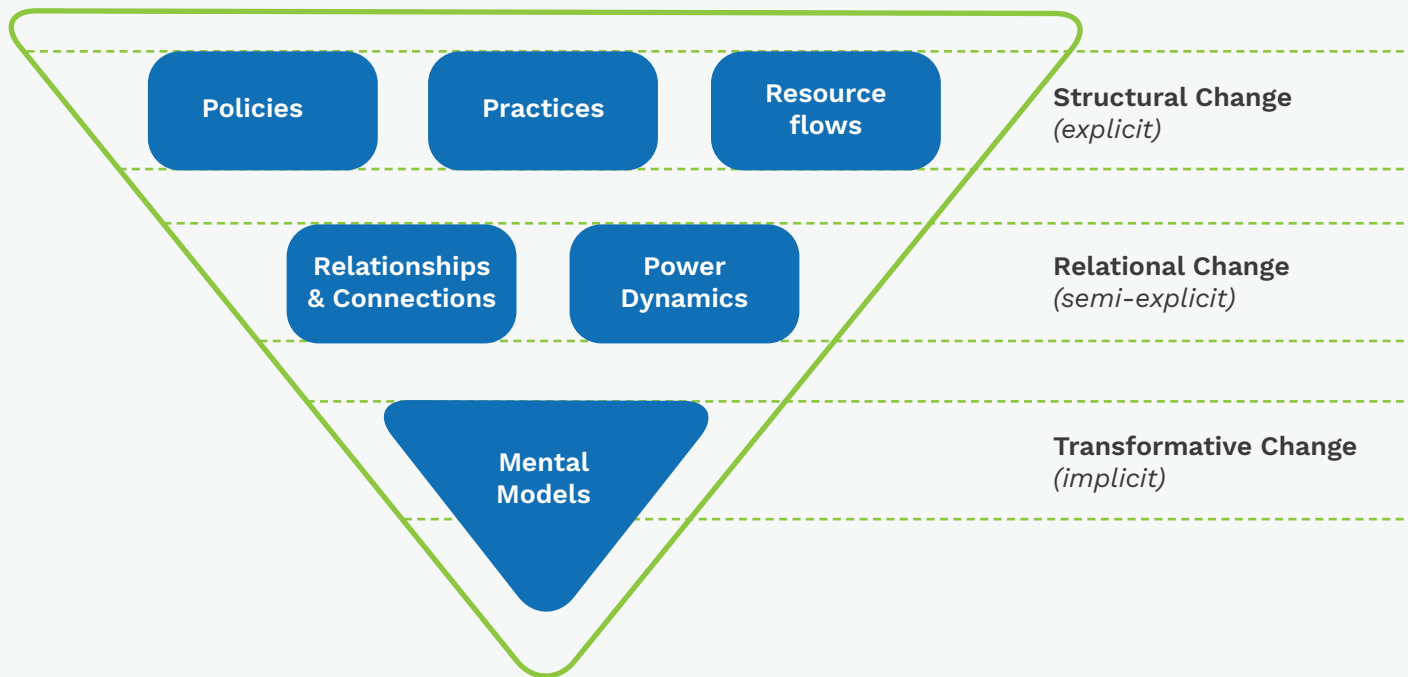


Figure 2: Six conditions of systems change
 Source: Kramer et. al, The water of system change, 2018



Although these conditions are independent in definition and can be targeted for change on their own, they constantly interact with each other and can be mutually reinforcing i.e. change in one can result in change in other conditions. As can be seen in the figure, policies, practices and resource flows are explicit conditions, where information about them is readily available. Thus any change in them can be measured through traditional means of monitoring and evaluation.

At the second, semi-explicit levels are relationships and connections, and power dynamics. Many organisations work to introduce change at this level. However, the third, implicit level is the least visible, most transformative to change, and most difficult to measure. System change requires intervention in all three levels for impact.

There have been some successful models which aim to impart 21st century skills education to young people in the country. The case studies below provide insights into how interventions could be designed for impact at all three levels in the systems change approach.

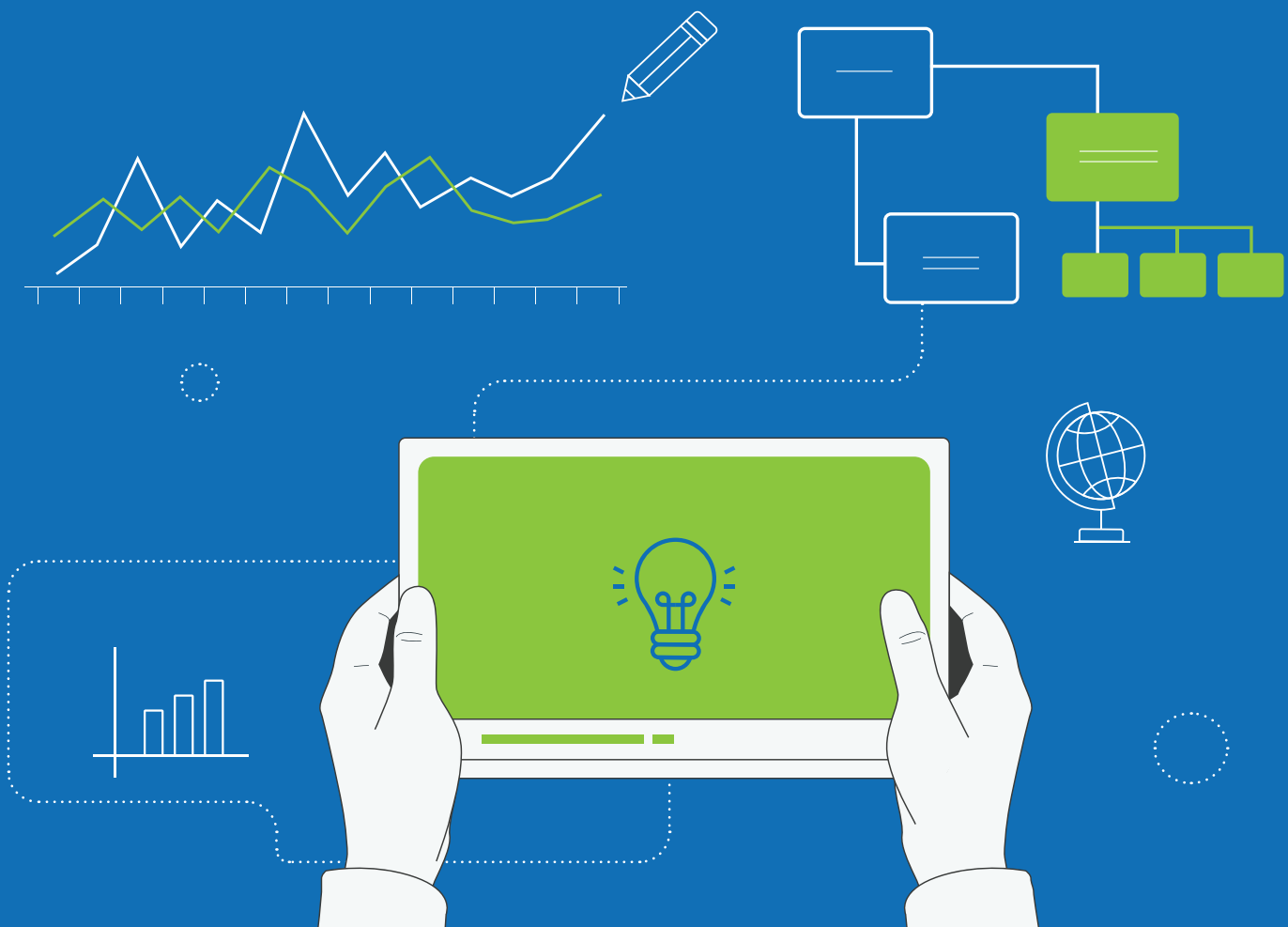


2.4 Successful models of 21st Century Skilling: Case Studies

With an in-depth understanding of systemic challenges, this study also deployed a solutions-focused lens and presents strategies from successful models across the country. This section documents interventions by five organizations, highlighting model level strategies for successful integration of 21st century skills in the public education system.

1. Rationale: case study selection

The choice for case studies emerged from a need to understand different models of system change intervention, which use different pedagogical approaches, have varied curriculum content and are spread across different geographical areas in the country. These intervention models leverage various factors to drive change such as personal behavioral transformation, community based approach, and learning experience designs. We believe that the learning from these case studies will inform designing an intervention model which is holistic, durable and sustainable across the public education system.



Kaivalya, Future Ready Schools

Kaivalya literally means 'Freedom from conditioned existence'. Based on Michael Fullan's philosophy, the organisation's education program was started in 2008 with the view that 'self change' promoted through development of leadership among educators can lead to 'system change' in education. As teachers and head teachers are motivated and empowered; the planning, processes, pedagogy, governance and system as a whole reforms through their behavioural transformation.

Key Interventions:

Kaivalya aims to create future ready schools, districts and states through a bottom up approach to promote student-centric learning where learning outcomes are at par with global standards.

1 Target Group

- Teachers
- Head teachers
- Block and Cluster resource coordinators

2 Engagement Strategy

- Capacity building workshops
- Center for excellence hubs
- Contextualisation of international frameworks
- Virtual and in person field support
- Professional learning communities



Approach to building 21st century skills

- Development of educational leadership at all three levels of school, district and state
- Capacitating teachers and officials from the education department to cascade the impact for the learners

Using experiential learning methods, the interventions at Kaivalya focuses on building capacity among teachers which then cascades to the students. For instance, if a teacher needs to teach collaboration to students, s/he needs to be less competitive and more collaborative herself.

Kaivalya, Future Ready Schools

Outreach:

- 11 states
- 32 districts
- 5 lakh schools empowering teachers and headmasters
- Examples of field based innovations include innovative teaching-learning materials, BaLa (Building as Learning Aid), student parliament, teacher practices tools and teacher need analysis tools among others. It has a spectrum of partners like Genpact, Piramal Foundation, Boston Consulting Group and Emory University among others.



“We try to bring experiential learning where the teacher is curator of learning experiences. We map which chapter of which subject addresses a particular project based learning so it is integrated into the regular curriculum. Integration is important otherwise they (teachers) will be pressured to finish the course”

– Monal Jayaram,
Director of Kaivalya Foundation

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The team has listed several community issues like mosquito infestation in a particular season and similar environment or civic issues which help children learn through civic projects where they use their understanding to solve the local problems with a focus on integration with curriculum.

Aavishkaar, Palampur, Himachal Pradesh

Aavishkaar was started by Sandhya Gupta and Sarit Sharma in 2012 in the remote village of Kandbari in Palampur, Himachal. They started volunteering at the local government school and found their purpose in replacing fear of learning mathematics and science by joy. Aavishkaar was thus born with a mission to enable, equip, and empower students and teachers to ignite creativity, curiosity, and critical thinking in science and maths.

Key Interventions:

Aavishkaar's focus is to improve the quality of teaching science and mathematics through use of innovative methods like visualization and hands-on activities. In the process teachers and students developed curiosity, creativity and critical thinking.

1 Target Group

- Teachers
- Students

2 Engagement Strategy

- Teachers
- Students
- Long term engagement
- Residential camps
- Short trainings
- Online trainings



Approach to building 21st century skills

- Aavishkaar targets systems change through a specific reform i.e. by teaching science and mathematics.
- They use an interest-based diffusion of ideas among a much larger network of like-minded organisations across the system - as a way of promoting change.
- The skills in focus are curiosity, creativity, critical thinking and problem solving.
- Local context and everyday objects are employed to teach Science and Math.

Aavishkaar, Palampur, Himachal Pradesh

Outreach:

- Aavishkaar has worked with teachers partnering with the governments of Himachal Pradesh, Telangana and Tibet. They are also the training leads of a Science and Math Collective where they have been working with several grassroots organizations including Neev, Karam Marg, Saath, Grameen Shiksha Kendra, CHIP, OSCAR, CYDA, Feminist Approach to Technology (FAT), Josh, Sahyog, Asaadharan, Universe Simplified, Vidyodaya. They have also worked extensively with Teach for India among many other organizations.



“The first step in our training is Charcha (Discussion) which is the exploratory phase. We encourage participants to see Maths in our environments and understand Science in the everyday phenomenon. We are more interested in the process of arriving at the answer than the answer itself. We always ask how they arrived at the answer. They explain their thinking and justify it”

– Sandhya Gupta
Co-Founder, Aavishkaar

Lend A Hand India (LAHI)

LAHI was started in 2003 with its base in Pune, Maharashtra. LAHI's model activates 21st century skills through promoting employability and entrepreneurship among students in secondary grades. They deliver multi-skill vocational courses to students across the country, and also assist the government through knowledge inputs and monitoring of the program through its state level project management committees.

Key Interventions:

LAHI's course gives students exposure to multiple sectors. The multi skill vocational course covers 20 occupational areas like electrical wiring, welding, carpentry, plumbing, land cultivation, landscaping, nutrition, packaging of food and storage, health and hygiene and so on.

1 Target Group

- Teachers
- Students

2 Engagement Strategy

- Guest lectures
- Field visits
- Internships



Approach to building 21st century skills

- Focus on both technical and non-technical knowledge and skill building.
- Uses the employability perspective to intervention design.
- Skills in focus: collaboration, communication, problem solving, critical thinking and leadership.

Lend A Hand India (LAHI)

Outreach:

- Grades 9-10; Ages 14-16 years
- 24 states and UTs
- 10,000+ schools
- 1 million+ students
- Direct implementation in 200 schools of 14 states



“We teach skills in an integrated way so 21st Century skills are also built in addition to vocational skills. For instance, the student not just builds the chair but is also required to demonstrate skills to sell it to classmates”

– Sanket Patil,
Senior Programme Officer, LAHI

Reap Benefit

Reap Benefit's mission is to promote decentralized governance through creation of an active citizenry. They, thus, work with schools (public and private) to create a cadre of problem solvers (who they call 'solve ninjas'), focusing on local solutions for local problems, using local data.

Key Interventions:

Reap Benefit's solve boot camp programs are experiential, ranging between short term, stand alone offerings to long term mentorship programs. The students are guided to identify problems and go through a process of solving them as part of experiential learning. Most problems are civic and environmental in nature, revolving around water, waste, sanitation and pollution. In the process of civic problem solving, learners undertake several tasks which can include conducting surveys, reporting, initiating local advocacy or campaigns, taking action (volunteering) or designing innovative solutions.

1 Target Group

- Students

2 Engagement Strategy

- Bootcamp programs
- Mentorship
- DIY kits
- Gamification Apps
- WhatsApp chatbots



Approach to building 21st century skills

- Using design thinking principles¹⁷, they leverage action based teaching methods. It includes identifying a problem statement, investigating it, arriving at a solution followed by ideation, prototyping, and execution of a plan built collaboratively through team work, and leadership.
- Skills in focus: empathy, communication, critical thinking, problem solving, community collaboration, team work, resilience, leadership, self confidence and data orientation that students learn in the process of civic problem solving.

They have a gamified approach to civic problem solving where the curriculum involves 21-25 games on themes of water, waste, sanitation and citizenship. Each of these games help young learners understand governance structures which they may employ while solving civic issues in their neighbourhood.

Reap Benefit

Outreach:

- Reap benefit has so far inspired about 40,000 solve ninjas who have taken over 60,000 civic actions and built 337 civic innovations. Their initiative has saved 4,60,00,000 liters of water, diverted 6,65,000 tonnes of waste from landfills and saved 10,70,000 units of energy.



“We have an algorithm that maps all kinds of civic actions taken by students to relevant 21st century skills. The students then get a final score of 21st century skills they developed based on the actions they have taken. This score is called the ‘Solve Ninja Index’. Apart from enabling students to see skills they have activated by solving civic issues, it also gamifies civic problem solving and incentivises taking civic action”

– Nikhila Kanakamedala,
Senior Program Officer, Reap Benefit

Flow India

Flow India is a for-profit organization that uses a cultural capital approach to develop 21st century skills. Based on the concept of Flow in positive psychology, it requires intense focus and complete immersion in culture to result in transformation of experiences and learning. This meaningful engagement with culture builds opportunities in skills and dispositions valuable for 21st century skills. Flow's mission is to establish choice of cultural learning and fostering of cultural intelligence as an integral methodology in the classrooms.

Key Interventions:

Working at the intersection of cultural learning, design technology and 21st century skills Flow India examines opportunities that cultural capital presents: art, music, traditions, monuments and other historical objects. By engaging with capital like this, particularly in a diverse country like India, Flow explores how learners can find access and relevance of cultural capital. This is translated into a variety of programs and projects for both educational and cultural organisations.

1 Target Group

- Students
- Educators
- Cultural Organizations

2 Engagement Strategy

- Sustained engagement until teachers can own the program
- Museum and heritage learning workshops
- Co-creation of design of program with students and teachers



Approach to building 21st century skills

- Focus is on cultural learning which enables skills such as collaboration, creativity, empathy, self- discovery, critical thinking, curiosity and 'community-mindedness'.
- Community-mindedness is described as an interest in connecting with and being a part of the wider community - achieving self-awareness in relation to one's community and the ability to voice interests as part of an empowered collective.
- Learners engage with cultural stimuli in the city which builds on the skills using creative enquiry process.

Flow India

Outreach:

- Flow India has worked with more than 100 educational institutions and over 25 cultural institutions in India reaching approximately 1000+ educators and 40,000+ children across twenty Indian cities.



“Success of a skill lies in a stakeholder’s capacity to effectively apply it to demonstrate adaptive expertise in a variety of real-world contexts. For example, the introduction to History and the Early Civilizations for Grade 6 children is activated through the exploration of material culture and the ability to question historic objects and evidence. The questioning skills built are then applied to archaeological collections in local museums and the learnings are interpreted as a visual storyline. The process concludes with an open reflection on the possible skills at play in the learning journey and other key takeaways from the experience”

- Arundhathi Mitter,
Director, Flow India

2. Core strategies for systems change

Our analysis of the five case studies presented certain thematics used as core strategies to bring about systems change. The following is the list of those strategies.

Collaboration with government

All five models acknowledge the primacy of state in bringing about change at scale and the necessity to collaborate with the government in its efforts. In several states, LAHI implements the program through the state government by playing the role of a catalyst, providing knowledge support, technical inputs and monitoring through a project management unit. For instance, they organize training of master trainers and also play an important role in curriculum committees. To convince the government to adopt its model, LAHI focuses on setting up 3-4 model schools near the capital which serves as demonstration sites for officials to visit and witness the impact. For LAHI, only the government has the wherewithal to undertake educational initiatives at scale. This is similar to one of Kaivalya's strategies – that of aligning their efforts with the government's agenda and co-creating programs with local bodies.

Thus, instead of approaching the government with its own agenda, Kaivalya understands the felt need of the government and aligns itself to it.

For Aavishkaar and Reap Benefit, the government is crucial to access a critical block of public school students and teachers to ensure that their programs benefit large numbers of students. Flow India engages with the government at the level of program initiation by ensuring that their goals are ratified by the relevant government education department and are available to all public schools in intervention states.

Key takeaways

- Take part in Curriculum committees
- Set up model schools as demonstration sites
- Co-create programs with local bodies
- Align with the existing needs of the government
- Ratify your goals by the government

Contextualization

All interventions regularly contextualize their programs for greater relevance and effectiveness. Reap benefit's work is based on the premise that public problem solving can be learned; building a 'civic muscle' of sorts. Kuldeep Dantewadia, Co Founder and CEO of Reap Benefit said, "Local Problems are best solved locally. We believe that young people can be real problem solvers and that every action irrespective of impact is important". Accordingly, they strategize to focus on solving local problems, with local resources.

Flow India adapts each program to the needs of a school, specifically its curriculum. For instance if a class is doing a chapter on the freedom struggle, Flow organizes a visit to the Red Fort or a local historical site and complements classroom learning through cultural experience.

Likewise, a chapter on the Harappan and Indus valley civilization is supported by a simulated excavation site created in the school campus to discuss early civilizations and its markers. For Aavishkaar, contextualization means building daily life connections to teach science and mathematics, which is largely achieved through visualization.

For instance, states of matter are explained by observing solid and liquids around students. Once trainees observe that solids stay intact and liquid spill out, they explain the difference in movement and the collision of molecules between solids and liquids.

LAHI contextualizes its vocational education by leveraging local languages, local industries and local human resources to address the need for local level capacity building. Kaivalya contextualizes global frameworks/curriculum, like Social Emotional and Ethical Learning (SEEL¹⁸) and applying it to the Indian context. This is done by vocabulary mapping, making connections with local history and geography, situating it within existing programs and engaging learners according to their levels of readiness.



“While there is a global perspective there is also local reality. For instance we noticed most children and adults in Jhunjunu have yellow teeth due to high fluoride content in water. They are also malnourished as agriculture mainly includes jowar and chana. They are getting vegetables only from outside i.e Haryana. All this is already impacting the child – which is their immediate concern.

So if we wish to help a girl from Jhunjunu, community is a key anchor. We have to develop her agency in globally relevant skills but she has to solve immediate problems around her. So we create a project where she solves the issue of fluoride content in water – either by creating an alternative machine that cleans it up or by creating awareness among community or political representatives – i.e. using her leadership ability. Therefore, knowledge of science, geography, leadership ability, initiative and so on are needed to solve problems. That’s the kind of combination we were looking at”.

**- Monal Jayaram,
Director, Kaivalya Foundation**

Key takeaways

- Local problems demand local solutions
- Complementary solutions addressing the needs of the school
- Establish connections with daily life experiences
- Use local language
- Work with local players: industries and human resources

Scaling through partnerships

Partnerships form an effective strategy to scale for all models covered by the study. However, within this approach, there are crucial differences. LAHI and Reap Benefit want to scale their idea i.e. of vocational education and civic problem-solving respectively, without scaling the organization. This means that they partner with the government or other organizations with similar intent and execute programs in several geographies through them. Reap Benefit encourages its alumni to set up social enterprises and continue work around water, sanitation and environment with their support and facilitation. To enable collaboration, they run a 'youth board' with civic leaders from the alumni as members, also making role modelling realistic and aspirational. The board has regular meetings and they seek accountability from the organization, much in line with a formal governing board.

Aavishkaar's partnerships help them gain access to more teachers, who become co-creators in a long-term engagement, and are focussed on interest-based diffusion. So far they have partnered with over 60 organisations, training about 5000 teachers. Likewise, Flow India improves its scale through partnerships with schools and is able to reach more learners and gain deeper engagement than it would through stand alone operations.

Kaivalya's partnership strategy is aimed at incorporating learnings from global experiments, innovations, frameworks, models and curricula which can be adapted to the Indian context. Kaivalya is currently partnering with the OECD and has developed a curriculum on social, emotional and ethical learning with Emory University.

Key takeaways

- Partner with Government institutions, peer organizations to stay small, but scale wide
- Leverage alumni networks to scale
- Choose a stakeholder for wider reach
- Partner with international organisations to gain global perspectives

Leveraging technology

All intervention models are in different stages of the process of technology adaptation. For Aavishkaar, Covid-19 pushed them to shift training online and increasingly depend on powerpoint presentations and virtual simulation methods. Flow India is actively seeking to convert the richness of experiential learning to the digital domain. Their recent project named Tana Taka utilized virtual reality to facilitate cultural experience among learners. They are exploring gamification and MCQ¹⁹ structures as well. Reap Benefit focuses on technology and data solutions as enablers.

They deploy a 'solve ninja' application which is linked to an overall dashboard for reporting actions and seeking follow ups.

Based on the number and nature of actions taken, each student is assigned a score, following which they arrive at a solve-ninja index which records the type of skills activated. In addition to this there is a Solve Ninja Neighbourhood dashboard which provides crowdsourced hyperlocal data and Solve Ninja Citizen Channel where students can network and learn about other civic projects from the Solve Ninja Community.

Key takeaways

- Leverage simulation, gamification and dashboards to engage learners
- Provide community support both online and offline
- Ensure the user experience includes two way communication and feedback loops
- Leverage dashboards to offer opportunities to showcase work and accomplishments

Working with educators as co-facilitators of strategy

Beside the above strategies, Kaivalya and Aavishkaar accorded specific focus to teacher engagement. Both organizations faced initial mindset barriers from teachers where teachers expressed resistance to learning from NGOs. These were addressed with patience and perseverance, and when benefits of the program were experienced, teachers began demanding more input from them. For Flow India as well, teacher engagement is an integral component of the immersion program. They do a series of workshops with teachers

to enable them to design and execute cultural learning programs independently in the long run.

As part of another crucial strategy, Reap Benefit supports its solve ninjas i.e. learners by providing mentors, who play an integral part in guiding and supporting them through the process of action taking. They attribute their success to the strategy of focusing on local problem solving - for e.g. solving for mosquito infestation versus building robots.

Key takeaways

- Building dialogue with stakeholders while creation of programs essential
- Co-creation of design and strategy with educators
- Building a mentorship model rather than a training exercise is helpful

Reflective assessments

All interventions have varied levels of assessment practices. Reap Benefit links civic actions to 21st century skills through an algorithm and does a rubrics assessment. Besides the regular baseline and endline studies to measure impact, they use randomized control trials to affirm links between intended strategies and skills of critical thinking and community collaboration. However, the challenge of assessing some skills such as resilience and empathy remains, while skills such as communication and data orientation are easier.

For Kaivalya learners, assessment of the output of project based learning, coupled with teachers observations, is followed by a process of self reflection. For teachers/CRCs/BRCs training, assessment is mainly achieved through reflection. Educators share classroom videos and engage in reflective discussions around what can be done differently, how pedagogy can be strengthened further

among other questions. LAHI conducts periodic evaluations of their program, which includes quantitative and qualitative assessments of skills applied by students, and efficacy of their communication among other skills which are built. Inputs are taken to teachers, parents and students themselves. Case stories, particularly around those who have demonstrated entrepreneurship or succeeded in schools are documented through home visits. Assessment in Flow India is done through a self reflective tool where learners not only give feedback on the program but look at their experience critically and assess their learning themselves. There is a specific format for self reporting improvements in 21st century skills and competencies which is supported by the observation documents of educators. After learners have ranked themselves, educators also guide the qualitative process of self reflection, asking them questions around their learning, what they could have done differently and their areas of support required.

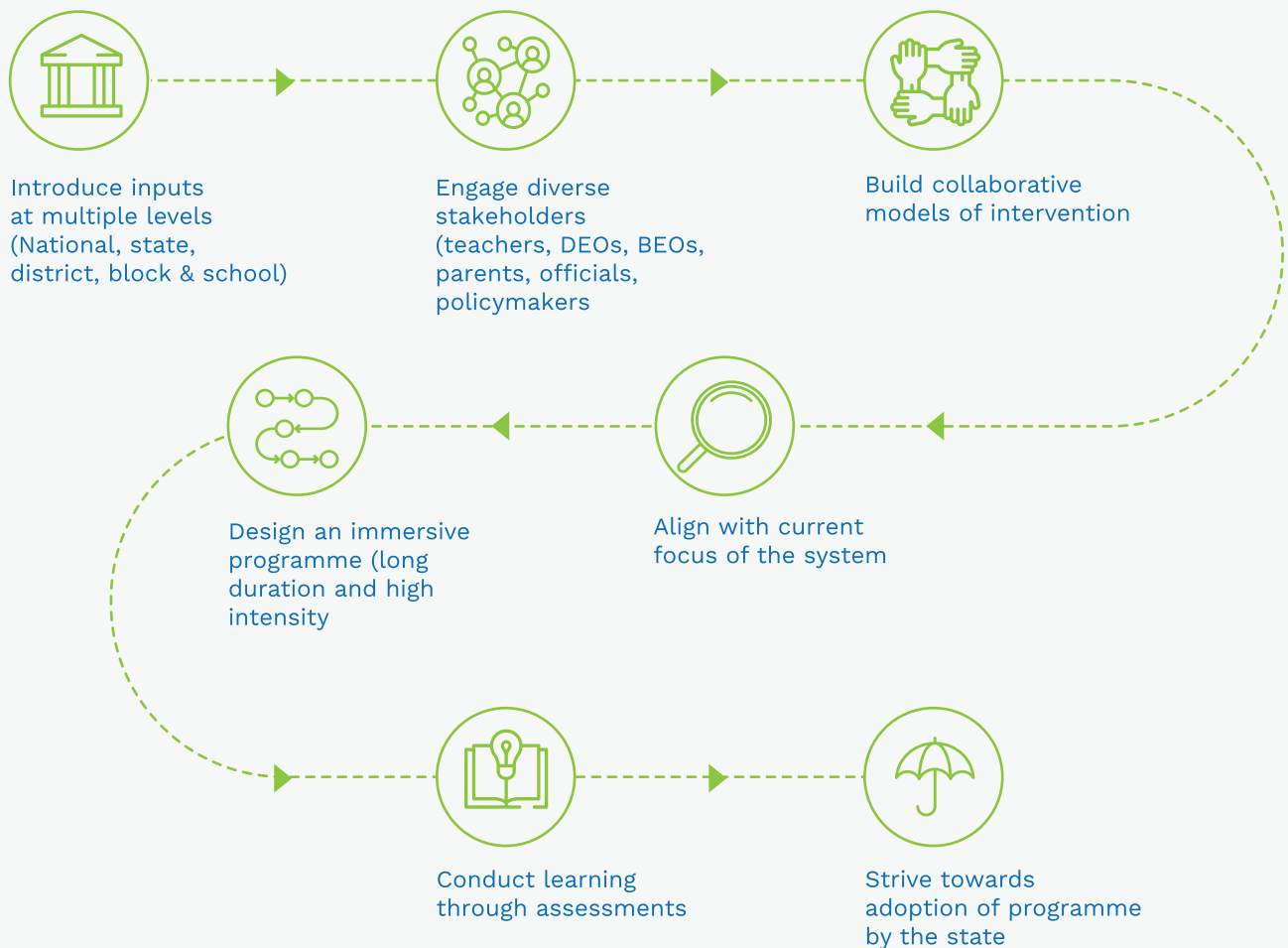
Key takeaways

- Reflection as a critical means to evaluate learning
- Assessment is a combination of inputs provided by self, peers, and educators
- Qualifiers of self assessment done through observations, documentations, home visits, qualitative processes
- Assess learning to identify areas of understanding, those that need improvement, and support

3. Key enablers of success

Success for systems change includes influencing structural change (through policies, practices, resources); relational change (relationships and connections and power dynamics); and transformational change (mental models) in the education system. Against this, we find that there are varied pathways to enable these changes and that these conditions of change interact with each other and can propel one area of action to trigger action in another area, and are highly interactive.

Journey of System Change



While structural change involves changes in practices, by influencing policy and infusing resources, these conditions of change may also bring change in mental models. Similarly an intervention may focus explicitly on changing mental models or bring about these changes by altering practices in the system. Intentionality to influence changes at all levels is the key to bring about transformative changes in the system.

Comprehensive program engagements could result in relational change between different system actors. Kaivalya strongly articulates education system change as its key goal. Given this, its intervention simultaneously focuses on several aspects of the system, including teacher training, curriculum development, pedagogy, educational leadership with 21st century skills and assessments. All of these together constitute its Future ready framework. Its successes include influencing the Ministry of Education to set up a centre on educational leadership in NIEPA (formally NEUPA). At the state level, Kaivalya representatives are included in policy reform, curriculum and teacher training committees. At the micro level, Kaivalya has been able to influence mindset change and this has been significant specifically in terms of the relational change it has enabled between teachers and students, students and parents and among teachers themselves.

LAHI's intervention advantage lies in its very focused link between implementing the government vision on vocational education and successful career transitions. The organization's curriculum is approved by the government and they work within the employability skills curriculum by NCERT. They have successfully mainstreamed vocational education as their course which is now a 100 marks subject in several state boards.

In some states like Odisha and Maharashtra it is a compulsory subject. Additionally agriculture has become a 6th subject in some states. For the organization, vocational education encompasses building 21st century skills to improve likelihood of finding employment.

In Indian culture where civic problem solving is not a priority and social immunity to civic problems are high, Reap Benefit is breaking mindset barriers. When students who may not be performing well in terms of conventional academic standards take successful actions, innovate and receive local media and community attention, both parents and teachers see merit in the skills their children are able to build through these engagements. This also substantially enhances the learners' confidence while building school and community buy-in for the intervention itself.

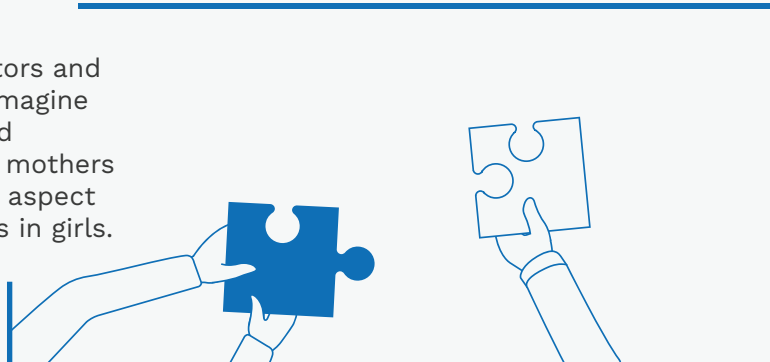
Aavishkaar's model of scale is not intentional but brings to the fore that success of an intervention can help it scale through interest based diffusion. Aavishkaar has worked with nearly 50-60 organizations till date. Success of the interventions has enabled partnerships with the government.

All the interventions bring resources into the system through curriculum content, training on pedagogy or human resources in the form of mentors/trainers/educators. For instance, for Flow India, precise success in influencing practice or resource flow depends on the nature of engagement with a school. Thus in schools where they partnered for a longer term engagement or where schools wanted to develop capacities of their teachers, Flow India was better able to influence practices and resource flows.

2.4 Implications for the girl child

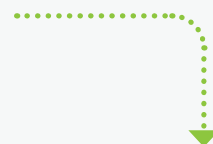
Girls are the largest disadvantaged group among children, enduring systemic gender based discrimination and violence in patriarchal Indian society. Specific deprivations like low household investment in girls' education and poor mobility result in fewer and inferior learning opportunities for them. Discrimination becomes more pronounced at puberty, coinciding with the secondary stage of education where a large percentage of girls may drop out of school. The impact of the pandemic has also been disproportionately severe on girls, resulting in consequences like early marriage, school drop out, increased domestic violence and child labour. Given such a scenario, it is important that education relates to the lives and experiences of girls.

- 21st century skill interventions should account for power structures prevalent in our societies and provide space and support for girl children to navigate the inhibitions towards successful manifestation of these skills.
- Along with 21st century skills, access to content specific to gender related training for both boys and girls should be made available publicly to fight discrimination. This would ensure fair access to resources for women in gaining 21st century skills.
- Skills such as negotiation, resilience and leadership are emerging as required skills more relevant for girls. These skills also need to be understood against the social context in which the girls live. In addition to skill building, girls need help with building a voice for themselves, and the autonomy to display leadership.
- Access to role models, mentors and a network of supporters to imagine and prepare for an adulthood radically different from their mothers is also emerging as a critical aspect of building 21st century skills in girls.



The pandemic has had a negative impact on the girl child with increased incidences of child marriage, drop outs and increased anxiety regarding their future. 21st century skills therefore have become more relevant now more than ever for girl children who are affected by issues resulting at the intersection of caste, class, and gender.

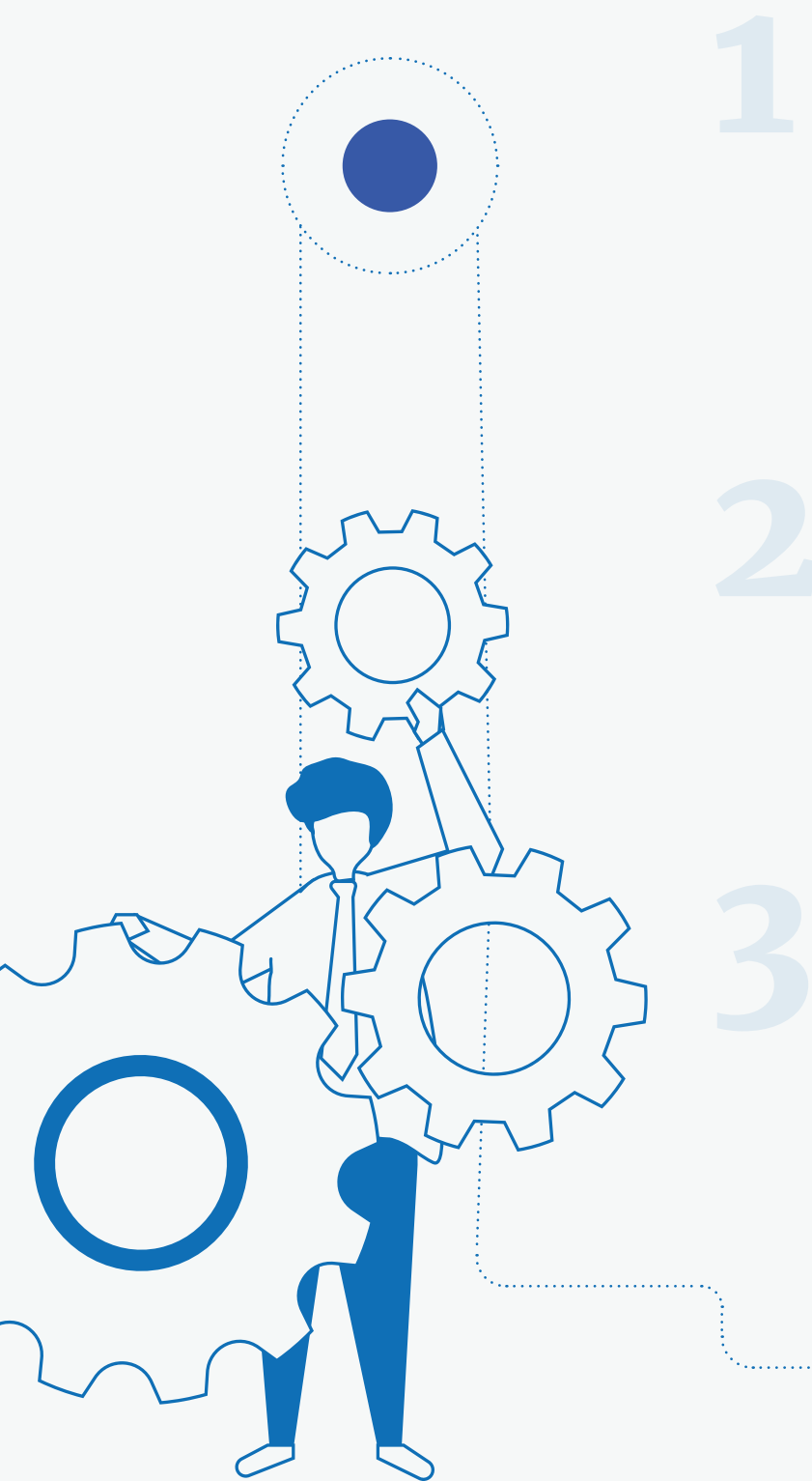
The case studies provide insights on ways to achieve equal participation of girls. For instance, LAHI is conscious of encouraging girls and boys in non stereotypical vocations in its program, rather than reinforce it. Some of the actions undertaken by solve ninjas under Reap Benefit addressed issues related to girls' toilets, thereby having an impact on their school retention and attendance. Flow India conducts workshops and courses where culture is examined from a gender viewpoint, for instance examining the position of women in medieval India through Mughal miniature paintings. Aavishkar's model of infusing curiosity, creativity and hands-on activity in teaching science and maths is of particular utility to girls in these subjects which are traditionally considered masculine.



Thus, although 21st century skills are relevant for both girls and boys, they have special relevance for the lives of girls and can tremendously help in furthering the cause of empowerment of women and girls towards the objective of an equal and inclusive society.

2.6 Overall recommendations for systems change interventions

Based on the findings from intervention models, we make the following key change prepositions for systems change through effective integration of 21st century skills.



Shift existing mindsets about systems change

System change is not a sequential input and outcome journey. It is an ongoing process of innovation, critical reflection and learning. Success with system change requires introducing a gamut of inputs at several levels of the system (national, state, district, block, school) and across stakeholders (policy makers, teachers, CRC/BRC, district and state level officials, learners, parents).

Invest in collaborative solutions

Collaborative models where solutions are co-created with different departments and stakeholders are likely to demonstrate early success. Co-creating programs allow the system to adapt and evolve based on actual needs, and avoids running into barriers such as poor buy-in and support from key stakeholders.

Prepare for a longer haul and persist

The duration and intensity of engagement is very critical. Any systemic change will mean major shifts in norms, attitudes and realignment of structures and processes. It is critical to understand the time-taking nature of this change and therefore the need to continue working through early barriers.

4

Leverage on state driven strategy

Scale is a challenge that interventions have to work through and overcome. A logical consequence for system change therefore is to endeavor towards a model that can be adopted by the state. While a bottom-up approach is critical to demonstrate early success on a few specific sites, top-down is needed to formalize the model with the larger state ecosystem.

5

Get creative about assessments

Measuring the transaction and development of 21st century skills is far more complex due to the tacit and contextual nature of skills. Multi-faceted and contextualised assessments such as self-reporting, feedback/observation from other learners/educators, and role plays with real-world situations and demonstration of learning through project and group work are more effective.



Finally, this study establishes that system change is a process-oriented long journey, offering the advantage of small early wins, against a single long-term goal. As an approach, it allows a focus on local, more immediate and achievable goals contributing to greater buy-in from the stakeholders while allowing utilization of every modest opportunity. Small wins finally lead to incremental change towards the larger goal of a 21st century education system.

Actionable Insights to build a Systems Change model



Visioning

- Build a shared consensus in the system
 - Align to education system's priorities
 - Co-create vision for change with multiple stakeholders
-



Planning

- Build an action plan from the visioning document
 - Identify areas of support for the state
 - Map ownership
-



Implementation

- Build a Systems Change model by
 - » Determining scale
 - » Determining entry points which can be through community, teachers, learners
 - » Determining structure of engagement
 - Build Curriculum outline by
 - » Determining Approach to 21st Century Skills
 - » Contextualization of Skills
 - » Determining how to measure success of the Skills
-



Review

- Design continuous review cycles
- Harness Data
- Revisit Visioning

Theme 2:

Potential sectors and related employability skills parameters for a post-COVID India

3.1 Background and context to theme

In 2019-20, the Periodic Labour Force Survey estimated the unemployment rate among India's educated to be at 10.1 percent²⁰. Alongside this, India's adult literacy rate stood at 73.2%²¹. Furthermore, India ranks 116th on the Forum's Human Capital Index²², a position lower than all other BRICS countries and, of note, below its South Asian neighbours, Bangladesh and Bhutan. Poor quality of education means only 25% of college graduates are considered employable

by businesses²³, and this does not take into consideration young people who do not make it as far as college or even secondary school. The lack of adequate skills and education levels, coupled with the shortage of jobs and the growing population continues to be an ongoing challenge that risks turning India's demographic dividend into a double-edged sword, or what is called the Great Indian Conundrum²⁴.

Consider this:

India is expected to have a talent deficit of 85.2 million workers by 2030²⁵. This deficit is mainly due to the imbalance between technological advances and the talent needed to leverage these advances

By 2030, the Indian population will surpass China's, reaching 1.5 billion by 2030, thereby adding an estimate of 245 million more workers in the next 10-12 years²⁶

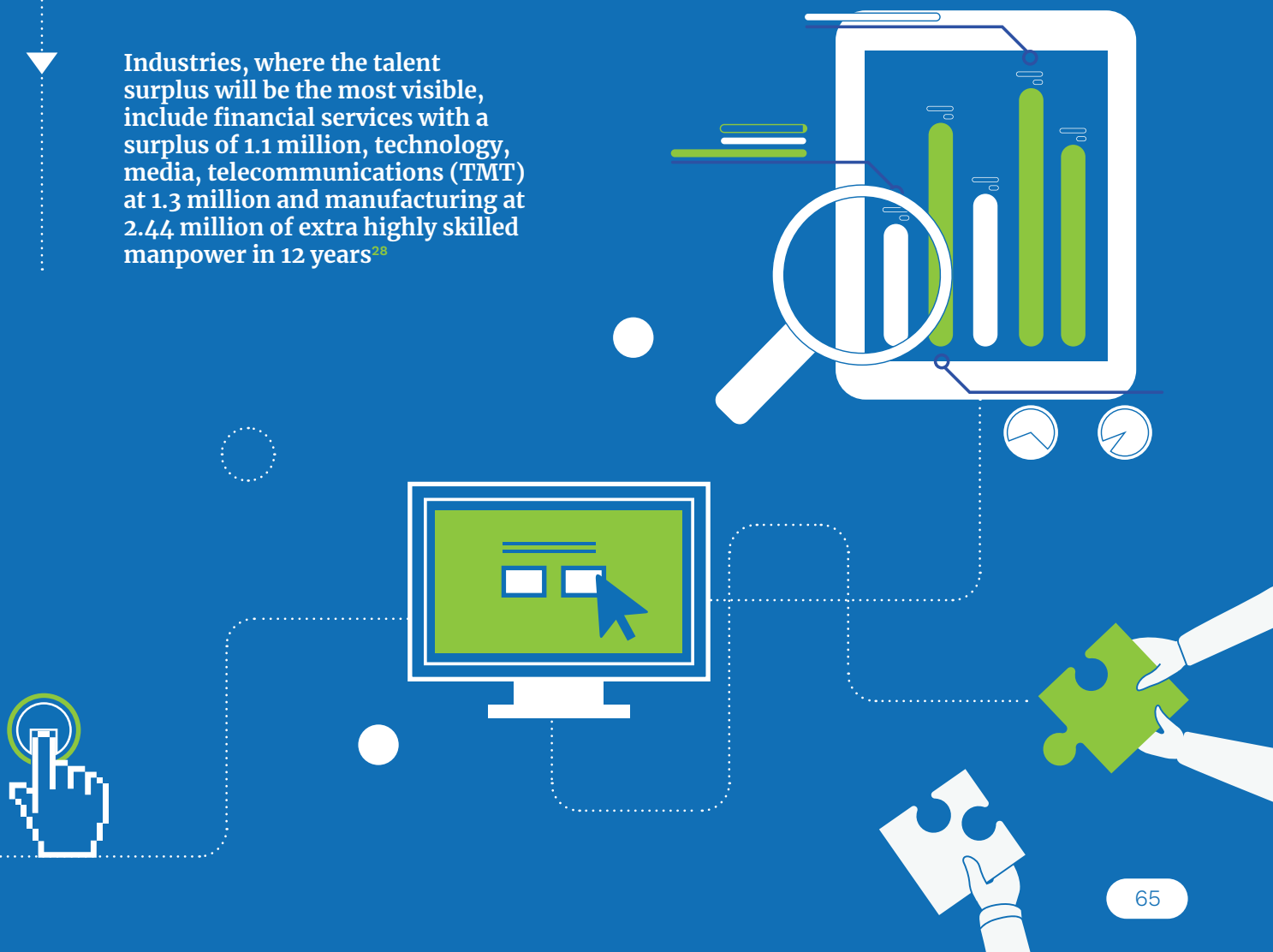
India is also projected to have a skilled labour surplus of 245.3 million workers by 2030²⁷. The huge reservoir of manpower also raises questions on a) ways to manage unemployment and b) to make the talent pool employable

Industries, where the talent surplus will be the most visible, include financial services with a surplus of 1.1 million, technology, media, telecommunications (TMT) at 1.3 million and manufacturing at 2.44 million of extra highly skilled manpower in 12 years²⁸

India's rural youth lacks cultural capital, access to information and the urban medium of instruction which is more of than not English²⁹

Every year only 10-15% out of over 3 million regular graduates/postgraduates are considered unemployable by the Industry³⁰

India's labour productivity is \$10,080 a year, compared with \$23,888 in Brazil and \$107,551 in the US, according to our Labour Ministry³¹



3.2 Impact of the Covid-19 pandemic on employment

In 2020, with Covid-19 causing a never-seen-before pause in global socio-economic processes, a world-wide economic downturn began to unfold into a recession, threatening the livelihoods of those at the lower end of the income spectrum.³²

In India, early months of the pandemic were marked by 'lockdowns' - a public health strategy to mitigate a large-scale health crisis. These lockdowns confined people to their homes, shutting down businesses that employed daily-wage labourers and migrant workers. These highly vulnerable groups were suddenly left stranded with no certainty or assurance of what was to come or happen to their livelihoods.

It is safe to assert that the migrant crisis that emerged in the early months of the pandemic was one of the biggest the country has faced in the 21st century yet³³. As the hardest hit demographic, daily wage workers, contractual labourers and self-employed workers had to face uncertain conditions along with the lack of food and shelter, resulting in a mass migration from cities to rural areas. The organised private sector also witnessed massive layoffs. Limited resources available in stringent economic settings led to unstable job conditions for the private sector workforce as well. The Centre for Monitoring Indian Economy (CMIE) reported that India's unemployment rate spiked up to 23.4% during the week that ended on 5th April 2020. Until March, the unemployment rate was officially reported to increase from 7.8% to 8.7% all throughout February 2020.³⁴

Predictably, youth employability fell to 45.9% - significantly lower than the previous year. But more importantly, the skill gap that emerged with the pandemic turned out to be a defining feature of the socio-economic changes that were beginning to take shape by mid 2020. As the economy began to 'distance' and digitize at a never-seen-before pace, the landscape of work and the skills required to succeed in that environment also changed in irreversible ways. It is into this future that young people in schools today will graduate. A future that stands in sharp contrast with their current reality of little or no access to digital resources and socio-economic capital.

The pandemic has and continues to test the fabric of human lives in ways we are yet to fully understand. It has clearly escalated critical economic changes that were already underway (for instance, digitization) causing major disruptions to global supply chains and just-in-time productions. Enabling successful school to work transitions requires us to gain a deeper understanding of the situation and help school systems prepare young people for a successful future. Specifically the need to integrate 21st century skills as part of the learning experience at secondary school level is critical to ensure successful school to work transition. Through this study we hope to provide recommendations which would inform intervention design for the school ecosystem.

3.3 Research methodology and approach

The study deploys a forward looking lens in its approach, methodology and analyses. The following presents a summary of the focus of this study:

- Identify disruptions in career trajectories that are likely to sustain or emerge over the next ten-year time frame.
- Identify careers that will be aspirational or can be made aspirational for secondary school students in the future.
- Explore green economic recovery and sustainability as possible career trajectories.

Given the context of the pandemic and the climate risks it has exposed and drawn attention to, the focus of this study would prove useful to set direction for future careers. This focus envisions a greener and more sustainable economic future that can withstand economic, health and environmental shocks over the coming years. And finally, the study also identifies how career trajectories might differ between the urban, peri-urban and rural locations

and within India; to help plan for a future that youth in diverse locations can aspire towards.

Study findings have been based on in-depth interviews with a variety of stakeholders; covering the school ecosystem (educators, parents, school heads and learners), heads of non-profit organizations, industry experts, staffing and recruitment agencies and bilateral agencies such as the International Labour Organization.

School level	24 (teachers, students, headmasters and parents)
Experts	28 (HR & staffing officers, FICCI representatives, sector skills councils, ILO, McKinsey, non-profit heads and implementation experts)
Total	52

States covered include Odisha, Karnataka, Gujarat, Assam, Telangana, Maharashtra

3.4 Key findings

1. Key trends that which shape the economic future of learners

- COVID-19 has accelerated digitization across sectors forcing various companies to adopt remote working systems. Digital adoption rates have surpassed the already swift pace of the last six years. A McKinsey report³⁵ from early 2020 noted that the world has “vaulted five years forward in consumer and business digital adoption in a matter of around eight weeks.”
- Accelerated digitization has also meant an expansion in global-in-house centres³⁷ (or GICs) as more multinational companies become comfortable with remote working and offshore some of their work in cheaper and less-risky economies. India at present is home to around 1700 GICs, which is 50% of all such centres across the world, employing 1 million people³⁸ in the country. Immediately during and after the pandemic, there were GIC related hiring and investments in the healthcare, telecom, and banking/ insurance sectors in India. Studies predict that the post-COVID world will see more of such GICs in India.

Similar trends are being observed in India, where even legacy companies and sectors which had previously been slow to adopt digital tools are investing in a digital transformation. Business executives in India note³⁶ that the pandemic came as a “wake-up call” and as an “opportunity” for the use of digital technologies. This has been further fueled by increasing digital adoption by customers and consumers, and by the remote working conditions that many companies had to adapt with the pandemic related lockdown and regulations. These shifts in behaviour will be irreversible and many companies are looking at a digitized workforce and supply chains as opportunities to increase their efficiency. These shifts will have significant implications on in-demand careers and skills; many roles will vanish, making way for others which will result in automation, thereby requiring an upskilled workforce fluent with digital tools and platforms. Studies suggest that these changes will drive new kinds of working cultures and regulatory methods to manage a remote workforce.

According to a recent survey³⁹ by the ManpowerGroup with employers across different sectors, 40% (in India) plan to offer remote work and flexible hours to the post-pandemic workforce, and around 25% are planning to offer a hybrid model to their employees. Another survey with the learners⁴⁰ in India found that most don't expect a return to pre-COVID world of entirely full-time in-person learning and work.

- In this context, companies are also reassessing their recruitment⁴¹ and talent management strategies for digital and remote working environments. For instance,⁴² companies such as Unilever and AB InBev (a beer manufacturer) are using Tydy, a Bangalore based digital platform to virtualise training and approve workflows. Recruitment strategies now involve holding interviews via videoconferencing with assessments focussing on candidates' abilities for communicating via digital platforms and tools.

2. Impact on sectors and careers

1. **Digitization and emerging opportunities across financial Services:**

The Financial services sector has been one of the quickest adopters of digital transformation during the pandemic. The changes adopted by the industry will continue to impact career and skilling trajectories within the industry. Fintech, for example, has played an important role as a disruptor in the industry. Fintech and financial services were the highest funded⁴³ sector in H1 2020. In addition, insurance and insurtech sub sectors also experienced a stable growth. The World InsurTech Report 2020 highlights the growing opportunity for insurtech⁴⁴ across the world (including India) as insurance companies try to meet the digital needs of the customers.

2. **Changes in healthcare and allied sectors:**

The pandemic accelerated the need for and use of digital technologies by healthcare professionals, especially in Tier 1 cities. This led to a major rise in telemedicine platforms, remote consultations, digital appointments among other changes. Experts warn that doctors and nurses will likely continue to use these digital tools, leading to a leaning down of the workforce in hospitals and clinics as a smaller number of support and administrative staff will be needed to manage operations. Health and Wellbeing: This is in contrast to the impact on allied sectors (such as pharmaceuticals and wellness) which are witnessing large public sector investments. For instance, the government has earmarked Rs. 15,000 crore⁴⁵ for testing facilities, personal protection, isolation beds, ICU beds, ventilators, and training of medical and paramedical staff.

A scheme on Promotion of Bulk Drug Parks⁴⁶ has been approved, for financing Common Infrastructure Facilities in three Bulk Drug Parks. In addition, a Production Linked Incentive (PLI) Scheme has been approved for promoting domestic manufacturing of pharmaceutical ingredients. Studies link both public and private sector investments in the healthcare sector to a rise in demand for personal support healthcare workers, paramedics, physical and mental health therapists, and customer support staff across the wellness sector.⁴⁷

3. **Job creation related to increased investments in education technology:**

The pandemic and the ensuing lockdown pushed private schools in urban India to adapt to a digital and remote pedagogy. Receiving over 2.2 billion USD⁴⁸ in 2020, the ed-tech sector catered to not just K-12 education, but also adult learning and workforce upskilling (specifically private sector educators). Studies suggest that it was the second most funded sector in 2020 in India, and witnessed a 4.5 times growth. The sector saw a sharp increase in hiring in 2020, with most on-demand jobs being in technology, marketing and sales, content and pedagogy. While some of this might be a short-term spike in growth, ed-tech is expected to continue to play an important role, especially in urban India.

4. **The post-covid expansion in gig-work**

The expert consensus on gig-work is that it will continue to see a rise, playing an important role in the economic recovery of India. In 2020- 2021, more than 50%⁴⁹ of new employment in India (both white and blue collar jobs) were generated by the gig industry. This trend has seen stability across two main kinds of work : online crowd work⁵⁰ and jobs undertaken via platforms such as Uber or Urban Company.⁵¹ Many young workers see these opportunities as stepping stones to their careers; and since, by their very nature and terminology, they were considered as a temporary “gig”, the jobs offered little in terms of social security and benefits of fair wage. But with the pandemic led rise in gig and platform based work, there has been an increase in much needed attention towards formalizing the sector.

5. **Green sector job-led growth:**

A pre-COVID ILO report estimated that a shift towards a greener economy can add up to 3 million jobs by 2030 in India. Initiatives⁵² by organizations such as the Indian Institute of Human Settlement (IIHS) in India also show that it is possible to link job-creation with environmental protection/ conservation efforts by creating local models that address environment and climate concerns while creating new jobs and supply chains.

Experts highlight that the pandemic can be an opportunity to fast-forward India’s efforts towards sustainability goals while addressing the need for new job creation. For instance, studies project that by implementing energy efficiency and renewable energy measures, the government can create immediate jobs, especially in the labour-intensive buildings sector, which employs 12% of India’s workforce.⁵³

This is substantiated by the fact that India’s renewable energy workforce has grown five times over the last five years, and its clean energy targets have the potential of creating employment for over 3,30,000 workers⁵⁴ by 2022. Rooftop solar and decentralised energy technologies are other labour-intensive industries that promise high job creation potential.⁵⁵ In the same vein, the pandemic saw private companies with better ESG profiles⁵⁶ attracting greater investments;⁵⁷ this market is projected to continue to grow in a post-COVID world.

6. **Accelerated privatization and new centres of growth :**

Between July to September 2020,⁵⁸ the Indian economy shrank by 7.5%, which reflects a recession worse than anything the country has seen since 1996. 140 million people lost their jobs after the March 2020 lockdown, and more than 6 million of them haven’t found new employment.

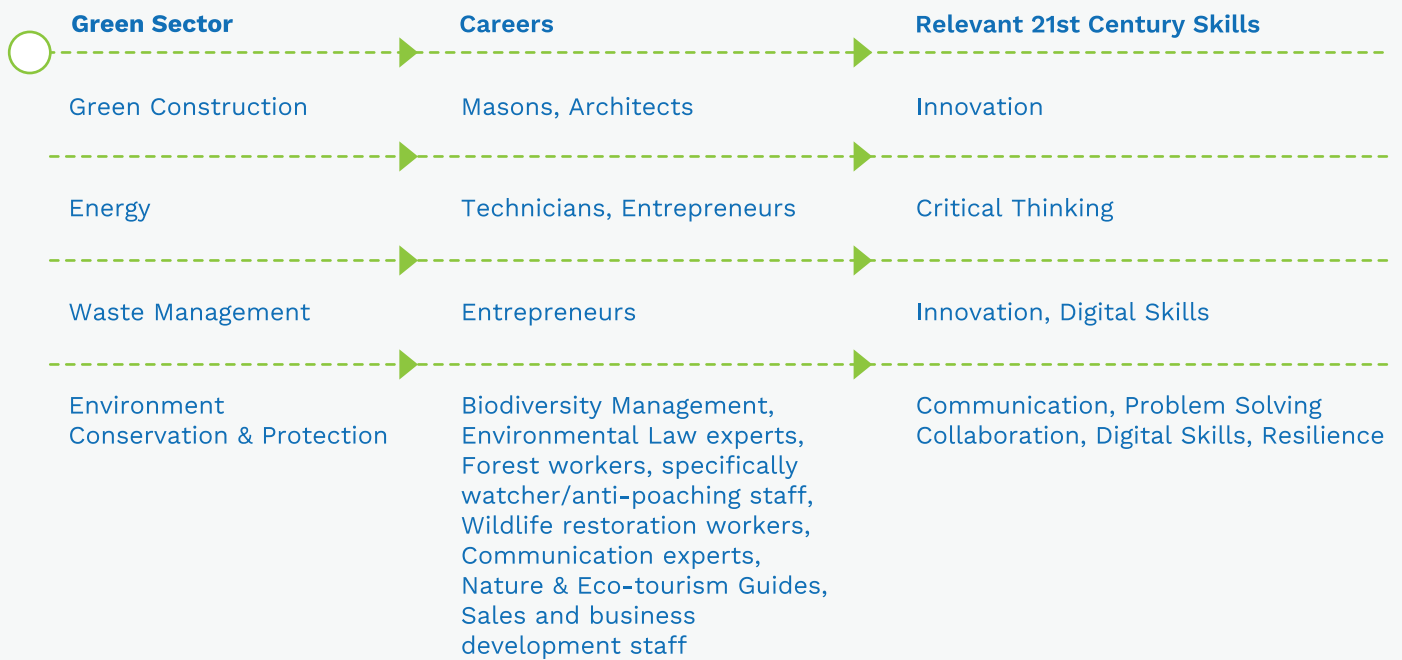
In a survey conducted by All India Manufacturers Association, 1 out of 3 MSMEs indicated that their business was beyond recovery, representing a potential of 20 million MSME closures in the 2020-21 fiscal year. MSMEs are a crucial part of the Indian economy, as they contribute to 40%⁵⁹ of Indian exports and employ 110 million people in the country.



A major government response to this slowdown has been privatization of different industries. From banking, to transportation and healthcare, the government has been embarking on various privatisation plans to revive the economy. Various 'opening up' measures⁶⁰ have been announced such as private participation in space research and atomic power. The other major government response towards economic revival has been focussed on creating new centers of growth or production hubs in India. As large urban centres face the brunt of the pandemic and continue to reel from the economic slowdown, many economists predict a focus on shifting supply chains to smaller cities⁶¹ and creating new production centres. As companies/economies look to diversify their supply chains, it is expected that the post-covid economy will see India expanding manufacturing hubs in tier 2 cities, specifically in the sectors of electronics, chemicals, textiles and apparel, auto and auto components.

Several studies suggest that the expected rise in production and manufacturing coupled with investments in the green sector can together lead to new ecologically viable supply chains and jobs in smaller cities and semi-urban areas. Experts also suggest that the green sector specifically, can create employment across different geographies with local jobs that address local issues in specific regions.





Geographical Spread

Across Tier 1, Tier 2 and Tier 3 cities. Government investment /incentivizing is more for the Tier 1 cities; but greater scope for innovation, investment in rural areas and potential for government partnerships in Tier 2/ Tier 3 cities/ small towns.



Geographical Spread

Tier 1 cities will see more disruption/growth. Growth in Tier 2 /Tier 3 cities will be as per pre-COVID trends



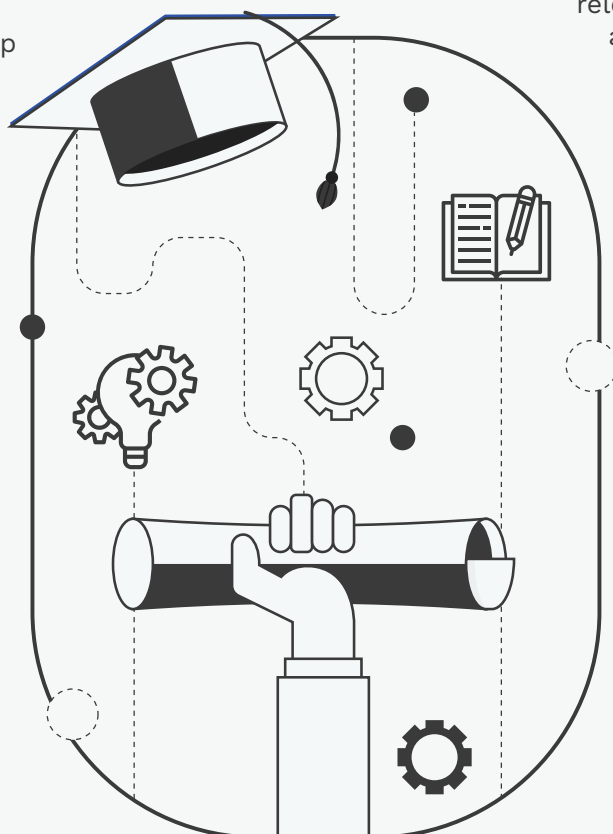
3. The school system against a changing world of work: Findings from ethnographic research

The fast-changing future of work has been a well acknowledged point of concern for civil society workers, employers and training institutions. Until 2019, most debates were largely concerned with the impact of emerging technologies, automation of jobs and the inability of education institutes to keep up with the concurrent upskilling needs of the market. It is clear that with Covid-19 hitting the economy in early 2020, new layers of complexities have been added to these already existing challenges in the education and skilling ecosystems in India. To understand where the current school ecosystem stands against the economic shifts detailed in the preceding section, this part of the study consolidates findings that represent youth voices and specific apprehensions around school to work transitions through interviews conducted across the states of Odisha, Assam, Telangana, Gujarat, Bihar and Karnataka.

1. Job market awareness against a changing future of work:

Interviews with learners and parents substantiate the age-old perception of teaching, engineering and medicine as the top three careers that Indian students aspire towards. Similarly educators, block and district level officials also present a gap in understanding of the impact the current economic climate has had in terms of the jobs that are witnessing a downward trend, and those that are emerging in new shape and form.

However, interviews in which stakeholders were also presented with these trends highlighted both a need and interest in reducing the gap between the school and socio-economic changes relevant to career development needs of learners.



2. Poverty, a relentless barrier between career related aspirations and decisions:



“I am in need of a job. I am ready to do any job that I can get. But I need a job...I will first get a job then see how the timing is and how I am able to balance my other interests. Once I get a job, I will decide which course to take and what to study further”.

- Arun (name changed), 19, grade 12 student, government school, Karnataka

Against the backdrop of cyclic financial difficulties, economic insecurity made worse by the pandemic and the absence of social safety nets, young people are pushed to choose employment over higher education or training. With little or no work experience, and a lack of time and resources to engage in training relevant to one’s interests and aspirations, young men and women are compelled to take up informal jobs characterized by difficult working conditions, low wages and no prospect of growth or upward mobility. This formed a common thread across interviews with educators who linked major job losses to a reversal in any shift towards long-term career focused thinking achieved before the pandemic hit learners and their families.



“It had always been difficult for them to find jobs. They would have only completed PUC (a pre-degree course, also known as 10+2) and they are willing to take up any job they get. These jobs most often do not have anything to do with skill, training or individual interest but everything to do with money and need. With many families suffering from income loss due to lockdowns, this trend is making a clear comeback in secondary school grade children, especially the boys”.

- Government school teacher, Karnataka

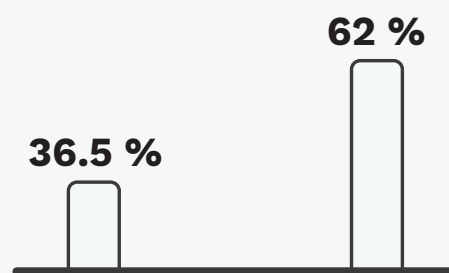
3. A severe lack in access to digital devices, opportunities for digital skill building: As outlined in the preceding section, a major impact of the pandemic has been the tremendous speed through which processes - across sectors and industries have digitized - changing workplace behaviours and industry demands in irreversible ways. This future of work paints a grim picture for learners such as Madhavi and her siblings. Being on the wrong side of the digital divide, their experience of education continues to be defined by difficult decisions, with little or no room for building complex digital behaviours and skills required to succeed in the economy that they will soon graduate into. The situation is worse for girl children.



“We only had 30-40% class attendance throughout the pandemic year. Not because students did not know how to join in on the online classes but because most of them did not have any digital devices to join through. We have no idea how they spent the time they were supposed to use for learning and given the scale of lack of access to devices, we could not do anything about it.”

- Government school teacher, Karnataka

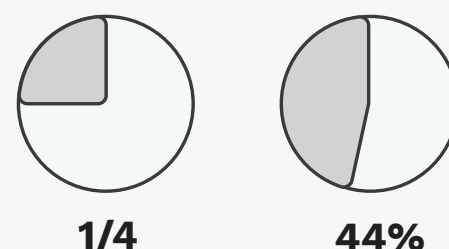
The latest ASER report, quantifies the digital divide⁴³;



In 2018, 36.5% households had a smartphone, now 62% of the households have access;



Out of this 11% purchased a new phone to support children's education



Only a 1/4 of the students in private schools didn't have access to a smartphone, versus nearly 44% of government school students who had no access to any kind of digital device.

With the impact of the pandemic continuing to unfold , we are now looking at a severe disparity in learning outcomes and access to economic opportunities among public and private school students.

4. The digital skills deficit among educators and school system stakeholders:



“Our world of work has become digital and we are struggling to keep up with it. How will we prepare our students? This has been the biggest source of stress for us teachers this year.”

- Headmaster,
Ahmedabad, Gujarat

One of the most significant and consistent findings that emerged from conversations with educators was the burden of switching to remote teaching methods without adequate support and training. Several teachers describe the experience of their struggle at par with and equivalent to those of students they were expected to engage remotely. They expressed how it is next to impossible for them to engage in innovating around pedagogy, 21st century skill building and supporting career development when they are struggling to transact a conventional and very analogue school curriculum that was unprepared for the digitization that school closures led to. One year into the academic year, their main point of challenge continues to be large numbers of out-of-reach children.



Given the severity of the challenges that the public education system is currently facing and the urgency with which they need addressing, organizing insights into recommendations for reform was a constant focus of the study. The following section presents recommendations consolidated from interviews with stakeholders across the system, analysed against expected market trends, with the aim of informing interventions working to ensure effective school to work interventions both in the short and long term.

IV. Recommendations for intervention model: Priority areas for action for stakeholders

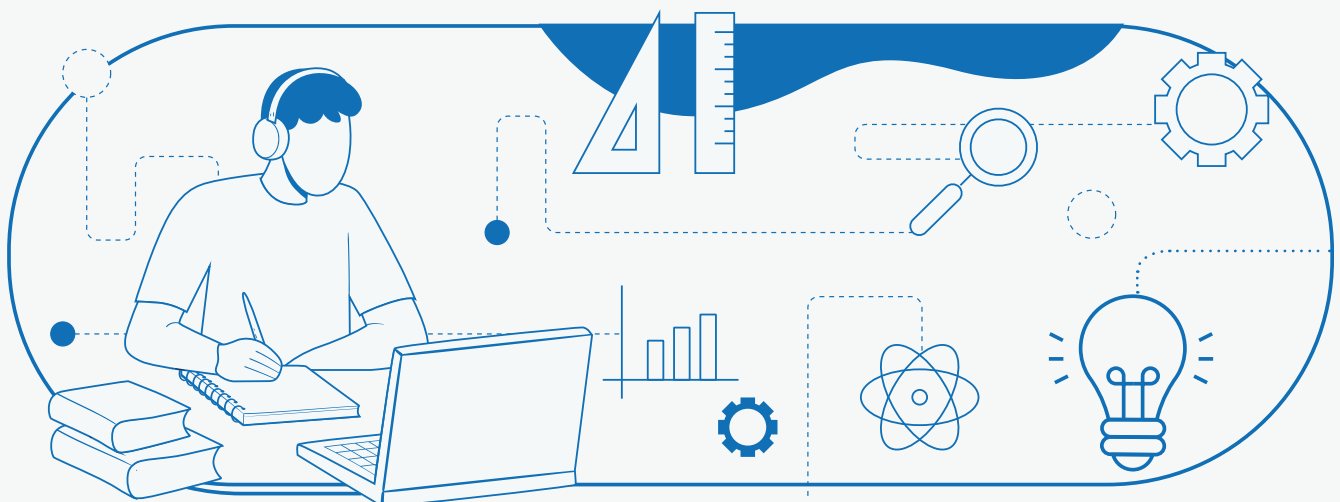


At learner level:

1. Pilot a comprehensive career development input that builds:
 - Critical digital skills and behaviours (beyond basic digital literacy) that allow young people to communicate effectively via email and platforms, navigate information to their advantage, and problem-solve through available applications.
 - A combination of specific technical skills relevant to a particular career pathway along with a varied number of 21st century skills (communication-English & digital, ability to innovate around problems, navigate through crises, self-awareness and emotional well-being)
 - Learnability - skills for problem-solving, referring to ability to quickly adapt to a fast-changing work environment by upskilling when needed. Practice 'micro-entrepreneurship' skills in every role and work related context, viz., demonstrate ability to self-learn, self-motivate, self-manage and take ownership of tasks.

- Address network-poverty: One of the biggest disadvantages faced by youth from poor and marginal families is the absence of social capital. Expert interviews iterate the importance of informal networks and social capital in helping young people not just access jobs (especially first jobs) but also build awareness of the market and in-demand skills. As mentioned in the report, recruitment is increasingly being done based on intangible and interdisciplinary skills which makes it critical for organizations to help address the current network poverty faced especially by government school and affordable private school students.

These inputs could range from creating peer and alumni networks across a state or specific regions, to connecting learners with role models from relatable contexts and enabling local vocational training and apprenticeship opportunities.





At teacher educator and school level:

2. Work with each system actor as a distinct unit of intervention even as the system is engaged with as a whole.

- It is clear that the system and key actors significant to any process of change need holistic inputs to relieve the stress brought on by the overall crisis at hand. Any future engagement, without addressing the several impacts of the pandemic, will only continue to add to the burden that stakeholders such as educators, BEOs and DEOs are currently reeling under. At the same time however, any intervention must also engage with the system as whole, mapping relations that can leverage off each other.

- These efforts could range from providing support staff (that comes in with ed-tech inputs to work alongside teachers), to working with school administration to strengthen connections with local industry representatives. The current parallel relationship between both these stakeholders causes an unfair burden of teaching and supporting career development on teachers while preventing the school from providing employment relevant exposure to careers available locally.

- Given the expected economic shift in production and supply chains to rural and peri-urban areas, bridging the gap between school and industry will be key to enabling a market relevant education for learners.



At system level:

3. Pilot programs on green employment by partnering with financial institutions, local enterprises and municipal governments. This could be vocational training inputs or entrepreneurial training programs that support secondary school youth from Tier 2 and Tier 3 cities with the skills, knowledge, capacities and investments to innovate and develop small green-solution based businesses.

- link the youth with the existing industries in the cluster through skilling, exposure, and training programs;

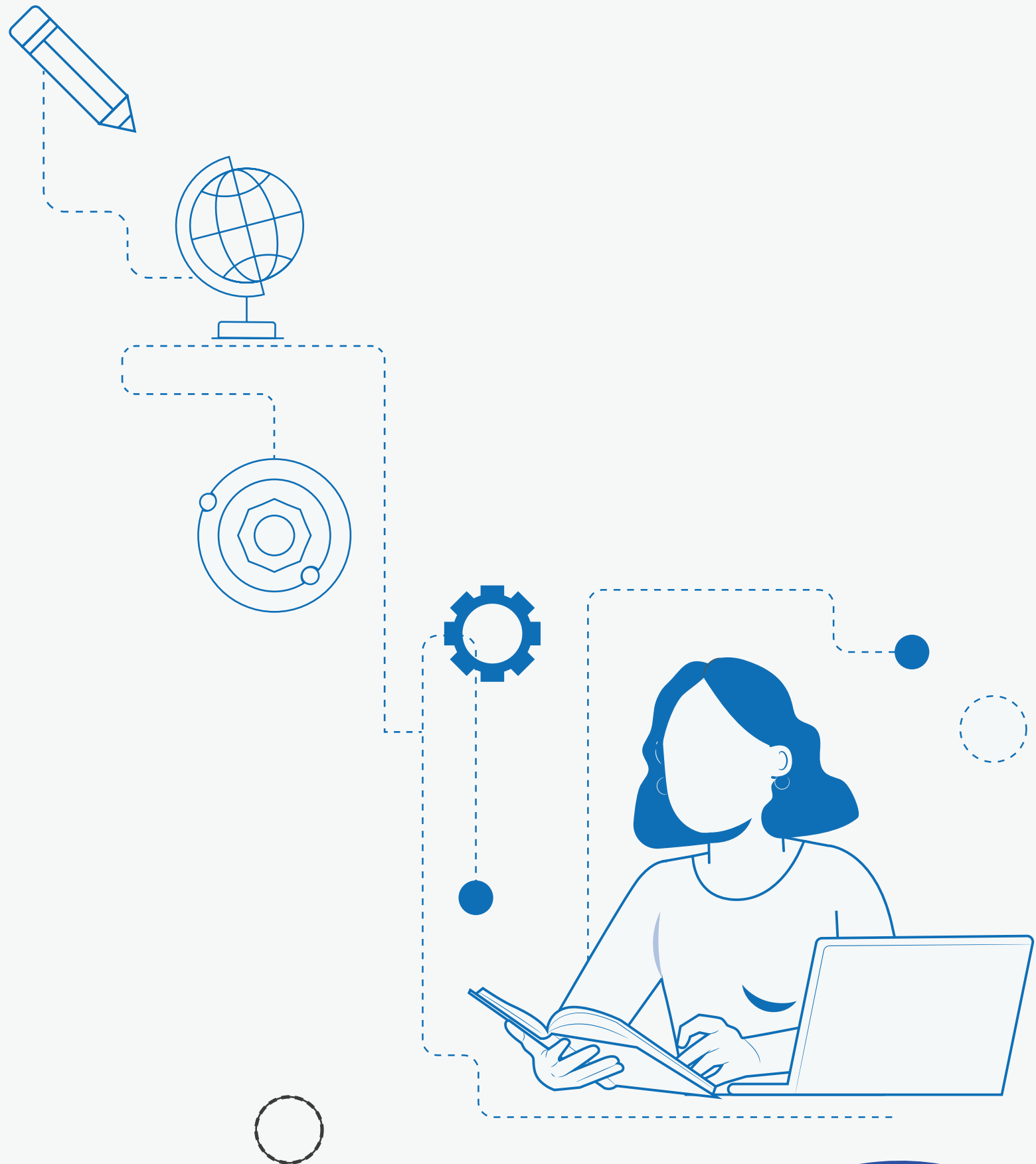
- create jobs by linking the youth to the existing resources in the region (in terms of natural resources, capacities/ skills in the region, government schemes, financial institutions, etc.);

- create jobs by advocating with the industry to expand to these regions;














4. Design interventions at the level of a cluster or region with cluster level multi stakeholder alliances: This is linked to the recommendations listed above. Since market needs, resources and skill demand varies across different regions, it will be worthwhile to identify clusters or regions as units of intervention. Each cluster could then be run by multi-stakeholder alliances/ partnerships that

















- partner with other government and civil society organizations to address other barriers faced by the youth in accessing employment.














By working at a cluster or regional level, intervention can work to develop regional centres, where students from all schools in the cluster have access to equal levels of information, training, and opportunities for digital skill building.



















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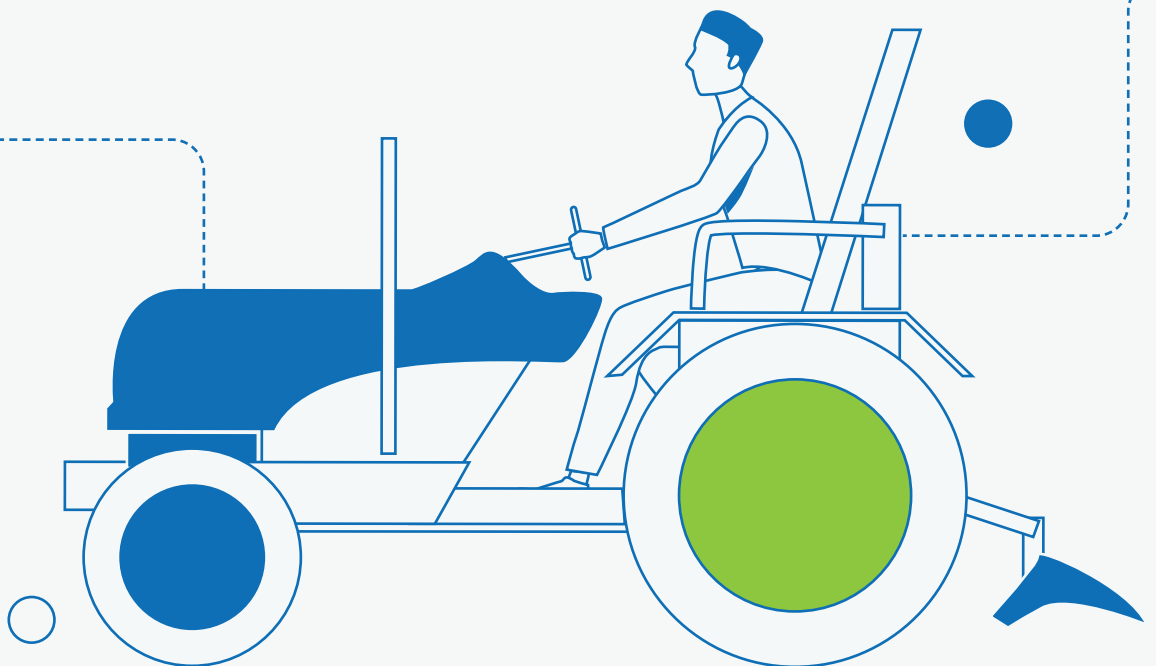
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