



Insight: June 2021

Higher Order Thinking Skills Learning Landscape in India

First developed in the 1950s, Bloom's Taxonomy is widely recognized by educators today. In this framework, skills are thought to build upon each other, starting with the most basic skills (recall and comprehension), progressing through more complex skills (application and analysis), and culminating with higher-order thinking skills such as synthesis, evaluation and creation which are referred to as Higher Order Thinking Skills.

The Higher Order Thinking Skills learning market in India is very fragmented and is still evolving. Education sector in India has started recognizing the need for meaningful learning rather than rote learning method which has led to focusing on developing thinking skills by puzzle based, game based, problem based and play based learning pedagogies which further lead to increasing demand for learning Higher Order Thinking Skills.

In this monograph, an outline of Higher Order Thinking Skills learning has been presented that examines the potential, competitiveness and product offerings within Indian market.

About Eduvisors:

Eduvisors is a leading sector-focused consulting firm in Education in India. A part of Barry & Stone (B&S), a global network of independent consulting firms with 12 offices in 8 countries, Eduvisors is a pioneer amongst consulting firms in India with sole focus on the Education sector.

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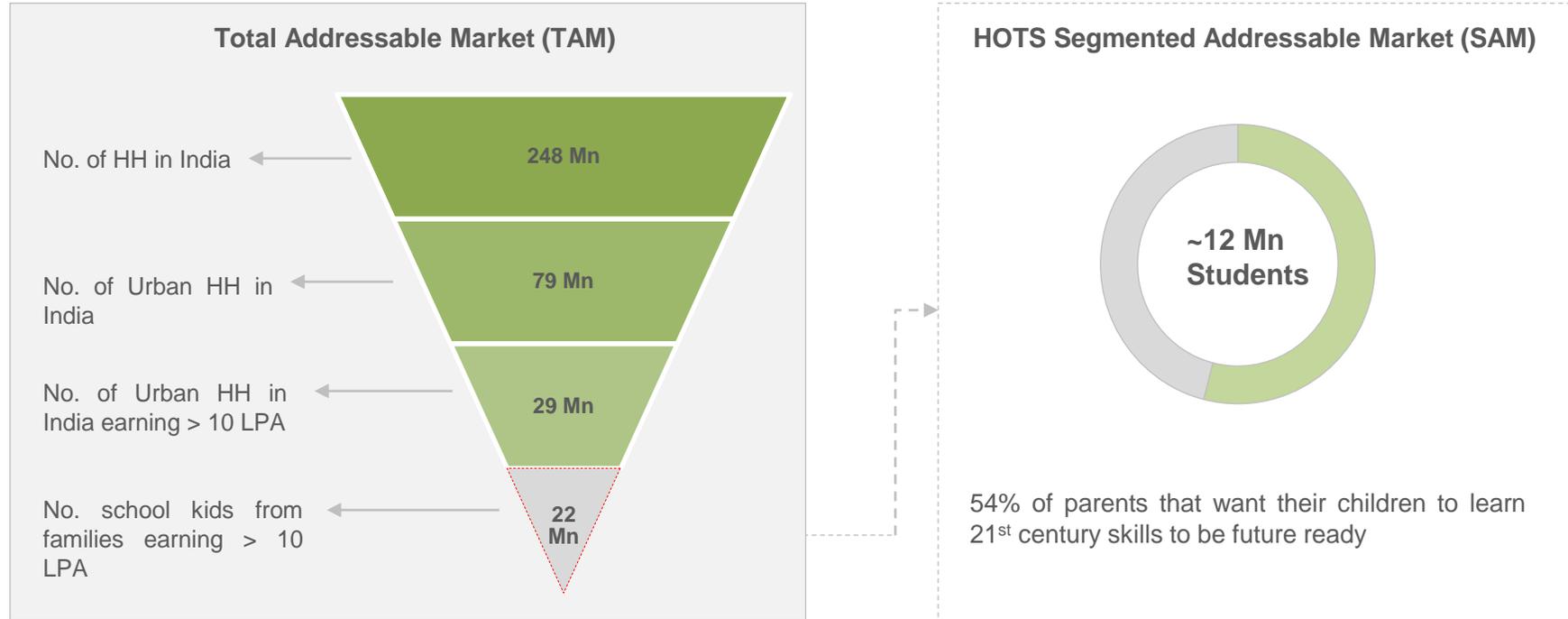
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Domestic demand indicators peg the market size to be 10 mn+ students

The market is expected to be propelled by middle income group families that consistently aspire to empower their children with skills relevant to the job market in the future:



- The middle income group is likely to become the defining market for cognitive centric learning as it is expanding the fastest amongst all income groups

The Indian ecosystem is warming up to early years development programs

The Indian HOTS industry is still familiarizing and changing to reach the global environment where HOTS is an essential part of the curriculum across the country:



Regulatory Mindset Shift:

- Assessment to shift from testing rote memorization skills to more competency-based testing of higher-order skills, such as analysis, critical thinking, and conceptual clarity



Investor Attractiveness

- Over the last 8 years, several start-ups have committed a portion of their investor funding into critical thinking related efforts amounting to an **estimated US\$ 2 mil**



Market Response

- HOTS startup beGalileo reported 100% growth year on year

Industry segment leaders that dominate the HOTS landscape in India

India is home to several prominent players focused on developing Higher Order Thinking Skills for children of all ages. Some of the most prominent players offering HOTS courses in India are:

					
Founded	2007 (Rebranded as Konshius in 2017)	2017	2015	2013	2016
Paid users (2019-20)	8,500+	500+	10,000+	15,000+	3500+
Grades	Nursery - VIII th	Nursery - VIII th	V th – VIII th	Nursery – XII th	Nursery - V th
Content type	<ul style="list-style-type: none"> Reasoning Dimensions Visualization Behavioral science 	<ul style="list-style-type: none"> Science & Math Technology Engineering Mapping & navigation 	<ul style="list-style-type: none"> Stories & Narratives Puzzles Reasoning Immersive research 	<ul style="list-style-type: none"> Game based Puzzles Visualization Linguistic 	<ul style="list-style-type: none"> Mathematics
Skill Focus	<ul style="list-style-type: none"> Critical thinking Creative thinking Collaboration & Communication skills 	<ul style="list-style-type: none"> Innovative thinking Logical reasoning skills Problem solving skills 	<ul style="list-style-type: none"> Communication skills Critical thinking Research & information literacy skills 	<ul style="list-style-type: none"> Problem solving Critical thinking, Independent learning, Decision making 	<ul style="list-style-type: none"> Critical Analytical Logical

Market for HOTS learners is fragmented and largely accessed externally

As Higher Order Thinking Skills can be taught through different activities including school curriculum, it is a very fragmented market. There are various means available to learn Higher Order Thinking Skills in and outside schools:

Students learning HOTS through other mediums

~70% Through Other Mediums

Students learning HOTS in a dedicated course

~30% Dedicated Courses

Learning Through Other Mediums:

Most students learn HOTS while learning other skills:

- Project Based Learning when used in school classes or after schools activities, presents a variety of authentic and meaningful problematic situations for students, which helps promote Higher Order Thinking Skills in Students
- Higher Order Thinking Skills are also promoted in a school classrooms through activities and collaborative learning
- Many EdTech's promote HOTS through other skills development like Coding, Programming, Robotics, Gaming, Reasoning etc.
- Many organizations help their employees in developing Higher Order Thinking Skills by engaging them with learning tasks that give them the confidence to be innovative

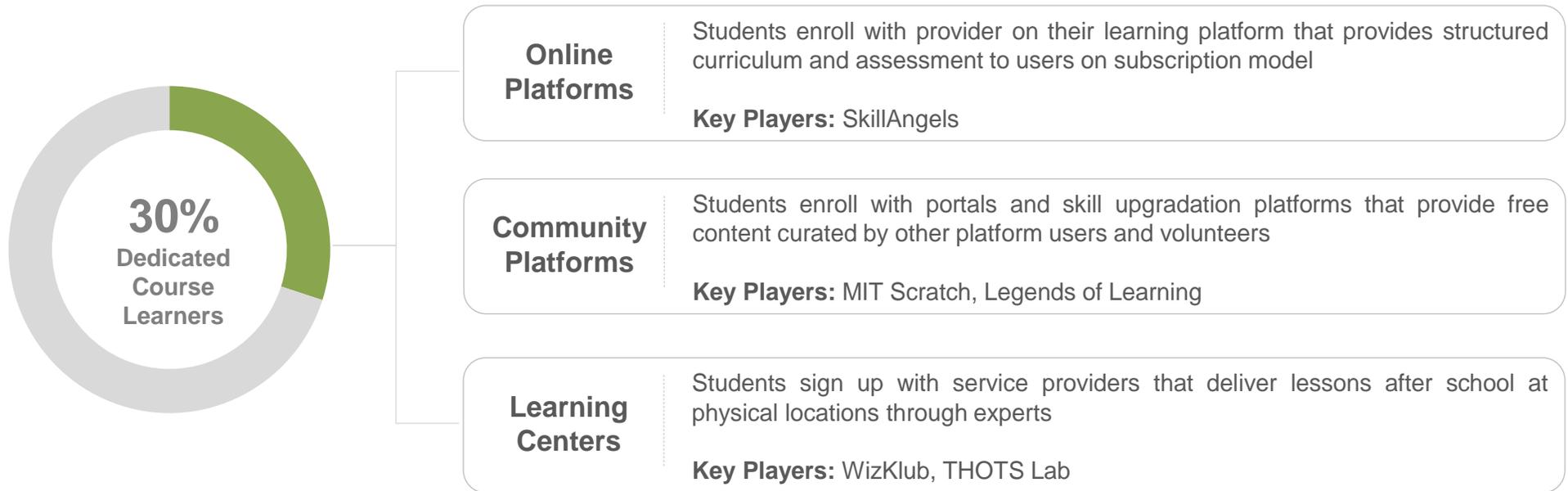
Learning Through Dedicated Courses:

There are EdTech companies offering courses dedicated to development of Higher Order Thinking Skills:

- Account for only 30% of the overall student learning HOTS
- Are taught using different mediums such as gaming, quiz, class curriculum etc.
- Online platform and School Tie-ups are most popular methods of delivery for HOTS courses

Organized courses are offered through different delivery modes

Students that choose to learn HOTS through external mediums have various alternatives available ranging between completely customized experiences to learning from public knowledge pools:



HOTS programs are classified by skills & multiple development attributes

HOTS learning is generally delivered through personalized learning experience by online sessions, platforms, face-to-face by step by step delivery of curriculum to develop specific skills and meet the learners need. Following is an example curriculum snapshot for learning HOTS:

Topics	Grade II - III	Grade IV - V	Grade VI - VII	VIII - IX
Critical Thinking & Problem Solving	<ul style="list-style-type: none"> Identify main idea of given passage Separate facts from opinion Distinguish between relevant & irrelevant information 	<ul style="list-style-type: none"> Identify & challenge assumptions / conclusions Identify weak arguments and logical fallacies Define a problem statement / research question 	<ul style="list-style-type: none"> Drawing inferences using argument mapping tools Analyzing context, inferences, assumptions Analyzing problem, proposing solutions 	<ul style="list-style-type: none"> Basics of building arguments Deconstructing arguments in precise claims Type of fallacious arguments
Research & Information Literacy Skills	<ul style="list-style-type: none"> Primary and secondary information sources basics Information sufficiency Forming questions to analyse information from diverse sources 	<ul style="list-style-type: none"> Identifying sources of bias & finding credible information Build hypothesis, understand relationship with variables Representative sampling & robust experiments 	<ul style="list-style-type: none"> Evaluate varied methodologies & draw conclusions Identify & apply control variables Experimental design to real life situations 	<ul style="list-style-type: none"> Evaluating arguments based on information sources Secondary data source analysis simulation Concluding main research question
Academic Writing	<ul style="list-style-type: none"> To precisely select what needs to be communicated Structuring communication: main idea & supporting arguments 	<ul style="list-style-type: none"> Identify & use appropriate tone for a particular audience Being precise & using different writing styles Steps in the writing process 	<ul style="list-style-type: none"> Identifying correct diction Use a wide range of vocabulary Learning writing techniques like linking major and minor points in a paragraph etc. 	<ul style="list-style-type: none"> Applying correct diction Applying finer writing techniques

Scratch: A Community platform that promotes collaboration & amplifies learning

Scratch is a free programming language and online community where you can create your own interactive stories, games, and animations. One can program their own interactive stories, games, and animations using the Community Platform and share their creations with others in the online community. The Platform helps young people learn to think creatively, reason systematically, and work collaboratively. Following are some example topics and exercises on Scratch:

Curriculum Topics	Description	Exercises
<ul style="list-style-type: none">▪ Creative Thinking	Use exiting projects to create online and offline projects at home	Online: Create games using block coding Offline: Fun activities like make a fort at home
<ul style="list-style-type: none">▪ Reasoning	Learning through existing games and projects on the platform	Hundreds of existing projects on Art, Music, Animation, Stories, Games and Tutorials help students work on their reasoning skills
<ul style="list-style-type: none">▪ Collaboration	Be part of group projects and discussions to learn from and with your peers	Learn through activities shared by others and be part of discussion groups

Products

ScratchEd

More than 27,000 educators who support learning with the Scratch programming language shared 4,749 discussion posts, 1,027 resources, and 354 stories on ScratchEd Online Community.

ScratchJr

With ScratchJr, young children (ages 5-7) can program stories and games. In the process, they learn to solve problems, design projects, and express themselves creatively on the computer.

ScratchDay

Scratch Day is a global network of events where people gather to celebrate , the free coding platform and online community for kids.

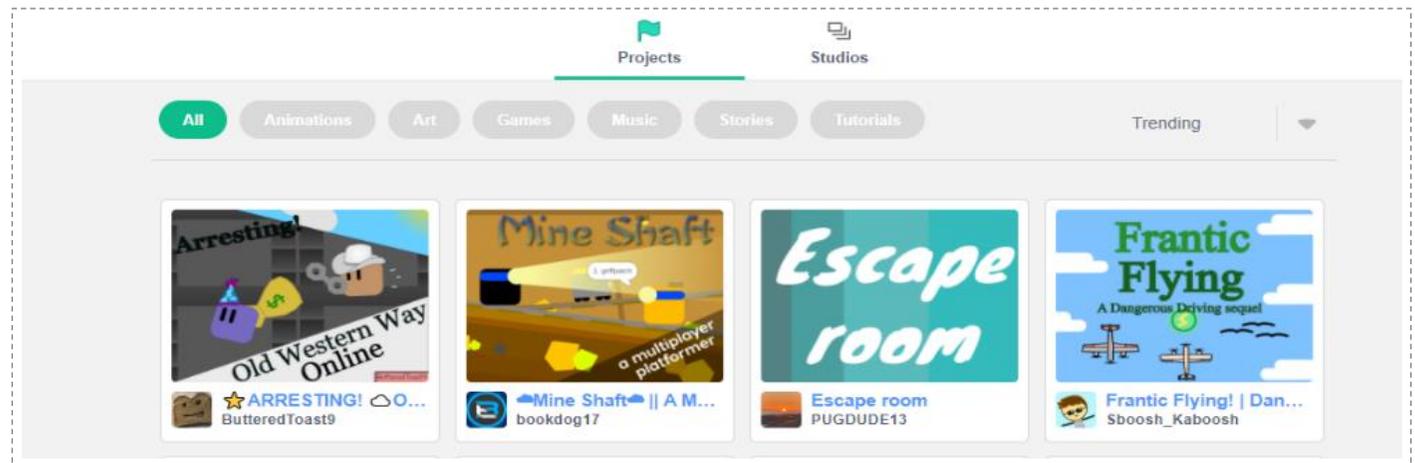
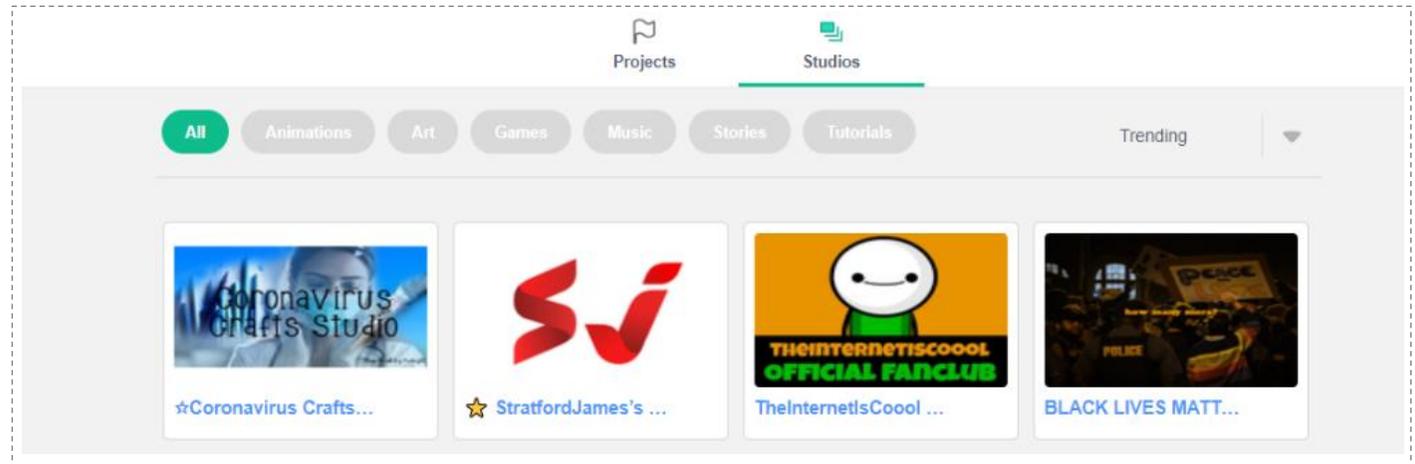
Scratch Conference

Scratch Conference, an international gathering where educators, researchers, and developers share ideas for supporting creative learning with Scratch.

Scratch: Self learning through tutorials is typical

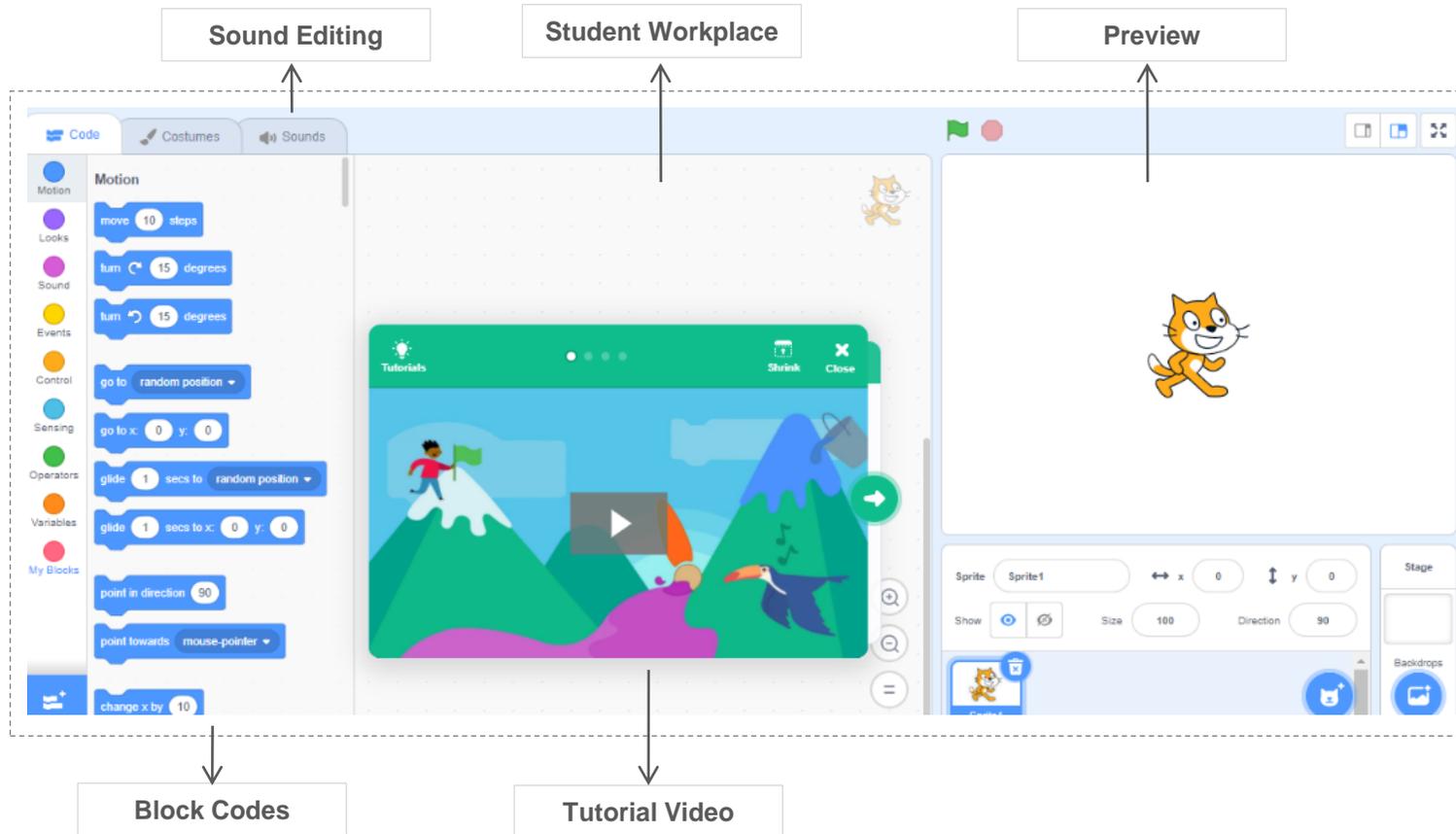
Project & activities done by other community members are available on the platform for other members to learn from:

- Tutorial videos, coding cards and educator guide to understand the processes
- Option to have discussion with other community members on different topics
- Starter projects to understand and edit them to remix them and make your own project
- Activities like: Learning how to make castle at home using chairs and blankets
- Escape rooms: Using puzzles and riddles to escape rooms
- Create music using the coding blocks
- The Scratch app allows you to create Scratch projects without an internet connection.



Scratch: Interactive session dashboards continue to be a consistent feature

The platform helps students to learn to create games, stories and animation through block coding:



Learning Centers: The most preferred offline mode of learning

Learning lab infrastructure is utilized by players in the industry as subconscious learning experience booster and creating engaging environment for children:

Features of Learning Centers

- **Labs installed inside school/centers** to provide stimulating learning experience to develop higher order thinking
- Safe and secure and engaging environment with use of semiotics to stimulate conscious thinking
- Specialized designed seating arrangement and tables with thinking concepts
- Random seating arrangement through token dispenser to provide children opportunity to sit with new classmate

- **Innovative concepts** such as spinning wheel for removing bias of 'who shall answer the question'
- Learning pedestal for conscious movement of thinking between time zones (Past, Present, Future)
- Sturdy furniture with standardized components to cater repeatability across country wide installations
- Effective use of walls: Various concepts stimulating thinking of child are displayed on walls such as Tools display boxes, Thinking models, Bloom's Revised taxonomy skills, Student's wall space, Wall hanging with powerful messages



Summary & Observations

Looking at the increasing need of learning Higher Order Thinking Skills, the HOTS learning market in India will be seeing massive growth in the coming years:

- A report by the World Economic Forum (WFE) on the Future of Jobs 2020 underscores the need for Higher Order Thinking Skills to harness an increase in automation and usher in a new wave of jobs.

To get the best out of both the worlds of automation and human creativity and adaptability, human skills will become the most important part of the digital future of work, making the aforementioned skills imperative for children to navigate their way and succeed in their careers in a world powered by technology.
- The National Education Policy 2020 gives significant emphasis to the development of an individual's creative potential. It focuses on the principle that education must develop cognitive capacities such as critical thinking, problem-solving, and social, ethical, and emotional abilities and dispositions.
- COVID-19 crisis highlighted the need for the ability to embrace uncertainty. The need to learn to navigate an evolving landscape can be met by building resilience. This is where cognitive skilling can help. One can strengthen their 'change muscle' by developing skills such as flexibility, emotional self-regulation, and creative problem-solving.
- With increasing human dependence on Technology and Artificial Intelligence (AI), future jobs related to rote fact-checking might be taken up by technology. Humans, on the other hand, excel at pattern recognition, creative projects and problem solving, i.e. non-routine cognitive tasks. Therefore, our ability to improve our systems in favour of cognitive skills in school, skill institutes and in higher education is a critical requirement for the future of jobs.

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Unique perspectives
on the Indian
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Thank You