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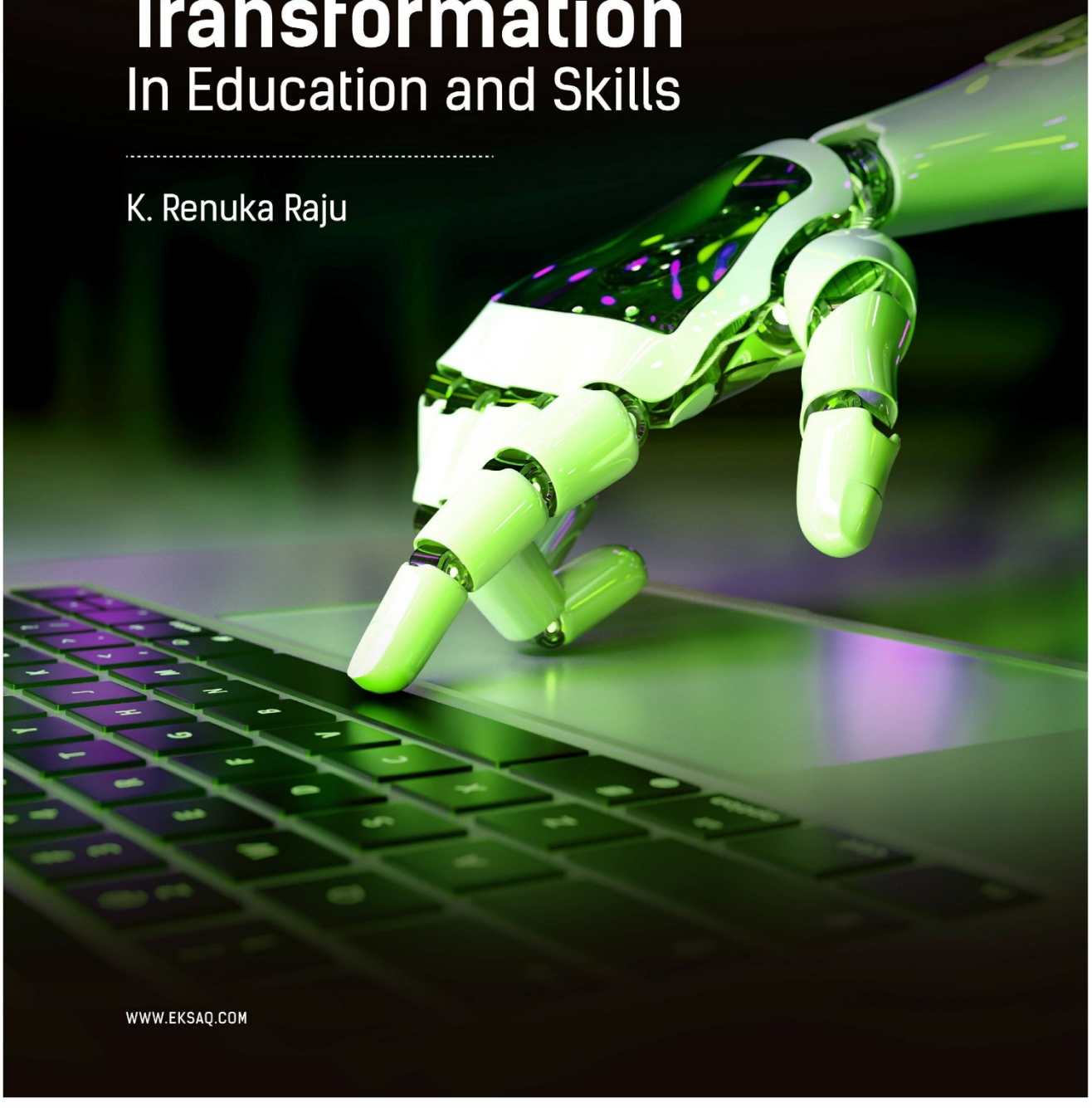
21st Century Transformation
In Education and Skills

K. Renuka Raju



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“The Speed and magnitude of transformation in education and skills delivery is impacted by several factors, including the world of IT applications. we should learn to ride the new wave of transformation or else get ready to be swept away by it.

The ‘chalk and talk’ method of teaching has resulted in rote learning. Today student-centered learning, leveraged by questioning, experimentation, discovery innovation independent thinking and application through active hands-on learning, has become a classroom norm."

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During my 30 years of experience in the teaching and training fields, I have been associated with many entities, academicians, professionals and others who have influenced and qualitatively benefited my intellectual journey. I shall be forever humbly indebted to their influence and contribution as professionals and human beings.

Extensive literature study and direct field observations for an in-depth understanding o the academics, operations and management of state, national and international schools have given varied insights into the life=cycle approach to education and skills delivery. My observation of the home support in students' study patterns has led to an understanding of the importance and efficacy of the 'Three Cycles of Learning.'

Various authors' futuristic and predictive works have channelized my mind towards an in-depth understanding of the influencers, enablers and resultant consequences of the ongoing and dynamic transformation process.

Alvin Toffler

Swami A. Parthasarathy

Kenichi Ohmae

Many books and authors have influenced and enriched my thought perspectives.

Extensive research and reading, keeping myself updated with the changing global socio-economic dynamics through the print and digital media, discussions and analysis of trends have helped in developing a keen understanding of the trends influencing transformation.

I thank the following organizations and individuals who have contributed to my fundamental line of thought and understanding of the 21st Century transformation process impacting education and skills.

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Ministry of Culture

Ministry of Youth Affairs and Sports

Ministry of Textiles

Ministry of Micro, Small and Medium Enterprises

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Education and training focus on investing in the development of products, processes, services, strategies, Innovations etc., for individual and societal growth and development. Passion, creativity, problem-solving, invention, innovation and design thinking are the buzzwords in the Education and Training fields

Preface

Digital Transformation

The past few decades have altered India's socio-economic landscape. The 21st century transformation in education and skills has been fast-tracked by the Covid Pandemic over the last two years. The rapid changes have impacted education in ways never witnessed before.

The transformation has necessitated the education sector to adopt and adapt to rapid changes. Restoring the services, changing existing practices and evolving new practices for institutional operations, management and leadership have been a real challenge for many education service providers. The process of teaching, learning, assessment and stakeholders' experiences have witnessed the proliferation of digital technologies. Those who adopted the digital in the challenging backdrop of the Pandemic emerged as winners; those who lagged were left behind.

The application of digital technologies in education has created new methods, tools, strategies, products, processes and services for teaching, learning and assessment. Anytime, anyone and anywhere availability of education service provision and delivery, which was earlier a possibility, is today a norm.

NEP 2020 and the Transformation in Education and Skills

The Ministry of Education, Govt. of India made a strong statement on the lack of efficacy of the extant education and skills ecosystem in India by introducing the National Education Policy (NEP) 2020 with a focus on Competency-Based Education (CBE). The NEP 2020 is a holistic, comprehensive, inclusive and far-sighted policy that has initiated several initiatives toward policy implementation.

NEP 2020 Focus

- A movement away from rote memorization by focusing on skills and competencies
- Tap into India's treasure trove of culture; preservation, promotion and perpetuation of India's cultural assets; encourage interactions between education and crafts
- A strong reflection of the Indian cultural ethos and local context in the pedagogy and curriculum to ensure that it is relatable and relevant for the learners

- Developing creativity, innovation and imagination with a view to making the future generation proactive, innovative, enterprising and success-oriented
- Transform India into an innovative knowledge hub for the development of world-class products, processes and service
- Grooming students from the schooling stage to lay the foundation for knowledge creation, innovation enterprise and entrepreneurship at the higher education stage. This will result in productive, progressive and prosperous Districts, States and an India that can move towards a 5 trillion Dollar economy

Objectives of the Document

In the 21st Century, it is crucial for school stakeholders to understand how transformation impacts the processes of teaching, learning and assessment.

The overarching objective of this document is to support the following NEP 2020 implementation initiatives:

- National Initiative on Proficiency in Reading with Understanding and Numeracy (NIPUN Bharat)

- Structured Assessment for Student Learning (SAFAL)

- CBSE New Assessment Scheme or proposed single test: Common University Entrance Test (CUET) for admission into higher education n

This document informs stakeholders about

- What is transformation and the processes driving the 21st Century transformation

- The human-machine interactions and partnerships, which are an undeniable upshot of technological advancement and digital resources

- How digital resources deployed into the three cycles of learning: morning cycle at home; day cycle in school and evening cycle at home will impact teaching and learning

- The new skills and competencies required in a transforming world – Core Skills, Subject Domain Skills, Design Thinking etc.

- New assessment protocols and multidimensional assessment, that

reflect accountability, reliability and transparency in School Based Assessment and Evaluation (Formative) and Summative Assessment

- Improving the quality of education, skills, competencies and assessment with international best practices moving towards a single test for college admission
- Importance of culture, family, relationships and networks in life and learning
- Commercialization of cultural assets for enterprise and entrepreneurship
- Exposure to thought leadership for all education stakeholders and the larger public
- Improving school feeder quality into higher education, without which the very purpose of NEP 2020 fails.

Stakeholder Profile

This document aims to engage the following education stakeholders:

- School Heads
- Teachers of all schooling stages – Foundation, Preparatory, Middle and Secondary
- Students of Middle and Secondary Stages
- Parents and the community

SECTION I

21st CENTURY TRANSFORMATION: SETTING THE STAGE

Section I: Introduction

The 21st Century changes, accelerated by the Covid Pandemic in 2020-21, have ushered the modern human civilization towards the crossroads of disruption and transformation. Several inflection points can and will have a deep impact and drastically alter the ways in which people learn, live and work.

Several forces are at play that necessitates people, communities, societies and countries to be ready for future challenges. Digital and data will transform human civilization going forward. The digital technology evolution and revolution necessitates a healthy partnership between humans and machines and optimizing the resulting benefits.

As stakeholders in the education process, it is important to understand the larger picture of the 21st Century and the transformation forces unleashed by it. Section I is a curtain raiser on the process of 21st Century transformation and its impact on the school education subsystem. The focus is on the processes impacting 21st Century transformation, and the changes resulting thereof.

1. THE CROSSROADS FOR HUMAN CIVILIZATION

Human civilization will be impacted by digital transformation. Unforeseen generational thinking shifts are underway due to the massive and unprecedented influx of technology invading our homes, schools, colleges, universities and workplaces.

Indian youth will soon face the tough challenges and opportunities of the 21st Century. We need to ensure the youth are adequately groomed to harness the opportunities and prepared to meet the challenges. Dependence on internet-connected devices, scanners and networks for daily functioning, is totally unavoidable. Many of these advances will call for new skill sets. Technology, automation, mechanization and robotics will dramatically push the boundaries of productivity gains and transform homes, institutions and workplaces.

The report titled "The Next Era of Human and Machine Partnerships", published by the Institute for Future and Dell Technologies has outlined the impact of emerging technologies on society and work in 2030. (The Next Era of Human-Machine Partnerships. Retrieved on 19.2.2019 from: https://www.iftf.org/fileadmin/user_upload/downloads/th/SR1940_IFTFforDellTechnologies_ Human-Machine_070717_readerhigh-res.pdf).

This report states that many of today's jobs will disappear by 2030; many jobs will be created in the future that do not exist today. This is a unique challenge to education and skill development, a dilemma to deal with. It is crucial to identify and understand what to teach and train the students for the necessary skill sets, relevant to the times they live in, to take on new and ever-changing workplace challenges and needs of the 21st century.

Contextualized Intelligence

A nuanced understanding of culture, society, business and people

Entrepreneurial Mindset

Applying creativity, learning agility and an enterprising attitude to work around and circumvent constraints

Personal Brand Cultivation

A searchable and favourable digital identity as basic work ethic

Automation Literacy

The nimble ability to integrate lightweight automation tools into one's own work and home life

Computational Sense-Making

Ability to derive meaning from the blended machine and human-based outputs.

The big US think tanks such as Aspen Institute's Future of Work Initiative and Brooking Institution's Center for Technology Innovation have flagged that the 21st century will usher in new technologies such as Artificial Intelligence and Emerging Technologies (ET). These will transform American society in unsettling ways. The race is about which country or company can create powerful algorithms, collect rich data, and treat the data as cash, human resource for AI & ET, and vast computing power. These countries/companies will stand to gain and will wield enormous geopolitical power

Retrieved on 19.2.2020 from: https://www.aspeninstitute.org/programs/future-of- work/

Retrieved on 20.2.2020 from: https://www.brookings.edu/about-the-center-for- technology-innovation/

Civilizational Transformational Projection

The technological advances in Big Data, Machine Learning, Artificial Intelligence, Robotics, Virtual Reality, etc. impacting our individual lives, education, training sector and workplace will witness vast, monumental and lasting changes not witnessed thus far.

In the future, as the Correspondent of several schools and an author I, K. Renuka Raju, would seek a digital eternal life. A robot can be developed with a name: for example, Head of Campus (HOC I) and registered to have existence. This robot will support School Leaders and Managers with practical in-time inputs, reports, profiles, cases, scenario mapping, visualization etc. The HOC I will seamlessly coordinate with gadgets, scanners, devices, data centres, manage & deploy computing power etc. to support School Leaders in discharging their future job roles and responsibilities

The intent and purpose of HOC I is to: improve the productivity of a School Leader by gaining nearly 30 - 48 additional workdays each year and decreasing work-related stress of the School Leader or School Management.

The productivity gains could be used by the School Leaders to: improve the utilization of budgets; achieve better student-learning outcomes, superior monitoring modes; data-driven decisions; gather field-level qualitative and quantitative evidence for various stakeholders; process, project and program evaluation; enable and facilitate individualized instruction planning; supervise schools etc.

School Leaders in the 21st Century could use the time to learn new hobbies, choose time to spend with their families, pursue spiritual endeavors, etc. In today's milieu, School Leaders in India are highly stressed. Future School Leaders may choose to work flexibly, as they have made partnerships with machines at the workplace. The Robot HOC I will continue to collect data from readers, practitioners and academicians, without any borders or limits. HOC I can be a personal assistant to any School Leader.

Imagine Human-Machine Partnerships

Enabling the formation of a human-machine partnership is a new reality. There will be a point where HOC I will overtake the Correspondent / Author, K. Renuka Raju and others in intelligence gathering, knowledge management, analysing and deciphering data to generate reports and documents. It will be a step towards 'Singularity', where Robots and Artificial Intelligence outpace real people's intelligence. This is the 21st Century's way of conducting life, work, and learning. The one area where Artificial Intelligence or Robots may find it difficult to take over from humans is: empathy. The correspondent and Author, K. Renuka Raju, has empathy, emotional and social intelligence, where the Robot HOC I will not compete - hopefully!

In the context of 21st Century readiness, it is essential that technology-related skills, ethics and sensitivities of the cyber world are to be the essential scope of the curriculum and assessment. Digital skills are to be practically tested and reported like Languages, Math, and Science. The computer labs in schools need to be oriented towards practical digital skill assessment. There is a need for huge capacity building of the current education sector workforce to be fully ready with 21st Century skills for teaching, learning, and assessment.

Technology can be the biggest enabler in providing various inputs to schooling, higher education, technical education, training and the workplace. Grooming students in self-learning, peer-learning, team-learning etc. for developing competencies (education, knowledge, skills, attitudes, and values) has to take root at the secondary school stage.

India's digital divide needs to be addressed and turned upside down to innovate solutions that are credible to its context and requirements. In the "3 Indias" context, the highly developed India needs to shoulder the responsibility to benchmark technological initiatives, build prowess towards research, and innovate to align with the skill set of an advanced country's workforce. Gone are the days of cheap labor and securing BPO jobs for Indian youth. We need

serious upgrading of competencies and qualifications for harvesting the 21st Century opportunities. The time is right for leading the transformation path. What is not taught in classrooms becomes critical for life; this calls for grooming, nurturing, training, and empowering youth with 21st Century Core Skills.

Special

The Report “The Next Era of Human and Machine Partnerships“ inspired me to imagine a human-machine partnership between teaching professionals and technology – HOC1.

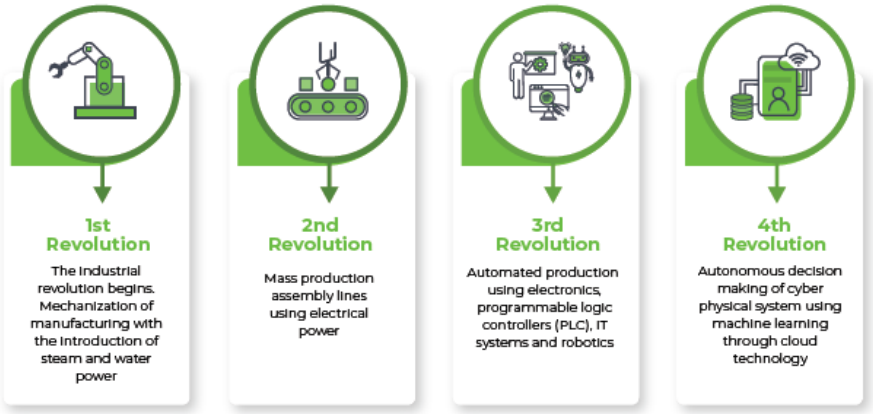
2. LEVERS DRIVING 21ST CENTURY TRANSFORMATION

The Three India Country Context

Every state in India has its diversity, and each District may fall into different levels or stages of development. Education and skill hold the most promise to address the Indian masses' aspiration to uplift themselves from multi-generational poverty and marginalization. Individual competencies will improve income and lead to social and economic empowerment.

India's scale is daunting and compounds the complexities of the 'Three Indias' country context. The highly developed, developing, and under-developed Indias create a unique testing ground for products, services and ideas Creating order from chaos and conflict will entail the most significant business opportunity to be unlocked and harnessed for the world markets.

The developed India country context is about delivering education and training aligned to best international practices and benchmarks. Developed India should build momentum towards improving benchmarks and standards in the developing and under-developed Indias context. Most school institutions, colleges, universities, businesses, manufacturing and service industries across India face challenges for improving standards and competencies. Addressing these challenges is crucial for developing better quality products, processes, services and innovations, to propel a sustainable environment and vibrant economic growth for a stable society. The diverse economic, agro-climatic zones; vast flora and fauna; rich, multi-cultural, and varied genetic make up could make India a hotbed for innovative enterprise building and testing ground for the world's products, processes, and services in various sectors. The world is witnessing a transformation in the way products, processes, and services are produced. The industrial development and transition have gone through four significant phases of revolutions:



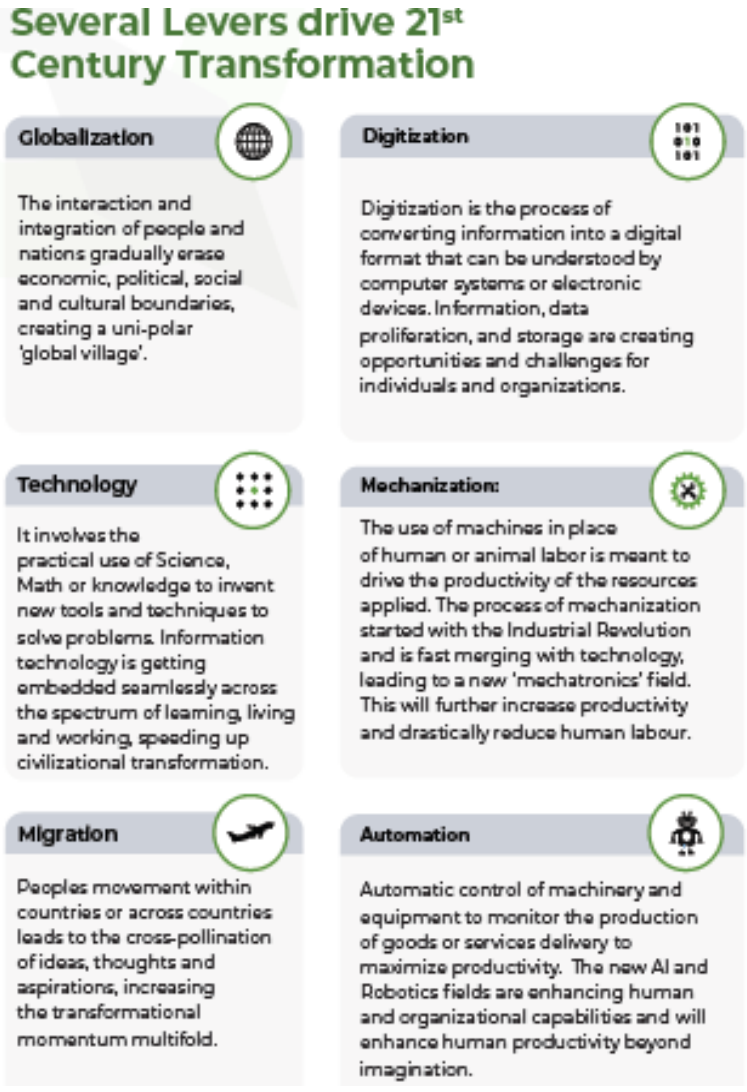
The three India country context puts different parts of India in various industrial development stages; a complex challenge and an opportunity for entrepreneurial development.

Technology will permeate living, learning and working in the 21st century. The 4th Revolution workforce will need to be tech-driven, which requires young people to be competent in Mathematics, Science, Communication and Emotional Intelligence for success in the 21st century. Industry 3.0 and 4.0 are the seedbed that will drive and propel 21st century transformation in all spheres.

Levers Driving 21st Century Transformation

Transformation takes place at the turn of every century, which is a simple and eventual reality. The 21stcentury is transforming learning, living, and working, unlike any change experienced earlier. A range of thoughts, followed by actions and events, will continue to evolve and change civilizations' destiny. If not for the transformational thinking of Indians, the country would continue to be ruled by the Moghuls or the British!

The 21st Century will usher in further profound changes Individuals, communities and societies need to embrace these changes or be swept into the transformation process by force! Awareness, awakening, readiness and preparation are the keys to understanding 21st Century transformation.



Transformation is:

- A deep and profound system-driven change.
- A process to survive, sustain and succeed in a fluid and dynamic world.
- The changes are not merely cosmetic; they are inward changes in nature and essence

Industry 4.0 is front-ended by digital-physical systems integration, the internet of things, big data, data analytics, blockchains, machine learning, deep learning, robotic process automation, virtual and augmented learning etc.

Over the decades, people and perceptions have influenced the transformation processes. People think, behave, act and react to the transformation processes which have varied over time. Individuals from different walks of life have influenced each other, contributing to transformation in several ways.

3. INFLECTION POINTS FOR 21^{S} CENTURY TRANSFORMATION

Inflection points are the points identified by the Author to throw light on how change gets unfolded. They propel the deep dive into transformation. These are not linear or hierarchical; they could get unfolded simultaneously.

Technology is the lead marker for 21st Century transformation. Every aspect of human civilization has been touched and transformed by technology. Human beings' role will get challenged by technology or machines like never before since the dawn of human history and civilization.

Technology, automation, mechanization, robotics, AI etc. will continue to change living, learning, and working. The Author identifies seven significant inflection points that will impact various aspects of life. The interplay and interrelationship between the seven significant deep dives for transformation will catapult transformation to a whole new level.

There is no hierarchy in listing out the influencers: they are dynamic and fluid.

- **The Rapid Cycling of Changes will be Linear and Exponential**
  - Earlier, major changes were witnessed every 5-10 years. Today, changes are witnessed every 2-3 years or even instant changes.
  - Some examples: In earlier times, wedding invitations were hand-delivered and had personal involvement. The social norm change is: invitations sent by courier, and later emails; nowadays, online or digital and WhatsApp invites. The Covid Pandemic has crystallized the transformation to hosting Zoom and online weddings, parties etc.
  - Movies earlier were viewed in stand-alone 35 mm and 70 mm movie theatres. Then came the multiplexes. Nowadays, movies have come home through technology - Netflix, Amazon Prime, Disney Hotstar, Zee5, etc. Entertainment anytime and **anyplace is made possible!**
  - Newspapers are gradually becoming redundant, more so with the younger generation. The morning and evening newspapers of yesteryear have today been taken over by live coverage and regular news updates on computers, mobiles, etc.
  - As recently as 20 years ago, what was unthinkable has today become a reality and the norm. E.g., selfies did not exist 20 years ago; they have become a fashion and passion today.

- **Renewed Respect for Planet Earth and its Limited Resources.**
  - Respect for the planet Earth and its finite resources makes it necessary to innovate a new range of products. For e.g., re-discovering the use of earthen cups instead of plastic cups.
  - Awareness that the planet and its resources have to be saved has become an overwhelming necessity fully embraced by people. Diwali consumerism is gradually giving way to fewer crackers. Increasingly, Ganapathi idols are being made of clay rather than Plaster of Paris, with less use of artificial colours and more natural dyes. Schools are increasingly playing a significant role in educating and empowering young learners about the negative and informing them about positive and innovative alternatives.
  - Consumption patterns are gradually changing, with more awareness among the younger generation about the repercussions of over-usage and wastage of resources and the need to reduce the carbon footprint.

- **The Unstacking of People, Organizations and Nations**
  - New countries, destinations and power centers are emerging. The resurgence and emergence of various Asian, Middle Eastern and African countries will spearhead 21st century transformation through the consumption and wealth generation in these regions
  - A similar trend is seen in Nations across the world, with the emergence of smaller hitherto, relatively unknown countries challenging the economic, cultural, social and political might of the traditional 'superpowers'- Western Europe / the USA.
  - New and emerging companies are challenging large companies and corporations.
  - New leaders are emerging that are disrupting the power, position and influence of larger organizations and nations. Positions of power and influence are shifting, changing, and being challenged.
  - New and less expensive products, processes, technologies and services are emerging. Research and development are being taken over by smaller and emerging countries to checkmate the might of the Western hemisphere countries.
  - The grouping or stacking of organizations in terms of size, output, turnover, etc. is facing a challenge from smaller organizations rising in stature. For example, large pharmaceutical companies that ruled the roost earlier are

being challenged by alternative medicine, wellness centres, etc. gaining popularity and acceptance.

- Agricultural systems like Hydroponics and Aquaponics will help small countries to become self-sufficient in food production. The productivity of 100 acres of farmland will now be possible in 5 acres, with less labour, land, water and more fresh produce available where required. Thus, local and hyper-local food production and sustainability can be achieved.
- An ecosystem of resource conservation considering environment and health considerations and best agricultural practices will be built. Anything can be grown anywhere on the planet, thereby transforming agricultural landscapes and economies. This scientific and creative disruption will have a far-reaching social and economic impact. On the one hand, it will solve the problem of food production and sustainability for the nation; on the other, it may result in losing livelihoods

➢ **Rediscovering and Restoring Respect for Philosophy and Culture**

Teaching basic tenets of philosophy and culture will develop objectivity, maturity and wisdom among young people. The IB Diploma program is highly respected by most universities, as it dovetails the Theory of Knowledge (TOK) as a signature input to develop thoughtful and purposeful inquiry into different ways of knowing and different kinds of knowledge.

India does not emphasize the study of Philosophy at the schooling stage. This could be the missing piece in developing Indian students to be more objective, creative, and have sound judgment. It means grooming the mind towards the sense and sensibilities, developing a questioning mind and inquisitiveness. Peace and harmony should find an anchor in education at all levels- schooling, college, adult learning etc.

Knowledge can be imparted and instilled; wisdom has to be distilled through one's life experiences. The pursuit of wisdom is needed to face 21st Century challenges of understanding what is essential, needed and required to lead a peaceful, meaningful and productive life. Means of countering 'fake news,' fact-opinion hybrid news warfare needs to be developed. Excessive consumerism, wealth, the value of people and relationships require reassessment. The difficult aspects of life require alignment and support of philosophical constructs.

The self-help books that use philosophy to empower and educate people across the world are gaining huge popularity. The school education systems, colleges, universities, training institutes, workplaces, civil organizations, etc. need to take the cue from these overwhelming interests to introduce philosophy relevant to future life and living.

Identity crisis issues, self-esteem and self-confidence are crucial aspects that need to be addressed at the school level to enhance student engagement with learning and a positive disposition toward individual character building.

In times of information overload, philosophy will direct thought and action. 'Digital Detox' through mindful meditation and re-discovering philosophy is gaining momentum in India and globally.

- **Super-Size Organizations will Parten with Small, Nimble Partners**

The value of small partners is being recognized. It is easier for large companies to take over their innovative products and services than to invest in research and development in their own large, bureaucratic setups.

The smaller partners are emboldened to become disruptors; to launch their disruption, they seek larger partners or present the challenge. The larger organizations are partnering with smaller partners to leverage their disruptive power. E.g., Forest Essentials and Kama were small local ayurvedic brands, which have become large Indian brands and are seen as important partners by global multinationals**.**

- **Re-emergence of Cottage Industries and New Business Models**
  - Small enterprises are gaining success and acceptance. New enterprises like Uber, OYO, Ola etc., are models that are engaging to work with small enterprises and create larger enterprises through the aggregation approach. A new dimension is brought in by technology to connect and bring value to the small stakeholders.
  - Amrut Distilleries is the only Indian single malt whiskey manufactured and distilled in India, but only sold abroad and found at many international airports. Many products of high repute will be developed in India for world markets. This emboldens many Indians to think differently. Another example is the micro-breweries, which are challenging large companies. The tribal communities may have their brand of brew to sell to the world, which could become the new norm! An example is the Mahua, prepared from the dried corollas of Madhuca longifola var latifolia. Tribal medicine is another huge

unexplored treasure trove for research and development in searching for alternative medical systems to augment wellness.

- Millets, which were not given importance a decade ago, have gained popularity through millet cafes and eateries, products, etc. Alongside popular potato chips, millet snacks have gone mainstream, which was unthinkable just a decade ago!
- Today, Palm Sugar is more expensive and some consumers seem to prefer it over regular sugar. Palm sugar costs around Rs. 250 for 250 grams, making it an exclusive product.

There are many such examples, creating a vast potential for entrepreneurial action

➢ **Restoring Individual Identities of People and Communities**

- People are increasingly giving importance to human dignity, expression, social, regional, cultural and religious acceptance.
- The 'New Haven' school of thought argues that the international legal order's central goal is to maximize human dignity.
- The feeling of regional pride has brought Telangana people together and built momentum for the bifurcation of the erstwhile Andhra Pradesh state.
- The hitherto voiceless people asserting themselves in their thinking and collaborating for collective action to exert influence will increase.

The Indian family and civil society are stronger than the State apparatus. Both will band together to force the future governance and political agenda. Big media barons are not the only influential individuals. Social media platforms and other means will educate and empower people to pursue activism, entitlement and action. For example, topics like employment generation will come under severe scrutiny and questioning, as a lack of opportunities and jobs will come under huge stress in the future. These topics that were spared from public scrutiny will face piercing and daunting questions.

Thus individual, group, or people's thought perspectives will flow into action, creating the 'thought-silo- gang' effect, i.e., people having only one perspective for an idea, without considering any other scope or dimension (trolling). Perspective hijacking will become a norm due to the interactions on the newfound social freedom-interaction patterns that technology is enabling. The maturity, objectivity and wisdom to see diverse perspectives could face challenges from the 'thought-silo-gang' or the trolls. A single perspective could dominate the conversation and thus damage the fragile and balanced humane approach.

The collective nature of Indians makes the country more community and socially driven. People's identities are re-emerging due to technology for collective support and reassurance, creation of comfort zones, connectivity to develop and maintain kinships and relationships, networks etc. The individual, group identity and culture will play a dominant role in strengthening the sphere of influence. The self-preservation, protection, perpetuation and profiling of individual and group identities and cultures could be very liberating on one hand while constricting on the other.

The complex dichotomy will create crises, conflicts and confusion while building confidence. Therefore, diverse identities and cultures of individuals and groups need to take responsibility for balanced thinking and sensible action. The individuals and groups are data points. All these data points could form big data, furthering technology scope towards developing Artificial Intelligence and other high-tech, social media platforms. 21st Century transformation will disrupt 'the way of life on many fronts

SECTION II

IMPORTANCE OF CULTURE AND RELATIONSHIPS IN 21ST CENTURY TRANSFORMATION

Section II - Introduction

The rapid changes in digital technology have fast-tracked the 21st Century transformation process. In the post-Pandemic world, people and countries has realized the importance of family and relationships as means to find peace, happiness, and harmony in life. Relationships and bonds are critical for developing empathy, as people are slowly moving toward digital dehumanization.

In a world that is witnessing the influx of digital technology, culture plays the role of a sheet anchor that keeps individuals grounded. Culture-centric education is a means to inculcate community, State and National pride, self-identity and self-esteem. Students need to be groomed and encouraged to create, innovate and commercialize family, district, State and National cultural assets for enterprise and entrepreneurship.

The media and technology will engage and connect people in many unforeseen ways to transform social life. The cultural context for individual dignity, expression and identity undergoes many changes in the 21st Century. Commercialization of family culture assets will require youth engagement and enterprise formation for sustainable incomes.

Section II looks at how culture, family, relationships, and bonds pave the way toward empathy, emotional stability, trust, happiness, peace, self-realization, building networks and social capital. Empathy is required to create and innovate through design thinking for developing products, processes, and services.

4. RELATIONSHIPS IN THE 21ST CENTURY – THE HAPPINESS INDEX!

Family is the smallest unit of society; individuals and families will influence the 21st Century's transformation.

People today are more educated, empowered, and connected to direct and control the transformation. The family is in the best position to imbibe, teach, groom and nurture young people into the family culture, values, traditions, religious beliefs, social networks etc. These soft assets will be the virtual currency for building and sustaining relationships, creativity, and imagination.

Building Relationships and Empathy

Increasingly, the happiness and longevity of people are linked to the depth of their relationships. An eight-decade old study, by Dr. Robert Waldinger, a psychiatrist with Harvard-affiliated Massachusetts General Hospital, states that forging and maintaining meaningful relationships impacts health, happiness, and longevity and forms the basis for better, more balanced emotional, mental, and physical health. (Can Relationships Boost Longevity and Well-Being? June 2017. Retrieved on 1.1.2020 from: https://www.health.harvard.edu/mental-health/can-relationships-boost-ongevity-and-well-being) The family is instrumental in developing love, respect, and trust, which form the bedrock for significant and lasting relationships and social interactions. Meaningful social interactions develop human emotional quotient, social integration, and social intelligence to build empathy. It leads to teamwork, networks, working together, cooperation, collaboration, creativity, imagination, etc. These are essential for success and happiness, ultimately leading to self-realization, individual initiatives for self-sustainability and success.

Relationship and Bonds

The unexplored potential of an individual student, family and local community needs to complement school institution efforts to provide deeper engagement for review, and reflection and recommend an appropriate course of action that brings happiness, contentment, and fulfillment. The relationship and bond orientation are needed to ensure and balance the 21st Century, where the human and machine partnership is essential. Therefore, the focus must be on individuals, families, and communities as resources for education and empowerment.

Individual Relationships and Bonds

The perception of character and personality development and how these two impacts one in evolving self-identity and orientation to life must be imparted

through home school partnerships. Personality development could comprise personal hygiene, grooming and dressing, manners, body language, language, and communication. The character development could comprise of: Deciphering between facts and opinions Understanding subjectivity and objectivity Reflection, leading to maturity and wisdom

The personality and character development are influenced by family's socio-economic, education status, customs, traditions, religion, language, regional orientation, and another complex inter web of dynamics, complicated to pin, yet essential for soft skills development. Individual identity development is needed; parents/ guardians are best suited to deliver this kind for prepare for grounding young people for life's challenges and opportunities.

Family Relationships

Peoples' orientation to the concept of what a family is and how they form and maintain relationships requires thoughtful reflection through life journey. Exploring or studying one's own family history, cultural ethos and other significant information must be passed on to future generations. Support provided, received, and reciprocated in the family context requires a depth of emotional understanding. Scope for engaging towards such dynamic emotional and empathetic exploration s must be carved out towards developing a humane and resilient mind.

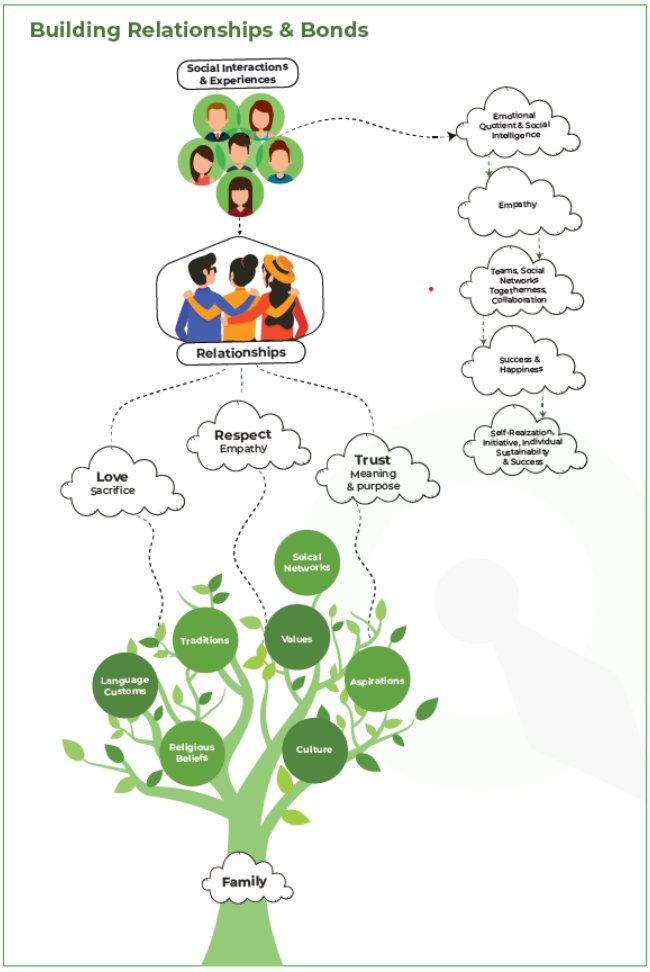
Community and Neighbourhood

The technology has redefined community meaning; the individual need for relationships can be met with physical and virtual communities. Integrating young people into society needs an anchor. Finding a range of opportunities for positive integration into a larger community requires careful coordination and collaboration. This must be the scope of family, social and community networks. It can be through community volunteer work, paid work, or supporting own family's work.

The Complex Web of Social Relationships and Bonds

The individual, family, and community offer a huge context for exploring the emotional component's vast dimensions. Most relationships call for sacrifice and caring. Sacrifice is needed to develop meaningful relationships and bonds. It is important to derive meaning out of relationships. The sacrifice component is the bedrock for meaningful relationships – through sacrifice, one can experience trust, respect, and love as the foundation for many human relationships. The meaning and purpose in any relationship will enable and

foster sacrifice. Loss of meaning will lead to breakups in relationships; - no emotions, love, respect, trust, etc.



The meaning and purpose of relationships hold immense potential in developing empathy among people. Empathy is naturally anchored into family bonds and relationships, which has vast significance in 21st Century learning, living, and working. Empathy and emotional intelligence will lead to better social interactions and experiences. Thus far, most educationists and policy makers ignore the family's role to impart empathy and a range of competencies. A family's scope is to impart soft skills, values, attitudes, interests, habits, culture, philosophy, religious orientation, peace, and purpose in life; this improves the qualitative dimension. This is essential for imparting 21st Century education and skills.

External Influences: School & Community

The Pandemic Covid -19 has brought deeper reflection among the masses. People pursued and downloaded content on philosophy, yoga, meditation, happiness, wellness, etc. This demonstrates that resilience, coping skills and more in-depth character building are needed in our lives despite various technological advances. The excessive focus on quantifying materialistic resources is to counterbalance and emphasize the qualitative aspects of life - contentment, happiness, peace, spirituality, etc. People initiated or used terms such as "New Normal" – "Hit the Re-set Button" to indicate their own deeper reflection of thoughts leading to firm actions or decisions on consumption or life choices. This more profound engagement with oneself and family gave people a profound perspective on living, learning, and working during the Covid -19 pandemic.

People and countries worldwide are pursuing the ‘Happiness Index’ – a ranking of countries. The definition of the happiness Index includes hedonistic (positive

feelings, emotions, and attitude), life satisfaction, strong network and bond with family, friends and the community, economic and social well-being, etc. The evaluative parameters for happiness should be a collective expression of the country's cultural perspective.

People searching for peace, harmony, happiness, contentment, and living satisfaction will be at the forefront. This seed must be cultivated for building acceptance of other cultures and grow in our minds to reduce stress or friction. The individual happiness index needs to be developed to contribute towards family happiness, ultimately towards community and national happiness index.

Human-Machine Interactions and Partnerships In the 21st Century, we cannot deny the increasing dependence on machines. While partnering with machines to improve efficiency and productivity, it is important not to lose sight of emotions and empathy, essential for human relationships. We can teach everything to a machine, except humanness and humaneness – this is what differentiates humans from machines. The new school of thought is that the onus is on schools, the community, and families to teach nurture, preserve and protect these softer skills among the younger and future generations. It is exceptionally critical to human civilization and history to ensure that the influence of the 21st Century's transformation orients towards human justice and peace, interactions meaningful, purposeful, sensible, sensitive, moral, and ethical. interactions

These softer social and humane aspects are essential and are comparable to productivity gains from technology, digital, and automation innovations. It is important to consider the role of technology in our lives – how much technology is optimum for consumption, the right balance of technology with the human touch. Technology has both pros and cons. It can be a boon – encourage self-learning, new and continuous learning, self-initiative, openness to learning, creativity, problem-solving, independence, simplify work, increase productivity, self-confidence, and self-esteem etc. On the other hand, technology can be a bane - it objectifies, isolates oversimplifies work and makes people lose touch with reality. It is crucial to give adequate importance to the human aspect of technological change.

The revolutionary and evolutionary interplay of technology and the human dimension will lead to social, cultural, and familial change. Therefore, families have to start taking responsibility and engage actively in competencies development. Education delivered from an institutional setting requires a shift; the dynamics of teaching 'empathy as subject' are better suited to the home

environment; The families, community or parents take the lead; schools take a secondary role in developing empathy and emotional intelligence.

The 21st Century schools need to provide and crave out curriculum scope for parental inputs to develop emotionally intelligent and socially competent future citizens. This kind of scope for parents has been minimal till today. School boards and institutions need to adjust and align with parents to deliver these softer aspects of personality to ensure that students remain grounded with humaneness and connected to long-lasting and positively engaging relationships. Without these kinds of inputs, the youth become more materialistic, immoral, self-centered, out of touch with reality and suffer isolation, leading to social and moral decay and face depression / psychological illnesses. A lone school counsellor is not the answer; family support, community role and involvement are essential. The whole village takes to raise the child – become a living testament for 21st Century transformational foundation.

Special Credit

My family has taught me the importance of family bonds and relationships in an increasingly impersonal world. My work has taught me why it is necessary to build social capital – networks, goodwill

5. ROLE OF FAMILY IN IMPARTING CULTURAL ORIENTATION

India's demographic dividend is its youth power. channelling the youth's energy appropriately will develop personality and character development, individual identity, self-esteem, self-confidence, tolerance, peaceful demeanour, and open-mindedness. Leverage Indian culture and its diversity or plurality to groom and nurture contemporary Indian youth. The Indian cultural diversity-related education and learning experiences should facilitate cultural competence among youth to develop a competitive edge on the global stage. There is a need to dovetail Indian culture to build life skills.

The world has become smaller, and borders have shrunk; increasingly, people are brought together in the contexts of learning, living, and working. Globalization, technology, migration, and media proliferation are bringing people together. These forces will not die out soon; instead, their influence on people will increase and deepen. Today's youth live in a borderless cyber world and need to cooperate with different cultural orientations. The topic of culture gains prominence in the 21st century, as the interactions between cultures increase. The seamless interactions open opportunities. Therefore, a 21st century citizen requires detail and depth of understanding own and different cultures for peace and harmony.

It is necessary to educate students about cultural influences and identify, understand, and embrace Indian values, traditions, customs, and local cultural ethos. also, make them know and have a balanced perspective on Indian culture. It is essential to inform and educate that everything western and external need not be positive or negative.

Culture-Centric Education

India's education system has not tapped the potential of culture's intrinsic applicatory value in educating and nurturing future citizens. It is crucial to focus on the scope and role of culture in education with a 21st century view relevant to future generations. Teaching and embracing culture should be scoped in the curriculum transaction for a positive impact. The home and local community resources must engage with the youth and groom them to understand, articulate and appreciate culture cultural diversity, and multi-culturalism to build character and personality. Initiating cultural inputs at the school level will ensure that future citizens are groomed and led to a cultural resurgence.

Culture-centric education provides students with a strong sense of individual, family, societal, regional, state and national identity. The 'cultural identity' issues contribute to building self-esteem and the individuality of the students.

Understanding oneself and respecting one's own culture leads to appreciating and understanding the culture of others. Cultural awareness prepares the students to incorporate multicultural orientation and sensitivities into their personal and professional lives.

Imparting Culture Family's Role

Empower youth as per Indian contemporary, cultural identity issues, and self-esteem. this is possible through teaching culture and philosophy. Family as an institution is ideal for grooming the youth on culture, philosophy, and religion. Students must be encouraged to study their family culture, religion, philosophy, and language without hurting others' sentiments or sensitivities.

The objective is to bring and engage families to contribute to their children and youth's education. We must note that parents are the first teachers, and home is the first school. Therefore, incorporating the family's umbilical cord and nurturing spirit prepares youth to understand cultural diversity to face the world with confidence.

School institutions and policy tenets need to provide the family's scope to become active members in teaching family/home culture and developing cultural competence among the young people. In an increasingly impersonal world, relationships and family bonds are under stress. The family has a crucial role in transmitting culture and providing scope for building and sustaining relationships and networks.

Social capital refers to the number of networks and inter-relationships within and among groups. The social capital endows one to gain or enjoy access to information or support as required in learning, living and working. Social capital is like financial resources: both would permit us to access information or support. Therefore, social networks including family, friends, colleagues, peers, associates, etc. are essential for having social capital. Individual identity gets influenced and shaped by bonds, relationships, or membership into different personal or professional affiliations, associations, networks, and various groups.

Familiarization with culture enables a peaceful understanding of contentious issues of religion, race, region etc. essential for both home and school education. The convergence of forces of home and school is critical in delivering culture-centric inputs.

Teaching cultural diversity is essential for developing and delivering employability skills; a diverse workplace is a reality for most Indians. Therefore, sufficient rationale underpins the need for embracing cultural diversity

orientation into Indian schools and colleges to provide a competitive edge for the 21st century

6. DESIGN THINKING

There is a palpable change the world over; today, people are convinced that change will pervade all aspects of life. The questions to grapple with are: Where is the change coming from? How will it impact our lives and civilization, including the thoughts, perspectives and visualization that will be considered path-breaking? What is the extent of influence of India's external and internal forces on the momentum of this transformational change to boldly enter the 21st Century?

The search is to find a path or follow the path laid by international entities. India must determine whether it can develop organizations that can lead or become a counterpart of the league of 21st Century institutions championing transformational change. This is the crux of the issue. In this backdrop of transformation, education and skills requirements for the workplace undergoing profound changes. It will be an expensive proposition to bring in foreign thoughts and ideas; rather, we need to mature our thoughts for India's transformation and push for implementation.

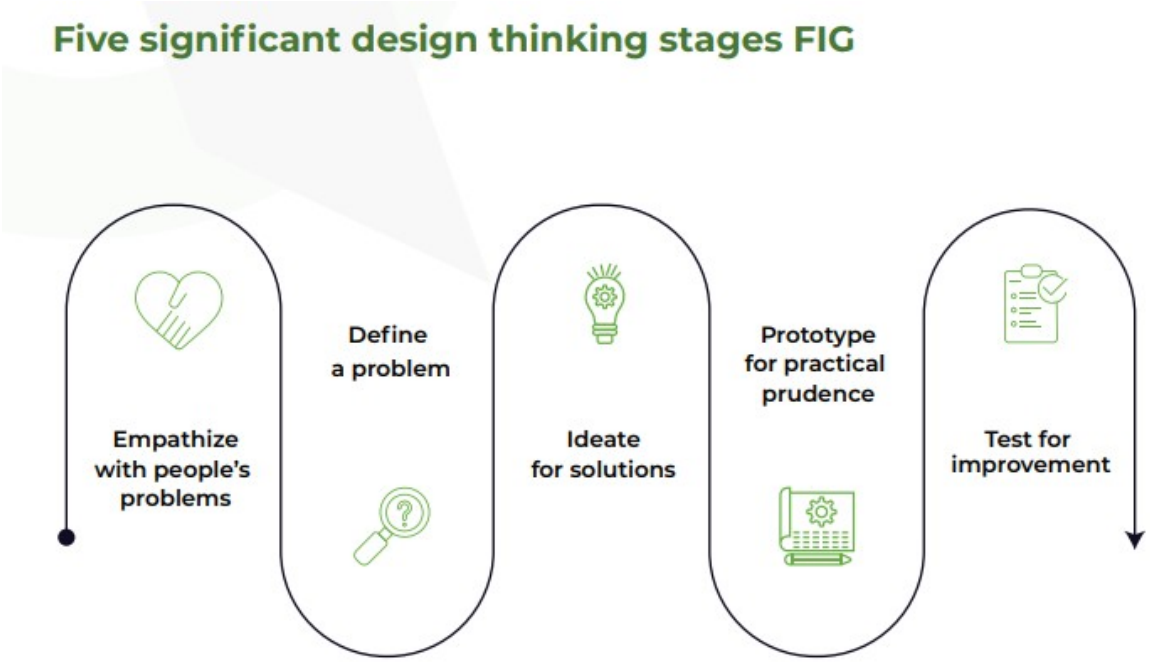
Today, the 'Three India's Country Context' can be viewed through the 'design thinking' perspective. India can boldly develop and pilot various products, services, processes, innovations and strategies targeting the three India contexts as a unique national testing environment. India can be a lab for pilot testing ideas and innovations to drive and deliver many products, services, and processes for the world market. India's liability needs to be leveraged towards building opportunities; this is the challenge for Indians.

The three India's can learn from each other and benefit. This could create immense possibilities for India's growth potential. Therefore, design thinking is essential for finding apt solutions for India's problems to create economic value, wealth, social good, religious harmony, and peace. This positive direction will lead to 21st Century enterprise and entrepreneurship development. The three India's country contexts provide a central platform for finding solutions by applying design thinking.

Design thinking is a solution-based approach to solving perplexing human and planetary problems. It is highly efficient and useful in addressing complicated, undefined, or unknown human' needs with a people-centric approach. It is undertaken by generating and selecting a vast array of practical ideas, selecting practical ideas to support and develop prototyping or testing with evidence-based pilots. Design thinking will empower people to adopt and apply ideas to solve complex Indian subcontinent, communities or companies' issues and challenges.

The Nobel Laureate, Hebert Simon outlined one of the first formal Design Thinking models in “The Science of the Artificial”, published in 1969. The Hasso-Plattner Institute of Design at Stanford University has proposed a 5-stage Design Thinking Model. Almost all reputed business schools, companies, countries planning are investing in resources for understanding Design Thinking. This is a cutting-edge procedure to develop products, services, processes, innovations, and strategies that address human needs, wants and requirements.

Design Thinking is a disruptive force with “rule-breaking, game - changing, paradigm-shifting breakthroughs that leave us scratching our heads and wondering why nobody thought of them earlier”. (Brown, Tim. 2009.Change by Design. Harper Collins.



Empathize

Empathy is a human construct; it is the central plank on which the design phase gets rooted. The human-centric approach drives the information gathering; so that what is produced, or service delivered is in line with the consumption or implementation requirements. Empathizing with people’s problems avoids the gaps in understanding what people need, thus creating close alignment with the productivity of various stakeholders’ resources

Define

Defining a problem from people's perspective and the human dimension is targeted to ensure that services, products, processes, and strategies aim to define, address, and solve complex problems. The user perspective is essential to the scope of defining the problem.

Ideate

There can be many ideation protocols such as Brain Storming, Brain Writing, Worst Possible Idea, etc. to simulate a vast range of conventional to unconventional ideas to find solutions to the problem. These are explored with a designer's imagination and creativity. It is about gathering as many ideas to solve the problem as possible to be aligned with the earlier stages.

Prototype

The products, services, processes, and strategies evolved need to be examined and explored for practical implementation. At this stage, the design teams are involved in developing various practical prototype versions of services, products, processes, strategies, and innovations for solving problems as empathized, defined and ideated with a human-centric approach. The prototyping stage observes how users behave, think, and feel when interfaced with various ideas under exploration. Imagination and creativity are needed to be used to identify and pinpoint the latent needs of customers; it is what customers may not express but need. This could be a new business opportunity that is yet to be discovered to garner a potential market.

Test

The interactive methods for developing products, services, processes, innovations, or strategies are meant to align with a people-centric approach to solve the people's or our planet's problems. With a non-linear approach to interconnectivity, the testing phase provides insights for improving the products, services, processes, innovation, or strategies, or guides back to the ideation stage. While developing solutions, it is important to "watch what people don't do, listen to what they don't say." (Tim Brown, p.43). This could be the scope for latent customer need. Design Thinking enables better communication among stakeholders, helps bridge the gaps, cracks and fissures that may occur due to the human or any other dimensions. It is about exploring, ideation, experimentation, implementation, iteration, creative and critical thinking, ethics, culture, people sensitivities and sensibilities, in developing the right services, products, processes, innovations and strategies.

Therefore, an ecosystem of problem-solving for the human perspective and dimension gets embedded to lead the 21st century transformation

Design Thinking Influence

Design thinking can influence the way education and skills delivery products, services, processes, innovations, and strategies are to be produced or perfected. Applied Learning tenets (theory and practice) must develop competencies (education, knowledge, skills, attitude, aptitude etc.) and employability skills. Applied Learning program focus is meant to embed student learning outcomes orientation towards products, services, processes, innovation, and strategies development. Thus, weaving design thinking as main delivery methodology will improve student competencies for 21st century. The Applied Learning should embed courses and direct the outcomes towards products, services, processes, innovation, and strategies development that are aligned to sectors and the workplace. This orientation must be a new initiative in secondary school so that the design thinking seeds sprout into higher education and training sector for bearing the fruits. This is the main contribution of the author and this document with a decade long research study and thought leadership. It is to ensure and bring design thinking to solve students' intrinsic need for meaning in undertaking a course of study and its relevance for the workplace, employability skills and entrepreneurship.

21st Century Education & Skills Transformation

Transformation in Course of Study

It is common parlance that most institutions and students understand what a course of study is, how the curriculum is weaved, the course is completed, and certification is provided. This is an old construct that has yielded mixed results in the past century. The theory and examination centric, with scares inputs of workplace competencies at secondary schooling, requires 21st century transformation. The secondary schooling stage is the college and career readiness stage; therefore, all program inputs must be geared and aligned to support students transitioning into universities, training tracks, or employment.

Scope of Embedding Design Thinking into Education

School education today should not merely focus on preparing students for high stake examinations for admission into professional courses like Engineering, Medicine etc. Young people need to be de-addicted from their aspiration for only Government jobs, which are limited and dwindling in numbers. There is a

need to introduce, nurture and groom students into a ‘start-up’ culture through Design Thinking. The highest level of achievement is to be an entrepreneur or a self-starter in an organization. This will support employment generation for the local, State and National economy. This is central to building entrepreneurial mindset to fulfil India’s aspirations to become a $ 5 trillion economy.

The school, higher education courses need to be aligned with design thinking tenets for better learning outcomes and solve challenges for commercial and non-commercial value. The certification will indicate the student competency in developing products, services, processes, strategies, etc.

The above framework ensures the authenticity of the purpose of the course of study and the responsibility of stakeholders (policymakers, regulators, institutions, students, families, employers, and the general public).

7. INDIA'S CULTURAL RENAISSANCE FOR ENTREPRENEURSHIP

The transformation of education is a catalyst for enabling the Indian cultural renaissance. There is a newfound realization that Indian culture holds immense economic potential to better individual life and entrepreneurship scope. It will propel, perpetuate, and lead to the revival of India's many cultural assets. India's cultural richness – its national 'soft power' or 'cultural assets' - can be leveraged to negotiate opportunities and unleash its potential for wealth generation.

Every state in India has a rich repository of local culture, represented in cuisine, decorative arts, textiles, languages, performing arts, etc. The young people require exposure and engagement with local, other states, and regional cultures to understand and accept. The richness of Indian culture can be observed through many cultural assets and traditional or esoteric knowledge. All Indian cultural assets need to be valued for their practical and commercial purposes.

Indian youth need to be inspired to understand their culture and cultural assets for commercializing. This will lead to the sustainability and continuation of art forms and cultural wealth. Innovation in modernizing cultural assets is needed to be broad-based so that Indian culture's appeal to young generations becomes sustainable for perpetuation. In this context, Indian youth entrepreneurship plays a critical role in reviving, sustaining, and promoting cultural assets for commercialization and entrepreneurial pathways selection.

A prime example is the Kalamkari art form. This art form had almost reached extinction; its revival journey began with the efforts of many committed and dedicated persons. Today, this art form has survived, is succeeding in the commercial market and provides support to many families, artisans, designers, retailers, and entrepreneurs. Kalamkari art - a cultural asset of Andhra Pradesh, needs to be guarded and protected for posterity.

The Kalamkari revival and survival is an example of inclusive growth and celebration of an Indian and Andhra Pradesh state's cultural asset migrating towards success and excellence. Systematic efforts are to be made to provide qualifications and skill development towards Kalamkari's propagation for further branding and promotion. This is a strategic initiative and investment for cultural asset preservation, protection, and profile-building in India and internationally. The strategy is for commercialization that supports employability and entrepreneurship, with youth involvement as the thrust for guardianship and trusteeship of the Kalamkari art form.

Understanding Indian Cultural Assets for Entrepreneurship

India's protection and perpetuation of its cultural assets must take precedence in articulating its entrepreneurship program development. These opportunities are far more sustainable than multinational company jobs, subject to globalized costs and retrenchment dynamics. Therefore, initiatives and investments must be targeted at engaging with cultural assets to preserve, protect, and promote inclusive growth. Indian cultural products and services require strategic research, planning, production, packaging, distribution, market strategy etc. for sustenance to enhance youth opportunities. For example, idli or vada competing in the world market along with cold cereal!

Commercialization of Indian Cultural Assets

Understanding and appreciating cultural assets must be cultivated and nurtured into the youth's learning experience. In the past, patronage for culture and its expressions came from the rulers; the arts sustained and survived. Young people are missing the anchoring or grounding of their culture, which is important for their self-identity, self-esteem, and confidence levels. The commercialization of cultural assets holds the key for perpetuating many cultural expressions (art, textile, food etc.). Usually, mainstream Indian education providers/regulators do not see culture from the commercial perspective. The royal patronage for culture in the past, is equal to today's commercialization of cultural assets. There is a need for building a positive cultural profile for the posterity of cultural assets. Commercialization supports youth aspirations for entrepreneurship and jobs or income generation avenues. Therefore, it is the most practical or apt way for youth to be nurtured as be guardians of cultural assets and expression. The guardianship and trusteeship of cultural assets belong to the youth of India. The cultural assets are inflection points for innovation in design and expression.

Cultural Assets Commercialization at Play

Sanathana Dharma: Spirituality for Human Values

New-age spirituality is being delivered as a service and publication industry. In the Tourism and Hospitality sector, especially focused resorts they are being built to deliver an experience in understanding spirituality and stress relief, which are re-packaged versions of Sanathana Dharma tenets. Packaging and innovation, from the sources of Indian scriptures, for delivering solutions to the current context of meeting people's experience needs, wants and requirements, have built a whole new industry of 'self-help spirituality' and

brought prosperity to the people. Indian education should include these spirituality concepts to enable and foster employability skills and entrepreneurship opportunities

Meditation

Meditation, as a practical method for reducing stress and promoting wellness, must be a part of the education curricular scope to empower modern Indian students with strength of mind and body Schools need to provide meditation practice to students to reduce stress, depression and strain of life. The sensory overload of information and data is causing huge stress to young people. Hence, meditation as stress relieving process is needed for the youth and people to lead healthy lifestyles or follow a wellness regime.

Yoga and Sun Salutations

Endurance, flexibility, strength, and stamina-building are the essential scope of physical fitness. Yoga and Sun Salutations require no special equipment, other than one's own body. Yoga and Surya Namaskara practice are ideal for Indian schools, as equipment and budgets are always scarce. Many people have adopted these techniques across the globe for developing fitness regimes to support healthy lifestyles. strength, Stamina, endurance, and flexibility are key indicators for fitness levels.

Massage – Ayurveda - Wellness

Ayurveda and massage are a multibillion-dollar business globally. The growth and potential are huge as people seek alternative solutions for de-stressing their lives, meet their healthcare and wellness needs. Alternative therapies are being accepted, which opens scope for traditional Indian medicinal knowledge. Indian wellness therapies and services were identified in 2018 by Time Magazine as top business trends to watch out. Ayurveda and its dietary practices, fasting, etc., are gaining immense popularity. There are many cultural assets or family recipes that call for commercialization for perpetuation and profit-making. Youth can be to be trained and certified to provide such services as income generation and wealth creation opportunities.

Vegetarianism

Cooking and preparing food that is diverse and interesting, with vegetables and spices, is a stronghold of Indian families. The repertoire of dishes from various states, regions, and families, could be mind-boggling. The world has recognized the advantages of a plant-based diet vis-a-vis an animal-based diet. In this context, India has a huge potential and opportunity to package, produce and process foods for local, national, and international consumption.

Millets are another unexplored food source for providing better nutrition and addressing climate change. The wide variety of vegetables and fruits used for food preparation should be seen from bio-diversity preservation and a unique celebration to each region and state, paving the way to build opportunities for inclusive growth and sustainability initiatives.

Indian youth need education and empowerment to harness these opportunities into entrepreneurship pathways in the foodservice, food processing, hospitality industry, etc.

Biryani

Every state in India has a Biryani recipe that the people are proud to present and claim as the best in the country. The Hyderabadi Biryani has crossed borders and is being presented to international audiences. It can invade the western or eastern world and compete with burgers, pizzas or noodles. The Hyderabadi Biryani expansion into various markets will bring prosperity and appreciation of Indian -Telangana cultural assets for entrepreneurship and job creation. Indian enterprises are harnessing avenues for Indian food to be packaged and presented for wider international consumption. The Hyderabadi biryani cultural asset brings pride and dignity to the local people, families, and the Muslim community.

Imagination and innovations can take wings in engaging with Indian culture; further, it must be pursued with value-based principles and profit motives. There are many cases where Indian cultural assets are now seeking value through Intellectual Property Rights (IPR), Geographical Indicator (GI) and copyrights. It has commercial value or other significant perceptual value in people's minds and hearts.

Create and Innovate with Cultural Assets

Designing, creating, and innovating through youth capabilities, could be nurtured with home, school, and community / cultural organizations. The Indian family business growth or start-up initiatives and Micro, Small, and Medium Enterprises (MSME), hold the key to sustainable, inclusive growth through positive engagement with the youth. A range of skills and competencies have to be developed for engaging with cultural assets.

Cultural asset like cuisine, music, and textiles, etc. could hold commercialization opportunities for youth entrepreneurs. The youth aspirations for freedom and expression must be anchored with entrepreneurship. Cultural competence engages and provides responsible

direction to youth for consuming and producing goods, services, and processes from cultural heritage.

Cultural assets function as ambassadors between families, communities, regions, and nations. As the youth tend to experience and appreciate cultural assets with their purchasing power, it will assist local economic growth.

Special Credit

I attribute my understanding of culture to my readings of the works of the Vedanta Trust, spiritual guidance from Swami Parthasarathy, Swami Chinmayananda, Baba Ramdev, Sri Sri Ravi Shankar, Sadhguru Jaggi Vasudev, the Brahmakumaris, Ramakrishna Math and the Agha Khan Foundation.

Being an entrepreneur, I have realized why it is crucial to inculcate entrepreneurial zeal among youth, to develop, protect and promote India’s cultural assets for commercialization.

SECTION III

21ST CENTURY TRANSFORMATION IN EDUCATION AND SKILLS

Section III - Introduction

The National Education Policy (NEP) 2020 is an education policy that aims to transform the Indian education and skills ecosystem. To realize its aims and goals, the NEP 2020 has introduced several initiatives toward Competency-Based Education and improving assessment practices and processes. The NIPUN Bharat, SAFAL and new CBSE assessment scheme are high-quality assessments for international benchmarking of education and skills. The focus is on improving the quality of school education feeder into higher education, to develop a skilled professional workforce for the global labor markets. Resurgent India needs to anchor education and skills for powering the internal economy and social harmony.

Section III examines how certain forces silently impact education and skills. A life cycle approach to education is possible only through interdependence and convergence of policies and programs of various Ministries and Departments. This will ensure improvement in the student feeder quality into Higher Education, which in turn ensures a 'holistic student' and graduate output that develops core skills and subject domain competencies. This will support the Govt. of India effort to move towards a single entrance exam into higher and professional education, the Common University Entrance Test (CUET), in line with international benchmarks.

8. NATIONAL EDUCATION POLICY (NEP) 2020: NEW INITIATIVES FOR ASSESSMENT AND EVALUATION

National Education Policy (NEP) 2020

The NEP National Education Policy 2020 is the first Indian education policy of the 21st century, with a focus on creating a new system that is aligned with the aspirational goals of 21st Century education, including SDG4. The NEP 2020 is based on the principle that education must develop not only cognitive capacities - both the 'foundational capacities 'of literacy and numeracy and 'higher-order' cognitive capacities, such as critical thinking and problem solving – but also social, ethical, spiritual, and emotional capacities and dispositions. The NEP focuses on moving away from rote learning towards Competency-Based Education.

To fulfil its mission and goals, the NEP 2020 introduced the following important initiatives:

- **National Initiative for Proficiency in Reading with Understanding nd Numeracy - NIPUN Bharat** : A National Mission on Foundational Literacy and Numeracy (FLN)

  (https://www.education.gov.in/sites/upload_files/mhrd/files/nipun_bharat_eng1.pdf)

  The highest priority for the school education system is to achieve universal acquisition of foundational literacy and numeracy skills at the primary level by 2026-27. The National Education Policy (NEP) 2020 states that a large proportion (more than 5 crores, a number that could have increased exponentially during the Pandemic) of young elementary-stage students have not attained foundational literacy and numeracy. The Pandemic unleashed critical and stressful learning gaps and lags into Foundation and Preparatory stages. Most schools remained closed, compounding the learning gaps. Filling and addressing learning lags is a huge task faced by regulators and education service providers.

  For the first time in post-Independence democratic India, a Foundational Literacy and Numeracy (FLN) drive has been launched on mission mode, and pre-primary education made a part of mainstream education. This is an inflection point in the history of Indian education. This is to fulfill the NEP

2020 mandate of universal foundational literacy and numeracy, the Ministry of Education, Govt. of India launched the National Initiative for Proficiency in Reading with Understanding and Numeracy or ensuring that every child in the country necessarily attains foundational literacy and numeracy (FLN) by the end of Grade 3, by 2026-27.

NIPUN Bharat has identified three developmental goals:

- Goal 1: Children maintain good health and wellbeing
- Goal 2: Children become good communicators
- Goal 3: Children become involved learners and connect with their immediate environment

The key components of foundational language and literacy include oral language, decoding, reading fluency, reading comprehension and writing. By class III, a student should be able to read at least 60 words with understanding in a minute. A reading sample for continuous reading of 3 minutes will entail reading up to 150-180 words with understanding is expected. This is an inflection point to determine the learning trajectory of young people at class 4 or age 9 years and above. Numeracy components include pre-number concepts, numbers and operations, shapes and spatial understanding, measurement, performing basic four math operations and data handling. By class III, a student should be able to read and write numbers up to 10000, work on addition, subtraction with 3-digit – 4 digit and solve 2 digit – 3-digit multiplication and division problems.

- **Structured Assessment for Analyzing Learning (SAFAL)**

NEP 2020 recommends transforming the assessment system to promote the development of students and suggests a shift from testing rote memorization to competency-based learning. The Policy proposes an annual school assessment – Structured Assessment for Analyzing Learning (SAFAL) - for all students in grades III, V and VIII to map each student's progress through the school years. The focus of the assessment will be on testing core concepts, application of knowledge and higher-order thinking skills. SAFAL will thus facilitate a shift from rote learning to competency-based education. The results of this assessment will largely be used to provide feedback to schools on student achievement and progress.

SAFAL Highlights

- A competency-based diagnostic assessment that will provide developmental feedback to schools and teachers to improve teaching-learning without additional examination pressure on students.
- A formal census assessment to collect valid and reliable data on students' performance on competencies at and below the grade level. It establishes a systematic reporting and monitoring protocol on key competencies and proficiency levels
- The initiative reports school performance on each competency and proficiency level to identify areas of focus and guide schools towards improving their learning levels. Parents can assess the performance of their children and the school on core concepts. They can support at-home learning for children to shift away from rote learning towards skill- and competency-based education

- **CBSE New Scheme of Assessment**

  Competency-Based Education (CBE) is an alternative to ensure a future-ready generation proficient in relevant skills. The new assessment scheme has been initiated by CBSE with a focus on progression to CBE where learners would gain mastery of 21st Century skills.

  CBSE Assessment Framework

  The suggested assessment framework has been put in place to drive improvement in the quality of teaching and implementation of changes recommended in the NEP 2020. The new competency-based assessment framework aims at enabling internationalized, high-quality education for improved learner outcomes, and will support teachers to create high-quality in-school assessments.

  The Summative Assessments will have MCQs as well as descriptive, case-based questions for all subjects. The Formative Assessment will include multi-dimensional written, audio, video assessments, student portfolios and subject enrichment activities.

9. THE SILENT FORCES THAT SHAPE EDUCATION AND SKILLS

Silent forces are not apparent or overt; these are subtle yet have a tremendous impact on leading the transformation process. The following are futuristic assumptions and projections; that will influence the impact of education and skills on 21st century transformation.

1. Future of Education and Skills Delivery Models

- **Customization and Personalization of Education and Skills:**

  The stakeholders seeking better learning outcomes will push for customization and personalization that has not been seen in the education and skills space. The industrial approach of education and skills delivery causes serious challenges and its existence will be a threat. Delivering anytime, anywhere and to anyone becomes a norm that helps bundle or unbundle courses as per learner needs. The stringent quality standards will emerge with new paradigms for certification and regulation of courses. The virtual and physical course delivery will integrate seamlessly into 21st Century education and training.

- **Blended Models:**

  Leveraging the technology for teaching, learning and assessment. is crucial Blended learning is a teaching-learning methodology that combines online electronic, digital and traditional face-to-face learning. The integrated, hybrid or flipped learning experience focuses on transforming and improving the learning experience

- **DIY and Self-Learning**

  Do-it-yourself is the new mantra of this generation. children, youth and adults are utilizing DIY inputs. The root of DIY is self-learning, many times to support self-sufficiency. DIY inputs will challenge the existing institutional education and skills service delivery.

  Universities, colleges, and schools have to develop DIY in addressing and engaging the current generations.

  Hobby or Self-learning, independent study and do-it-yourself course deployment will increase to challenge mainstream educational institutions.

- **Upskilling and Re-tooling for Life-Long Learning:**

Continuous Professional Development (CPD) requires education professionals to update and upgrade their knowledge and skills continuously. Upskilling refers to equipping personnel in specific job roles with additional inputs to improve the given job role. Re-tooling is the capacity-building to educate, empower and lead personnel into new job roles and responsibilities to enhance and support the organization for furthering SLOs. The Covid-19 pandemic has brought unprecedented upskilling and re-tooling opportunities.

- **Embedding Digital Technologies:**

  Many aspects of education delivery, management, and monitoring will get embedded with digital technologies. This is one step closer to Singularity (machines outpacing human intelligence). Increasingly, providing education and skills inputs will build a level playing field across geographies. Anytime, anyplace and anyone can access the inputs for learning and gaining professional competence standards; this will create unforeseen new wealth creation opportunities**.**

2. **Technology Interventions Integration**

- **Virtual Reality, Augmented Reality, Machine Learning, Digital Learning, Robotics**

  The invasion and proliferation of technology will be unstoppable. The nations will be in a race to develop new technologies to equip people with better education and skills to have a productive workforce. The extreme race for productivity will embed in all spheres of working, learning, and living through the ever-increasing need for better and newer technologies.

- **The Shifting Paradigm of Research:**

  The old systems of higher education or universities receiving funds for research will be seriously challenged. Start-up companies will take up research and development and initiatives drawing students and funds from various sources. This creates a significant impact on higher education and the academia's ability to draw research projects will diminish. The crowdsourcing of funds from people across regions will get amplified in addressing issues that impact people's lives and the environment.

- **Data is an Asset**

  The ability to understand and deploy solutions using data will get embedded seamlessly into how people learn, live, and work. Data points usage, privacy issues, entering or capturing new markets require data analytics and emerging technologies. The latest and emerging technologies will use data as a weapon against people, nature or humanity.

  The way data points will converge or diverge to build consumer personas to produce/deliver new products, services, processes and strategies will forever revolutionize how human civilization will evolve into the 21st Century. Governments across nations and people will find this as a scary or pleasant data experience. The interplay of people with data will go into rapid cycling, impacting how production and consumption cycles feed into each other.

3. **Higher Productivity and Standards**

- **The productivity of the Resources Deployed**

  Stakeholders will question the increasing deployment of resources. Education and skills budgets will come under increasing scrutiny for the productivity of resources deployed. Blockchains, data analytics and digital technologies will revolutionize the resources applied towards outcomes, a future trend that cannot be avoided or ignored. Eventually, that is difficult to avoid being accountable and transparent.

- **New Definitions and Standards for 21st Century**:

  The need for best-in-class solutions in Education and Skills calls for new definitions and standards. A literate person in the 21st Century needs minimum Class V completion and operational competency to support absolute minimum learning, living, and working requirements. This definition and requirements question current standards or measurement of literacy rates; how we report who is literate and who is not literate. The 20th Century standard of literate person gets a total transformational shift with new functional requirements. These new literacy standards need to be ideated and realigned for quality requirements and relevant standards of the 21st Century.

- **Merit and Ability Will Dominate:**

The workplaces will shift towards Industry 4.0, seeking better qualified and workforce pools. Therefore, merit will dominate. Most highly paid jobs call for high levels of Math, Science, Communication, empath, and social intelligence in equal measure.

Productivity improvements are the norms in the 21st Century workplace and linked with the merit and ability rule one cannot stop people from creating their entrepreneurial opportunities. This makes a vast impact on migration, entrepreneurship and wealth creation.

- **The Productivity of Courses:**

  The higher education or training sector cannot ignore and avoid student customers accountability on the justification of the fees, time spent and the opportunity cost of their life at the institution. Sector alignment, information technology and customization for learning and earning will get embedded into course development and service delivery. A distinctive tone will challenge the survival of higher education and high university fee.

  The course delivery or inputs will lead to productivity justification in the workplace. Students will demand accountability and question the Return on Investment (ROI) for the fees charged: will the courses provided by higher, professional education and universities serve as inputs for developing services, products, processes or strategies at the workplace or entrepreneurial pathways; will it support or provide jobs and livelihood. The Higher Education and training sector will face unfathomable backlash from stakeholders regarding the value of higher education costs.

4. **Changing Socio-Economic Dynamic**
   - **Entitlements:**

     The politically driven entitlements and family inheritance as an entitlement will change. Society and individuals will band together and lead the gangster-style silo platforms. This is to peddle the points of conflicts to unfold a crisis in society. The people's voices will lead to clamour on digital media. Silencing these voices will be untenable for governments all over the world. The resurgent middle and the working class will challenge the rich and the poor classes; the resurgent middle class resists the freebie and entitlement culture.

- **Clamour for Opportunities:**
  The youth will question the governments for worldwide pushing universal education into society. The clamour for opportunities will bring unrest in society. People expect employment avenues in private or public enterprises to address livelihood for bringing societal peace and harmony. Entrepreneurship options will receive wider acceptance across the socio-economic ladder.

- **Extreme Wealth and Poverty Dynamics:**

  The number of extreme wealth will come down, and severe poverty cases will reduce. The tip of the wealthy population will get flattened, while the base of low-income families will move into the working class. The class difference will take different tones and textures. The disparities will get reduced; Asia and Africa will see most of the growth. Technology development and financial power will be spread across the globe, leading to the flattening of extreme wealth scena**rio.**

- **Social Barriers Decrease; Openness Will Increase:**

  The inter-cultural, inter-racial, inter-religious, inter-linguistic, inter-educational/social status movements and mixing of partnerships are receiving acceptance gradually. The social barriers will start lifting as individuals assert and seek better self-expression, individual identity and self-confidence.

5. **Extreme Opportunities and Challenges Dominate**

The education and training solutions have to be aligned with the sustainability of planet Earth and its safety to drive decisions and budgets deployed. Clean air, water conservation, safeguarding earth from erosion and safety from calamities or disasters are to be addressed in delivering digital or institutional platforms.

- **Universal Income Scheme:**
  To meet taxes, Governments worldwide are looking to provide minimum subsistence income support. After having completed this, tax collections from infrastructure development and other sources in the future will be apportioned towards subsistence schemes for creating peace and stability in the society.

- **Geo-politics and Market Access**

New templates of geopolitics for trade and market access opportunities become a major force. People become national human assets or firepower to develop and lead new frontier technologies to capture markets and dominate to secure economic might. The pullback from globalization will be towards national priorities and investing in their own economies. Geo-political will change in the aftermath of the Coronavirus pandemic. The race toward building digital empires among nations and technological supremacy will redraw new engagement lines.

- **New Wars:**

Nations will not fight wars like they did 20 years ago. The warfare in the future chemical, biological and digital cannot be underestimated or ignored. These kinds of wars become more real threats than terrorism or atomic blasts The new wars will force global economic growth to slow down, reduce social mobility and challenge trust issues among nations and civil society.

The Coronavirus pandemic has changed and led to a strong bio-war-like situation. How world economic growth and national interests take priority is unfolding. The unforeseen catastrophic health care crisis the world has never seen will change the way we live and consume. The rapid response systems of all nations' coordination and synchronization require enormous planning and new technologies to combat bio-war like situations. Resilient India will work in a crisis to strengthen its families, community, society, states and governance fabric.

- **Backlash on Past Decisions:**

The whole range of backlash will be seen on globalization, migration, free trade, individual freedom issues, etc. The clarity of thought will get a coating from the past or traditional view. The decision will have data support and the human dimension. The backlash will come from the past and present and influence impending future decisions.

The range of silent forces will influence education and skills demand and consumption. The 21st Century learning, living\ and working need to equip the youth with many unforeseen challenges and opportunities with a fluid and dynamic approach.

10. CONVERGENCE FOR LIFE-CYCLE APPROACH IN EDUCATION AND SKILLS SERVICE DELIVERY

Digital Resources and Devices get Deployed into Home and School

Three Cycles of Learning

Three Cycles of Learning are recommended for the optimization of learning outcomes.

Home Cycle I:

Morning time (4:00 a.m. - 7:00 a.m.), when a student wakes up with a fresh mind, is an effective learning period at home / outside home, through online or offline resources/self-study. This time can be spent to revise, review and recall the previous day's schoolwork, self-supported or parent directed.

School Cycle II:

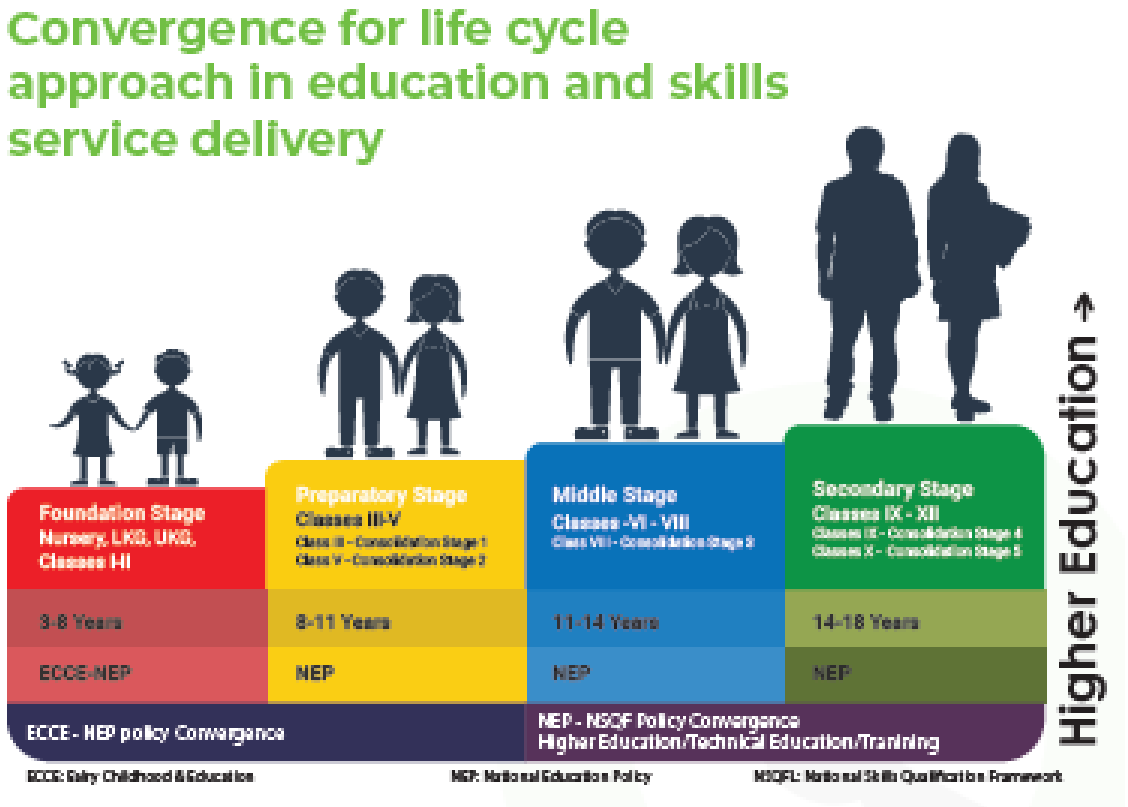
A sizable proportion of a student's waking time (8 hours - usually between 8:00 a.m. - 4:00 p.m.) is spent in the school. Learning takes place in classrooms where teachers teach using various resources.

Home Cycle III:

The evening time between 5:30 p.m. and 9:00 p.m. is invested to study the school subjects. This time is used to practice what is learnt at school, review the day's work, do project work or undertake remedial work. This can be done at home or by using external resources such as Massive Online

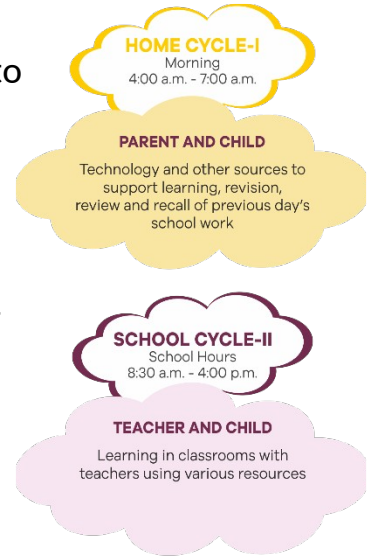
Open Courses (MOOCs) for personalized learning. Additionally, community engagements can be taken up for mentoring, guidance, advice etc.

In a departure from earlier education policies, the NEP 2020 has included the three years of pre-primary (nursery, LKG, and UKG) with primary education in the Foundation Stage (3 years of Pre-primary and 2 years of primary classes I & II). This is an inclusive life-cycle approach to school education, which will bring about the convergence of three crucial policies: Early Childhood Care and Education (ECCE) Policy 2013, NEP 2020, and the National Skills Qualification Framework (NSQF) Policy 2013.



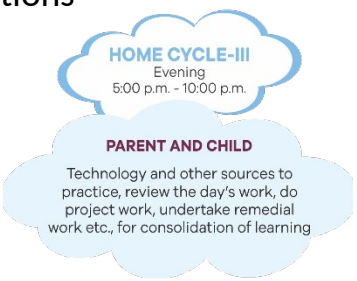
Personalized Learning Strategy

Personalized learning refers to instructions in which the learning and instructional approach is optimized according to the learner's needs. Learning objectives, instructional approaches, and instructional content (and sequencing) may vary based on learner requirement Besides, learning activities are made available that are meaningful and relevant to learners, driven by their interests and often self-initiated.



Extreme Customization for Stage, Class, and Subject Input Delivery:

Addressing the poor and uneven quality of learning is a major concern for stakeholders. This will see an array of solutions to target inputs for personalization and customization.



The Holy Trinity

Life Cycle Approach through Teaching, Learning, and Assessment

Teaching

- The teacher's role will transform into that of facilitator, enabler, and supporter in instruction delivery
- Teachers will use a diverse range of inputs to make the teaching-learning process more interactive and engaging

Learning

- Diverse and enriched sources of content and learning will be made available
- Learning through technology
- Anytime-anyplace learning
- Self-directed learning

Assessment

- Assessments to be multi-dimensional and competency-based: Higher Order Thinking Skills (HOTS), open - ended questions, etc
- Personalized, algorithmic and standardized testing should become the norm

11. 21st CENTURY TOUCHPOINTS FOR SECONDARY STAGE FEEDER INTO HIGHER EDUCATION

The 21st Century transformation requires many touchpoints to broadcast and seed the defined change direction. Education or any sector needs to pinpoint the right touchpoints for leading transformation or brace for change that is thrust to survive into the future. These "touchpoints" are to set the direction. It is crucial to identify 'what is the change direction'? This will yield a maximum positive impact and outcome. It is essential to identify the touchpoints for the implementation of the transformational process.

Kovida Ltd. has strived to identify the following significant touchpoints for leading education and skills transformation. This document builds a rationale for secondary schooling stage productivity and impacts on college/ University/training institutes stakeholders, outlining significant touchpoints.

The Process for Identifying Touchpoints:

The intellectual rigor of academics; field institutions management and leadership experience and expertise and entrepreneurial zeal from the high calibre of professionals are brought together to identify touchpoints. This is to bring forward a discussion and engagement into evolving balanced, prudent

The Thought Leadership Sources for Identifying the Touchpoints

Higher Education Faculty and Leadership:

Academia Intellectual Rigor

School Heads and Operators: Institutional Management and Leadership Perspective

Start-ups or Company Heads:

Entrepreneurial Zeal for Efficiency in Delivering Solutions

The drive towards touchpoints has a specific theme. each of which forces on considering a set of touchpoints that can drive and deliver transformation. The entire set is to synchronize the impact more efficiently and productively to create an environment for supporting people's ambitions and

aspirations while firmly anchoring individual competencies (education, knowledge, skills attitudes, abilities, and values). They create the domino effect and cascading impact, one single touchpoint can redefine the entire system. For example, moving the evaluation and assessment standard from 35% to 50% will impact the education system and society, which will affect India's social and economic might. The following is not a sequence to be followed; rather, together as a theme, the touchpoints will drive better and overall synchronization of outcomes leading to transformational change.

First set of touchpoints: Humaneness and Productivity of Resources

- Two levels of Mathematics and higher performance standards:
  A 'single size fits all' Math standard does not address and engage the vast student pools. Provide an option to the secondary stage students to choose the Math level based on their interests and cognitive needs.
- Introduction of a vast range of courses choice for secondary education students:
  The introduction of sector-oriented skill courses will expose students to various sectors' skills and qualifications requirements. This will empower them to make informed choices, prepare them for college/career and improve feeder quality into higher education and training sectors.
- Eligibility Criteria for program entry:
  Eligibility Criteria refers to parameters that define which candidate is eligible for a particular course/pathway. The Indian school examination system relies on two terms to indicate student success and achievement.
- 'Pass' and Fail'
  This is a narrow vision of success and achievement in examinations and has several negative repercussions. It is necessary to ensure that all students have options based on their performance and achievement. Boldly eliminate pass and fail system. Provide students with Eligibility Criteria to enter higher education (college) or training (career) pathways.

Second Set of Touchpoints: Individual Merit and Ability; Peace and Harmony

- Multi-dimensional Assessment for higher education and training sector:
  Multi-dimensional Assessment is necessary to improve the quality of education, knowledge, skills, attitudes and aptitudes that impact student learning. The overemphasis on MCQs must be decreased; Higher Order Thinking Skills (HOTS) questions, open- ended questions and writing skills filters for improving the student feeder quality that enters higher,

professional and technical education should be made mandatory.

- Rebranding Vocational Education for improving people's perception:
  In India, vocational education is perceived to be for students with lower achievement bandwidth. The term Vocational Education needs rebranding as Technical and Career Education. Rebranding is essential for wider acceptance; influencing public opinion and informing students to align their competence towards sectors and qualifications.

- Introduction to Philosophy and Literature (Introduction of Theory of Knowledge (TOK):
  It is important to prepare the youth for the rigor and relevance of higher education and life. Students need to be well-grounded and prepared for the college-level challenge of undertaking independent study and research assignments. Introduction of Philosophy and TOK at the secondary school stage will equip students to have a balanced view of life and its challenges. The TOK has the proven potential in equipping the student with an edge in developing maturity, objectivity, values and deeper dimensions of life, which can be achieved through the Vedanta Philosophy.

- Advanced Placement and credit orientation from secondary schooling:
  The merit, ability and talent of motivated students require pathways into the advanced qualification placement into college or training sectors. This requires a credit point system's support to enable secondary school students to work towards credit accumulation and porting the credit towards a defined college or training sector course. Advanced Placement can be facilitated for students who demonstrate the caliber to undertake advanced college-level courses at the secondary schooling stage.

Third Set of Touchpoints: Technology and Media Proliferation for Productivity

The pandemic has created a new normal. From school camps to online, teaching and personal contact by going back to the routine, which helps them build interpersonal relationships. Once the pandemic recedes, blended learning will become the new normal.

- Digital integration for online and offline in Education and Skills:
  Digital integration of online and offline teaching, learning and assessment processes enables high productivity. Digital technologies provide a level

playing field with the new paradigm of connectivity to anytime, anyone, anyplace. This provides unprecedented opportunities for all students and teachers to engage, interact and communicate.

- Robotic Process Automation, Machine learning, Deep Learning, Virtual Reality, Augmented Reality:
  The education and skills sectors will witness newer technologies, thus revolutionizing the service delivery for customization, personalization, user experience and engagement. Data analytics, robotics handling micro procedures to major processes, etc. will reduce the use of resources previously applied.

- Professional cadre development of education and Skills ecosystem:
  NEP 2020 identified stages of schooling; this gives tremendous opportunity to develop national professional standards for teaching, learning, and assessment. This professional cadre requires stage and subject-wise inputs as tactical and surgical resources to address poor-quality outcomes at the school field level. The NEP 2020 implementation requires building a professional cadre of Master Trainers, Trainers, Teachers, Principals, Assessors, Moderators, Counsellors, etc. to ensure Quality Assurance (QA) and quality of student learning outcomes.

- Algorithmic assessment protocols:
  Assessment Design Framework (ADF) is to include examination questions on knowledge/understanding, application and Higher Order Thinking Skills. The question types and percentage weightage for each stage and subject need benchmarking and quality assurance. Algorithmic assessment protocols will support to integrate ADF seamlessly with personalization. learning set new standards. Technology has given scope for life to move on without halting, but man is a social animal. Students and teachers are eagerly waiting to resume.

- Digital portfolio of learning evidence for assessment and certification:
  The Pandemic Covid -19 has identified a pressing need for new methods and student assessment techniques. Digital portfolios are used extensively in Art and Design and a few progressive education institutions which do not depend on the single year-end examination to determine student achievement. Digital portfolios will give scope for recording student progress and achievement data that can be verified and certified.

- Extreme customization of courses and integration of Design Thinking:
  et jobs or become enterprise builders. Creativity and collaboration for ideas and innovation to solve perplexing problems through higher education course development processes are needed. The integration of Design Thinking will enable addressing extreme customization towards outcomes of the courses to develop products, services, processes or strategies that are market, industry or workplace driven.

- Dynamic content delivery for student engagement and interaction:
  The education and training content is evolving rapidly in the 21st Century. The dynamic content will require a digital platform to deliver, engage and interact in a way hard copies cannot. This dynamic content will engage students to pursue in-depth study and research. Dynamic content delivery can build bridges between labs across worlds to the classrooms seamlessly.

Fourth Set of Touchpoints: Family's Social and Cultural Orientation

The family history and social culture for individual identity orientation:
The family plays a crucial role in delivering the social and cultural inputs; parents need to be involved in these critical aspects of educating and empowering young people. Knowing, understanding and appreciating family cultures secures young people to be better grounded into the family as a basic unit of society. Individual identity orientation-related inputs need to come from families and schools; this new combined responsibility towards grooming young people is essential. Education, skilling and empowerment can safeguard cultural assets.

- Family contribution for competencies development:
  The values, attitudes and habits for life skills are anchored into home-based learning. The home is best suited for nurturing, grooming, cultivating and training young people towards developing values, attitudes, habits for learning, living, and working.

  The home environment is a rich resource, fully utilizing it for grooming individual and entrepreneurial skills essential for survival and success in the 21st Century. The role and responsibility of parental contribution of student self-learning towards education and skills development have to find an avenue into the institutional operations. The home is the best environment to groom a range of communication and soft skills, inputs for developing social relationships, family bonds and networks. This enhances

young peoples' ability to develop empathy and humaneness that is crucial for success and survival.

- The family wellness program intervention into basic education:
  The Covid 19 Pandemic has driven home the importance of varied health and wellness inputs into people's lives. The lessons on wellness are crucial for the 21st Century; the wellness content needs to be provided from the schooling stage to secure health safety, security and improve immunity. This information, education, knowledge, abilities, attitudes and values will empower future generations with long and healthy lives.

The Fifth set of Touchpoints: Environmental Good an Indicator of Wealth of Nations

- Developing technologies for safeguarding environment:
  Education and skills for developing new technologies to safeguard the environment and protect bio-diversity need to be considered a significant part of educating future generations. The significant development and deployment of technologies for improving the degraded environment require direct involvement from young people. This restoration and sustainable protection of the environment is a marker of true development in the 21st Century.

- Clean Air and Water is a primary indicator of the wealth of Nations:
  The basic provision of clean air and water is an accurate marker of nations' wealth and a gift for future generations. The careful and prudent usage of the planet's finite resources has to be a part of young peoples' lives Future generations should practice developing commitment, dedication, devotion and love for the natural environment.

- Cleaning up previous environmental degradation:
  The active engagement, actions, initiatives and programs for environmental clean-up or restoration of degraded environment will secure future employment or enterprise development; this will be an essential scope of the 21st Century opportunities. Therefore, the environment will dominate the discussion, debate and discourse, an important aspect of learning, living, and working opportunities and challenges.

The education and skills ecosystem needs to have a deeper understanding of the 21st Century transformation to deliver better economic, social, cultural, educational, and environmental impact. The Covid-19 pandemic has opened a

pandora’s box for digital technologies proliferation across the world and supercharged the 21st Century transformational forces. India’s stakeholders need to engage with 21st Century transformation while leading and implementing the National Education Policy (NEP) 2020.

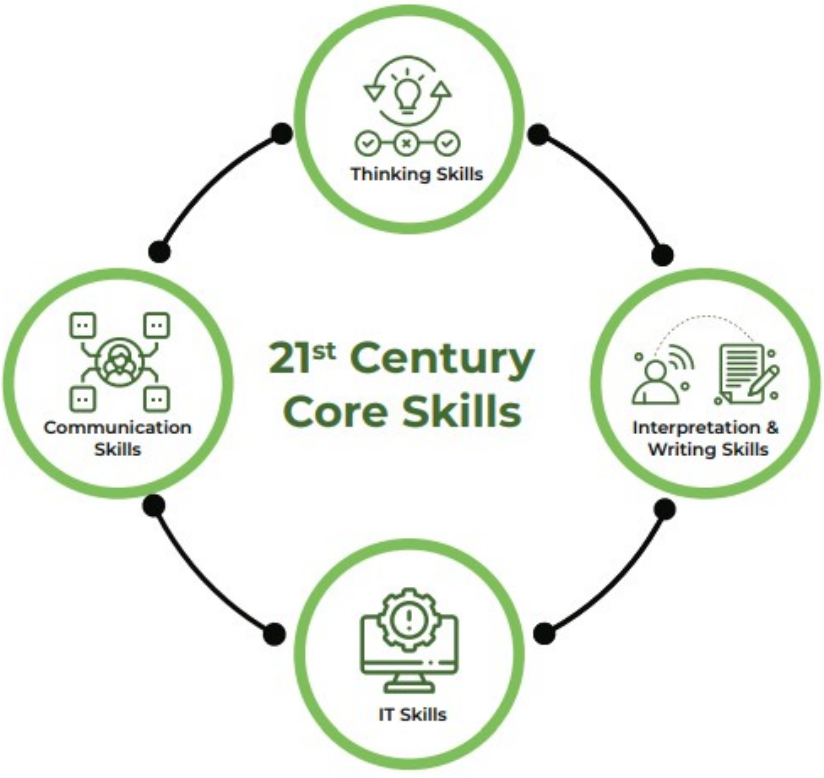
12. FRAMEWORK FOR 21ST CENTURY LEARNING CORE SKILLS & SUBJECT DOMAIN SKILLS

What are Core Skills?

As new technologies, job markets and digital channels open new opportunities, they also pose new challenges. To be successful, young people need to generate and implement new ideas, use digital tools effectively and apply their knowledge creatively to solve real world problems. Core skills equip young people with tools for self-learning and continuous learning Anywhere, anytime be available for Learning Living-Working (L-L-W) challenges and opportunities. They should develop essential skills needed for life and work in the 21st century global economy.

Core skills are the skills that equip learners with basic practical skills required in everyday living, learning, and working. A workplace calls for individuals to demonstrate a range of competencies that are specific to each sector.

The term 'Core Skills' covers a variety of broad skills and abilities that allows an individual to manage, adapt respond to a changing society. Core skills are critical to modern-day learning, living, and working. These skills help to put knowledge into action in a flexible way and adapt one's existing knowledge and skills to the demands of ever-changing situations.



Core Skills Structure and Delivery Progression:

Kovida Ltd.'s Core Skills program is divided into four strands for ease of delivery and budget efficiency. Ideally, progression is followed as planned for higher productivity of budgets applied:

- The First strand concentrates on developing communication skills through contextual learning, questioning skills, building vocabulary, graphic organizers, mind maps, and oral presentations.
- The Second Strand focuses on developing basic thinking skills, problem solving, decision making, life skills, working in groups, cross-curricular instruction delivery, and organizing exhibitions, cultural competence, etc.
- The Third Strand deals with developing HOTS – Bloom's taxonomy aligned with multiple intelligences /Theory of Knowledge / Design Thinking, inputs for creative expression, etc.
- The focus of the Fourth Strand is on developing ICT skills and tools for functioning in the digital era.

Subject Domain Skills

Subject Domain Skills are the skills specific to each subject for understanding of subject matter so that well-defined opportunities are provided for specific skill-development under each subject domain.

All subjects must be taught with 'Application' and 'Higher Order Thinking Skills (HOTS)' orientation to solve 21st century challenges for harnessing opportunities

Science Domain Skills

Social Domain Skills

Foundation Stage

EVS-Environment Skills:

Observing -using all the senses to gather information about an object/ event

Classifying - grouping / ordering objects / events into categories

Communicating - using words, symbols, or graphics to descibe a odject, action or event

Identifies

- Simple features in the immediate surroundings
- Directions, locations of objects / places
- Voices opinion on good / bad touch
- Shows senstivity towords plants and animals

Demonstrates drawing skills / making pictures

Collects and records information

Understands the connections with natural and man-made surroundings

Nursery
LKG,UKG
Classes-(I-II)

Preparatory Stage

- Making and using models
- Map-pointing and Map-reading
- Family and community awareness
- Observation skills
- Communication skills
- Interpersonal skills

Classes
III-V

Middle Stage

- Debating and Discussion skills
- Life skills for Geo-political-cultural-ethnic and regional diversity
- Reading and interpreting tables, charts and graphs
- Communication skills
- Interpersonal skills
- Map skills
- Gathering information
- Making inference

Classes
VI-VIII

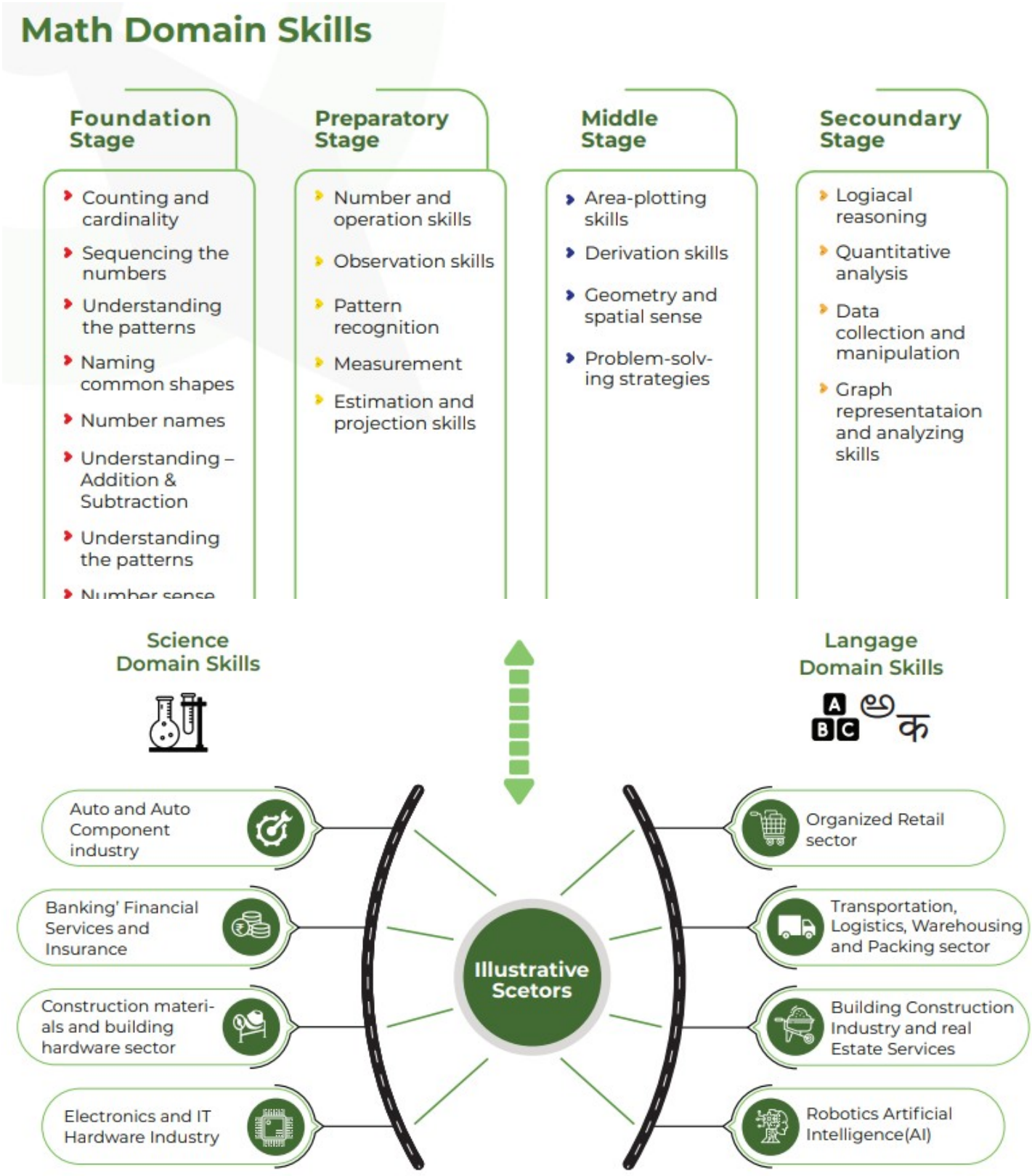
Secoundary Stage

- Functional skills in citizenship
- Surveys and questionaries
- Communication skills
- Interpersonal skills
- Understanding cause and effect
- Comparing and contrasting
- Debating and discussion

Classes
IX-XII

Subject Domain Skills - Sector Linkages

The linkage of various sectors with subject-based competencies developed at school / general education will lay the platform for employability skills. Each subject has the specific skills that every student should develop along with knowledge of the content.



A basic understanding of all the school subjects is essential to enter any sector for occupational roles. Every subject has its own importance in understanding sectors and occupational roles and lays a foundation for developing different sectoral skills for employability.

Competency-based Education (CBE) calls for a range of activities to develop student competencies. The assessment and evaluation of the activities require rubrics with clearly defined competencies and well-articulated descriptors to ensure objectivity, reliability and validity. The reporting of student achievement through the Holistic Progress Card (HPC) will enable student tracking to monitor student learning for appropriate interventions.

SUMMARY

Change is an ongoing process that impacts all aspects of life. The 21st Century is witnessing rapid changes, accelerated by the Covid Pandemic, that are deeply impacting and transforming living, learning and working in unprecedented ways.

One significant transformation touch point is the influx of technology into our lives. Though digital and data will transform human civilization going forward., the importance of culture, relationships and networks for peace, happiness and harmony cannot be undermined. Relationships and bonds are critical for developing empathy, as people are slowly moving toward digital dehumanization.

Culture-centric education is a means to inculcate community, State and National pride, self-identity and self-esteem. Students need to be groomed and encouraged to create, innovate and commercialize family, district, State and National cultural assets for enterprise and entrepreneurship. Commercialization of family culture and assets will require youth engagement and enterprise formation for sustainable incomes. Embedding Design Thinking into the school curriculum will encourage students to produce products, processes and services through entrepreneurial initiatives, start-ups and self-employment.

The NEP 2020 takes a fresh look at how India can adapt to the changing global education and skills ecosystem. Several transformative interventions have been introduced to bring qualitative improvement in the school education feeder into higher education. Kovida's Core Skills program will support the Govt. of India's effort to develop employability skills among students graduating from schools and colleges, aligned to international standards and benchmarks.