

EQUALLY

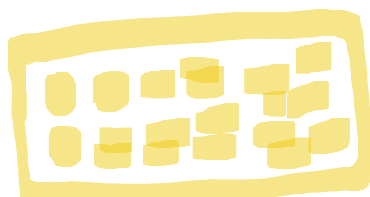
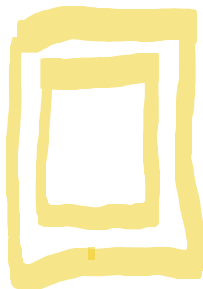
ABLE

ACADEMY

OF

DIGITAL

EMPOWERMENT



# Equally Able Digital Academy

Concept Note and Proposal

August 2020

## BACKGROUND

The agenda of inclusive and sustainable growth cannot be achieved without including the 600 million people of India, residing in the rural area, unconnected and deprived of basic needs. This project stems from the belief that the hinterlands of India have immense cultural, scientific and frugal knowledge that is untapped and excluded from global knowledge economy. The lack of accessibility to infrastructure and educational tools among those with social and physical disabilities has resulted in the adoption of foreign solutions versus the creation of indigenous solutions to local problems. Solutions need to be inclusive and incorporate the sensibilities and voices of all.

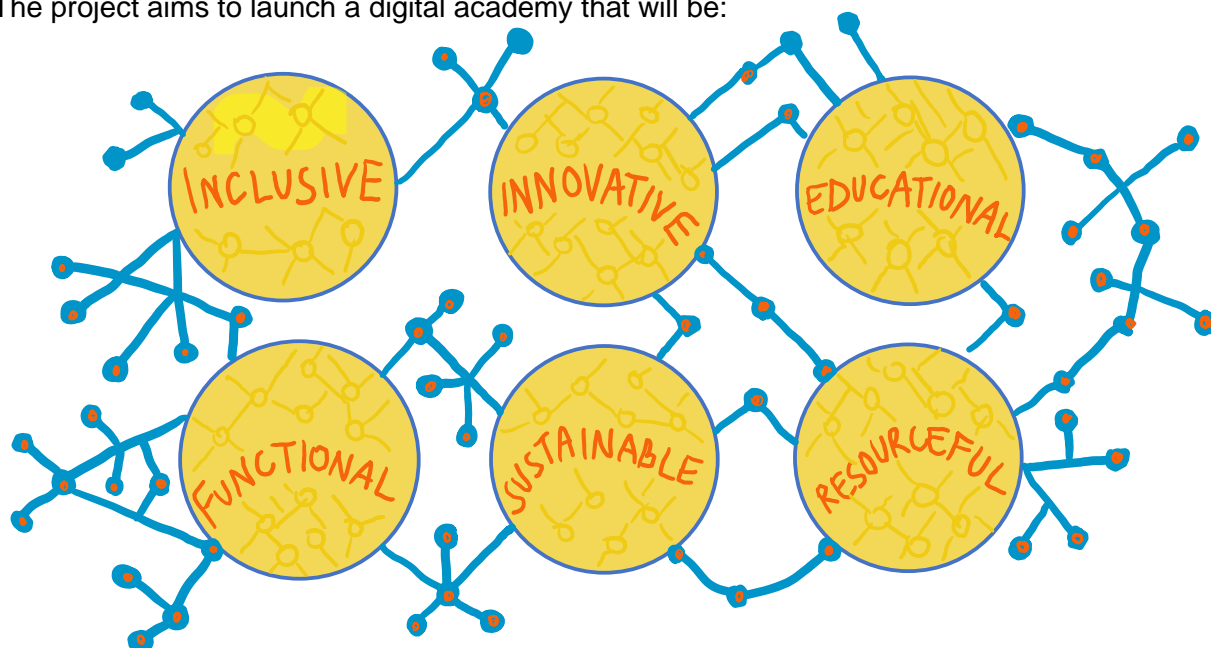
Equally Able Digital Academy of Digital Empowerment has been envisioned as a co-learning and co-working space that encourages creative mind of Generation Z from rural areas of India to explore and solve problems. Unlike formal education and vocational centres where students are required to follow a set curriculum and engage in rote learning, this largely unstructured learning space will allow youth to decide their own projects, take ownership of their education and create innovative solutions for their communities.

## OBJECTIVE

The Equally Able Digital Academy of Digital Empowerment is conceptualised as an inclusive makerspace to enable digital solutions to social, economic and environmental problems through inquiry, experimentation and innovation. The academy will host:

- A Makerspace
- A Fellowship
- A Virtual Digital Academy.

The project aims to launch a digital academy that will be:

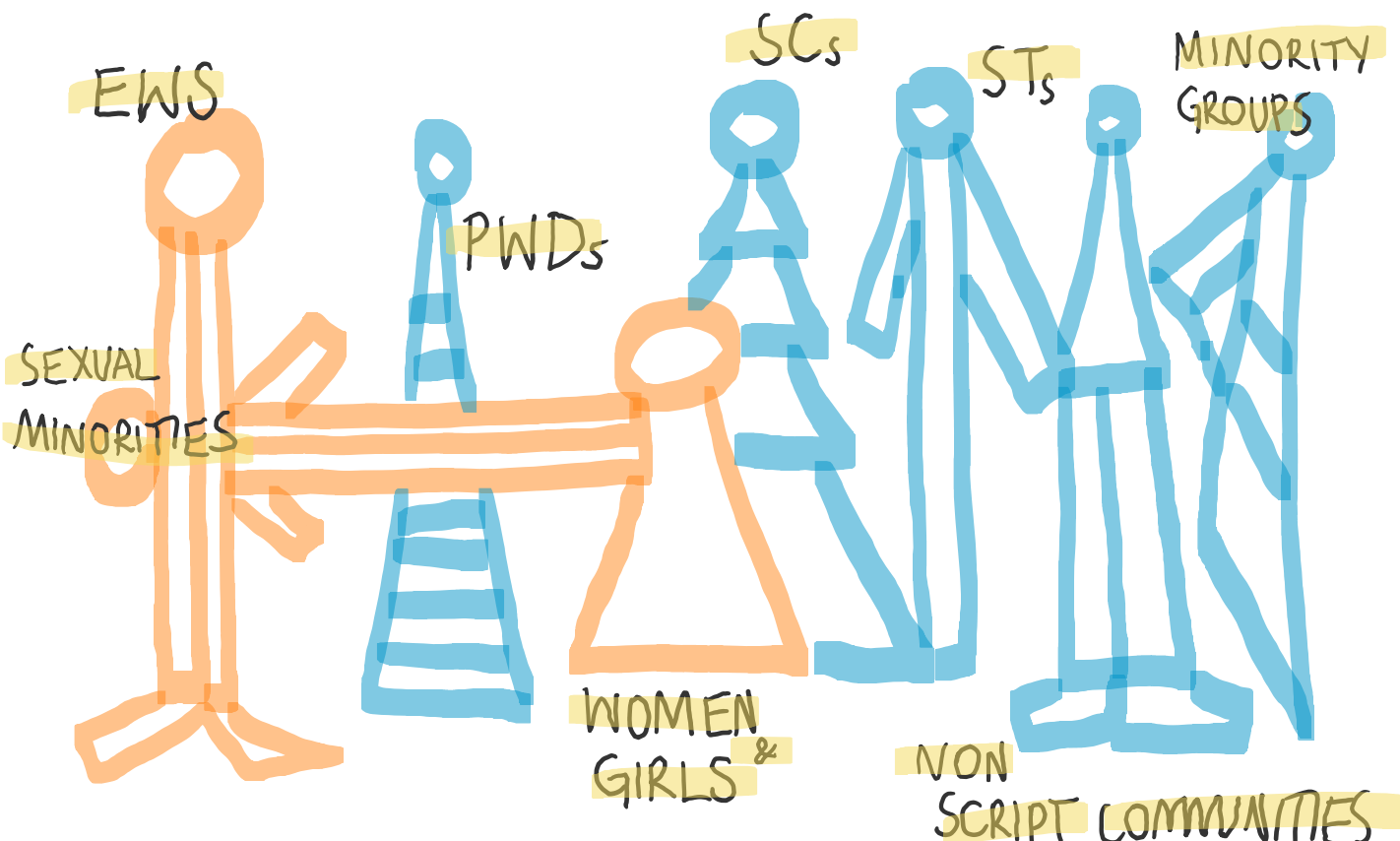


1. **Inclusive:** designed for and by communities with physical and social disabilities to include the marginalised adolescents and adults across the country
2. **Innovative:** encourage frugal engineering, inculcate skills of creativity and promote multidisciplinary thinking to solve real-world problems
3. **Educational:** facilitates open learning and teaching focused on student-centric inquiry
4. **Functional:** creating spaces and processes that are easily accessible, practical and mindful
5. **Sustainable:** constructed using environmentally responsible and energy-efficient design and architecture
6. **Resourceful:** Equipped with physical tools, modern technology and digital infrastructure

The project aims to help communities:

- Broaden experiential learning at grassroots level and enhance rural innovations through exploring interests in science, technology, and creative arts
- Understand the concepts and application of STEAM (Science, Technology, Engineering, Art, Mathematics)
- Inculcate curiosity, analytical, design computing, mathematical and team working skills
- Leverage design thinking approach for identifying real time community problems and creating tangible contributions to rural development
- Inculcate a bottom-up approach to problem-solving and nurture a sense of inquiry
- Equipped themselves for further studies and careers aligned with the 21st century demands

## TARGET AUDIENCE

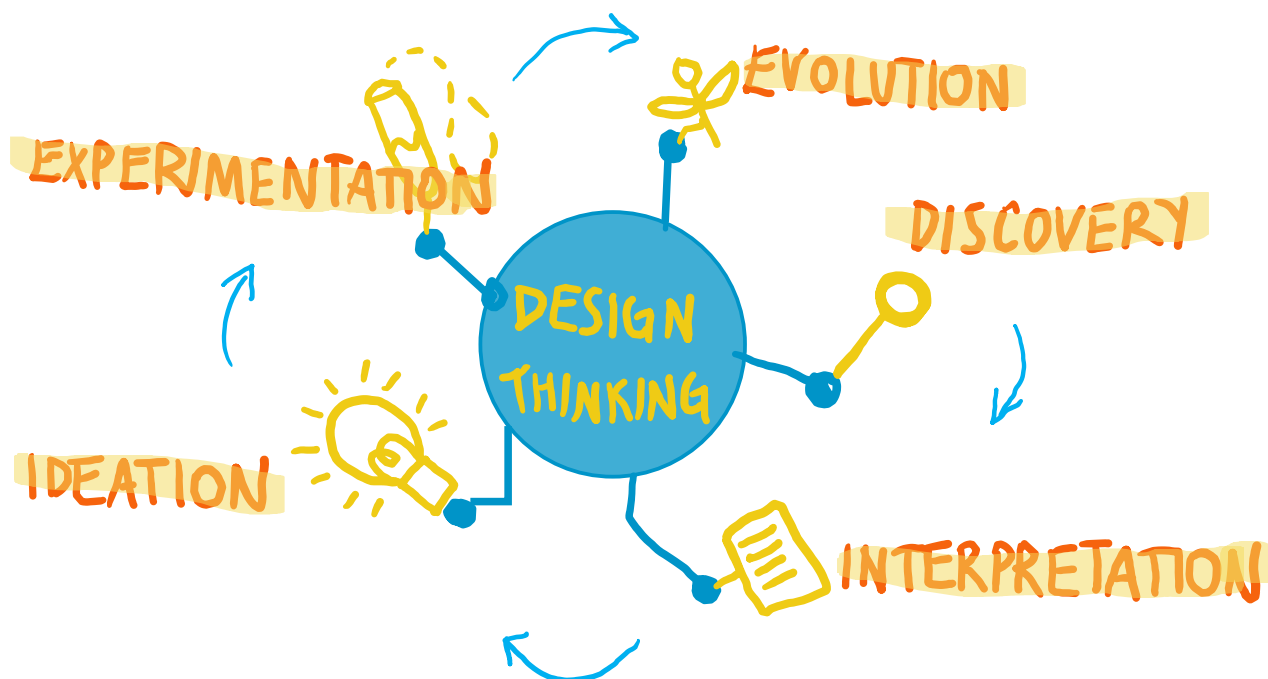


1. The project will mobilise and target communities that have been excluded from mainstream society due to their economic, social, physical, cultural and political, geographical conditions. These may include:
  - Economically Weaker Sections (EWS)
  - Women and girls
  - Persons with disabilities (PWDs)
  - Scheduled Castes (SCs)
  - Scheduled Tribes (STs)
  - Sexual Minorities
  - Non-script communities
  - Minority groups
2. The project will be focused on children, youth and adults with an age group of 10 to 24 years of age.
3. The project will cover geographies across India especially the learners from backward districts and regions.

## APPROACH

The makerspace will be based on the idea of ‘invent to learn’ where in the students will be exposed to hands-on and creative ways of learning to encourage them to design, build, experiment and invent while they engage in science, art, engineering and tinkering.

Design Thinking is a mindset and a structured approach to developing and generating ideas. Educators have used it as a tool to inculcate a sense of optimism to act when faced with challenges and participate in building a better future.



The five phases of the design process:

1. **Discovery:** I have a challenge. How do I approach it?
2. **Interpretation:** I learned something. How do I interpret it?
3. **Ideation:** I see an opportunity. What do I create?
4. **Experimentation:** I have an idea. How do I build it?
5. **Evolution:** I tried something. How do I evolve it?

## CORE CURRICULUM

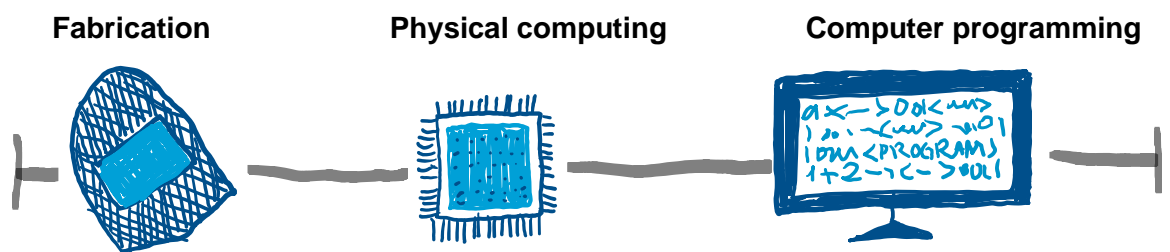
The primary aim of the curriculum is will be to foster curiosity, learning and experimentation, which will lead to knowledge-based learning rather than education-based learning, eventually creating a pool of makers.

The secondary aim is to develop an understanding and identifying various global issues and design creative solutions to tackle the same.

This co-learning and co-creating space will impart 21st century skills that can add real and applicable value to our rapidly changing world. The lab will create a conducive space for youth to transform their ideas into reality or be trained for the future jobs of the world. Analysing big data, understanding artificial intelligence and innovation with 3D printers, robotics and Web or mobile-based application will be at the forefront of this makerspace.

### 1. Makers Space Curriculum

The Makerspace curriculum will be based on the following technologies:

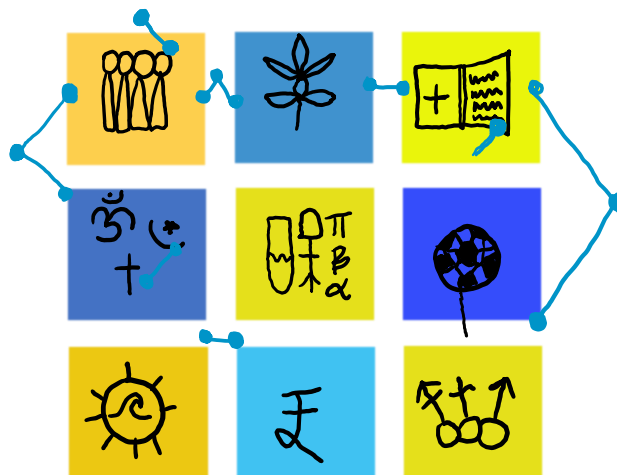


Along with knowledge-based learning, the program will focus on soft skills like:

- Meaningful Collaborations
- Creativity and Innovation
- Knowledge Building
- Enquiry and Problem Solving
- Critical Thinking

The project and prototypes will be created to solve problems across various fields to include:

- Society, Governance, Democracy
- Food and Agriculture
- Health and Education
- Language, Art, Culture, Heritage
- Science
- Sports
- Water, Energy, Environment
- Economy
- Gender



The learners will have access to several offline and online educational resources to facilitate research and additional learning through the following channels:

- Creative Commons Resources
- Subscriptions to international publications and online libraries
- Guest Lectures and Workshops
- Learning journeys and field visits

The lab will work towards creating patents on ideas and products and at the same time give open access to its knowledge, processes and space.

## 2. Fellowship

The Maker's Fellowship will select 10 aspiring young leaders and innovators to engage them in a learning journey to create, innovate and inculcate 21<sup>st</sup> century skills.

The residential fellowship will:

- Expose the participants to a series of innovations through an online and offline learning journey
- Provide the participants access to a maker space to prototype and test products
- Create a cohort of makers who will solve local issues in their communities

## 3. Virtual Digital Academy

The Virtual Digital Academy will aim to identify, train, build capacity and empower disadvantaged individuals, vulnerable groups and communities in digital skills and capacities to access information-based and digital opportunities.

Digital Academy courses are unconventional and alternative skilling courses with focus more on functional, operational and management skills in using digital platforms and tools.

DEF Digital Academy courses are effective for:

(1) Mainstream students in social sciences, social and development studies who are willing to work and join the development sector;



(2) NGO/CSO workers, professionals, management who wants to effectively use digital tools, platforms, solutions and frameworks for better management of organisational matters, and integrating digital solutions and methods in existing and potential development interventions at community level;

(3) For Cooperatives, Self Help Groups (SHGs) and their members, Micro and Small Enterprises and entrepreneurs to adopt and deploy need based digital means and solutions to achieve desired results in economic and commerce activities;

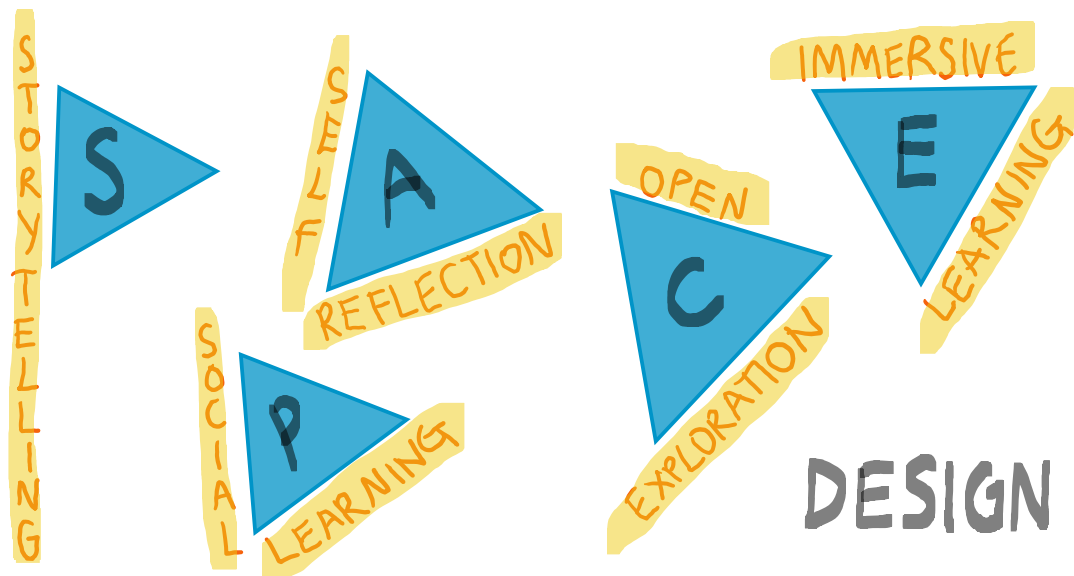
(4) For elected Panchayati Raj Institutions (PRI) members, elected members of Urban Local Bodies (ULBs), and elected Members of Legislative Assembly and Parliament to understand and deploy Digital Frameworks and solutions to engage communities and citizens better for good governance and effective services delivery.



## SPACE DESIGN

The ways in which students learn has drastically changed over time and it is important to reimagine and recreate our spaces to match this transformation.

In addition to creating an environment of open-learning and self-discovery through design thinking, the makerspaces will also focus on designing its physical spaces. Based on David Thornburg's theory, 'The Primordial Learning Metaphors' different sections of the building will enable:



- **Storytelling:** a lecture space where learners interact and learn from one individual (facilitator, presenter, fellow student)
- **Social Learning:** spaces for spontaneous meetings, student conversation and brainstorming that help learners process and discuss information after lectures
- **Self-reflection:** Closed, cosy spaces that provide learners a sense of uninterrupted privacy and are geared towards solitary, reflective and self-directed learning
- **Open exploration:** spaces that allow learners to apply their learning through hands-on activities and recognizes that learning comes through tinkering.
- **Immersive Learning:** spaces where students participate in multi-disciplinary projects using wide variety of technology



## Web Accessibility

The Digital Academy platform will try and incorporate international standards from W3C Web Accessibility Initiative (WAI) to make the learning platform accessible to persons with disabilities:

- 1 Operable user interface and navigation**
  - Functionality is available from a keyboard
  - Users have enough time to read and use the content
  - Content does not cause seizures and physical reactions
  - Users can easily navigate, find content, and determine where they are
  - Users can use different input modalities beyond keyboard
- 2 Perceivable information and user interface**
  - Text alternatives for non-text content
  - Captions and other alternatives for multimedia
  - Content can be presented in different ways
  - Content is easier to see and hear
- 3 Understandable information and user interface**
  - Text is readable and understandable
  - Content appears and operates in predictable ways
  - Users are helped to avoid and correct mistakes
- 4 Robust content and reliable interpretation**
  - Content is compatible with current and future user tools

## Digital and Physical Infrastructure

- The makerspace, training facility and digital training facility will consist of functional furniture, tools, equipment, and materials.
- The furniture will include cupboards, desks, chairs, benches, and different types of tables which has been identified and will be made available for the implementation of this project through DEF partners.
- Tools and equipment are non-consumables whereas materials are mostly consumables and will include:
  - 3D printer
  - LEGOs

- Electronics kits
- Robotic Kit
- Power tools
- Laser Machine
- Sewing Machine
- Soldering equipment
- Electronics: Arduino, Raspberry Pi, Little Bits, Makey Makey, and Lego Kits.
- Video, Sound & Photography: Studio Equipment, Cameras & Accessories, and Multimedia workstations with a variety of software.
- Arts & Crafts: Button Maker and miscellaneous craft materials and supplies
- Laptops, Tablets, Projectors
- Consumables



## HUMAN RESOURCES

### Facilitators

- The facilitators will be a combination of:
  - Mechanical Technologist (1)
  - Electrical Engineering Technologist (1)
  - Programmer and Software Technologist (1)
  - Project Manager (1)
  - Art Studio Facilitator (1)
  - Content Developers (2)
- The makerspace technicians will act as facilitators and mentors for the learners.
- Other facilitators will also be hired as consultants or part-time facilitation

## Learners

- A minimum of 50 learners will always be enrolled at the digital academy.
- The learners will be selected from communities across the country to include members from different social geographical and cultural groups.

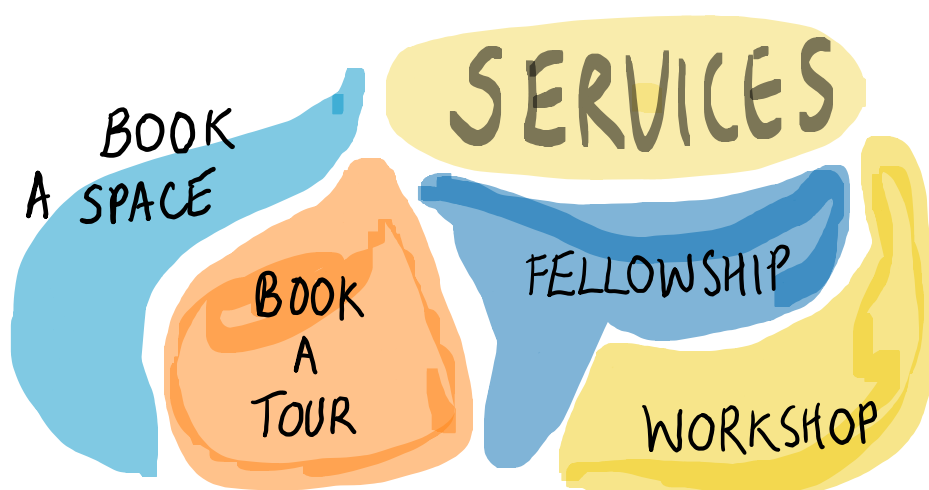
## Staff

- Staff will include the following will all serve as the supporting team of the digital academy
  - Housekeeping/Cooking/Security team (2)
  - Administrative team (1)
- The staff will be hired locally from nearby marginalized communities

## METHODOLOGY

- Baseline Survey and Research
- Hiring of Staff
- Procurement of Equipment
- Installation of Infrastructure and Equipment
- Design and Development of Curricula
- Training and Capacity of educators and facilitators
- Mobilization, Selection of learners
- Awareness Programs and Workshops
- Enrolment of Learners
- Course delivery and practice
- End line Survey and Research

## SERVICES



- **Book the Space:** Certain spaces will be available for use. The visitors can utilise the space at a minimal cost for meetings, gathering, research and other engagements.

- **Book a Tour:** The Makerspace is home to a variety of low-tech and high-tech software and equipment along with finished and in-progress projects. The tour will take the guests through the studio, lab and projects created by the students.
- **Workshops:** The makerspace will conduct various paid workshops for teachers, students and general public and give them a chance to get curious, create and experiment with technology.
- **Fellowship:** Long term fellowships for deserving students to shape them into makers of the 21<sup>st</sup> century

Services	Unit	Unit Gain	Total Gain	Year 2	Year 3
Book the Space	24	5000	120000	120000	132000
Book a Tour	36	2000	72000	72000	79200
Workshops	80	1000	80000	80000	88000
Fellowship	10	20000	200000	200000	200000
Total Gain			<b>472000</b>	<b>472000</b>	<b>499200</b>

## ACTIVITIES AND TIMELINE (Year 1)

Name of Activity	Quarter(s)
• Baseline Survey and Research	<b>Y1-Q1, Q2</b>
• Identification of Location, Design, Construction	<b>Y1-Q1, Q2</b>
• Hiring of Staff	<b>Y1-Q1, Q2</b>
• Procurement of Equipment	<b>Y1-Q2</b>
• Installation of Infrastructure and Equipment	<b>Y1-Q3</b>
• Design and Development of Curricula	<b>Y1-Q2, Q3</b>
• Training and Capacity of educators and facilitators	<b>Y1-Q2, Q3</b>
• Mobilization, Selection of learners	<b>Y1-Q2</b>
• Awareness Programs and Workshops	<b>Y1-Q2</b>
• Enrolment of Learners	<b>Y1-Q3</b>
• Course delivery and practice	<b>Y1-Q4</b>

• End line Survey and Research	<b>Y1-Q4</b>
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## BUDGET and PARTNERSHIP

The project will be supported by Digital Empowerment Foundation (DEF), Equally Able Foundation and other philanthropic organisations and individuals.

Contribution by Partners (INR/Dollars)			
Year	DEF + Other Partners	EA	Total
Y1	30%	70%	100%
	₹ 21,00,000	₹ 49,00,000	₹ 70,00,000
	\$ 28,717	\$ 67,005	\$ 95,722
Y2	50%	50%	100%
	₹ 25,54,000	₹ 25,54,000	₹ 51,08,000
	\$ 34,925	\$ 34,925	\$ 69,850
Y3	50%	50%	100%
	₹ 25,09,400	₹ 25,09,400	₹ 50,18,800
	\$ 34,315	\$ 34,315	\$ 68,630
Total	₹ 71,63,400	₹ 99,63,400	₹ 1,71,26,800
	\$ 97,957	\$ 1,36,245	\$ 2,34,202

### Detailed Budget for 3 years:

S N	Nature of Expense	Unit	Unit Cost	Total	Year 1	Year 2	Year 3	Grand Total
1	<b>Human Resource</b>							
	Project Manager	1	3,00,000	3,00,000	3,00,000	3,30,000	3,63,000	9,93,000
	Electrical Engineering Technologist	1	3,00,000	3,00,000	3,00,000	3,30,000	3,63,000	9,93,000
	Mechanical Technologist	1	3,00,000	3,00,000	3,00,000	3,30,000	3,63,000	9,93,000
	Programmer and Software Technologist	1	3,00,000	3,00,000	3,00,000	3,30,000	3,63,000	9,93,000
	Housekeeping/Cook/Guard team	3	1,80,000	5,40,000	5,40,000	5,94,000	6,53,400	17,87,400
	Frugal Innovator	1	3,60,000	3,60,000	3,60,000	3,60,000	3,96,000	11,16,000
	Art & Studio Facilitator	1	3,60,000	3,60,000	3,60,000	3,60,000	3,96,000	11,16,000
	Fellowship (Student, accommodation, logistics)	10	1,00,000	10,00,000	10,00,000	11,00,000	12,10,000	33,10,000
	Online Content Developer/ Special Educator	2	3,00,000	6,00,000	6,00,000			6,00,000
	<b>Total</b>				40,60,000	37,34,000	41,07,400	1,19,01,400
2	<b>Infrastructure</b>							-
	Physical Infrastructure: (Available)							-
	Digital Infrastructure (Makers Space)				20,00,000	10,00,000	5,00,000	35,00,000
3	<b>Consumables (Electricity, Internet, Water equipment maintenance etc)</b>		2,40,000	2,40,000	2,40,000	2,64,000	2,90,400	7,94,400
4	<b>Website development and technology for remote learning platform</b>			3,00,000	3,00,000			3,00,000
5	<b>Administrative Cost</b>	1		1,00,000	1,00,000	1,10,000	1,21,000	3,31,000
6	<b>Logistics, Transportation during set up</b>				2,00,000			2,00,000
	<b>Grand Total (Year Wise)</b>				₹ 70,00,000	₹ 51,08,000	₹ 50,18,800	1,71,26,800
					\$ 95,722.00	\$ 69,850.00	\$ 68,630.00	2,34,202

## References:

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<https://designthinkingforeducators.com/design-thinking/>

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Tools: <https://rdc.libguides.com/c.php?g=696069&p=4951050>