



Government of India
Ministry of Human Resource
Development



SUMMARY REPORT ON-

DESIGN BOOTCAMP

*was an exploration opportunity for school students to
Creative Thinking, Innovation, Problem Solving -
All through Tinkering, Games and Hands-on exercises*

Organized by:

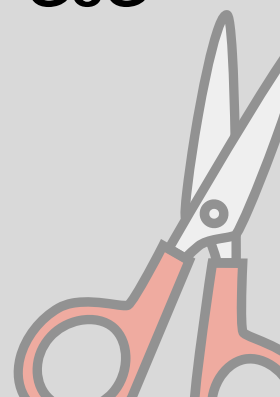
**GUJARAT
TECHNOLOGICAL
UNIVERSITY**

Design Innovation Centre (DIC - Hub), MHRD scheme at GTU

In association with:

Student Strat-up & Innovation Policy (SSIP) - GoG

From May 20 to 31, 2019 (Two Week)
At GTU, Chandkehda Campus,
Ahmedabad.



DESIGN BOOTCAMP OVERVIEW

Globally practiced Design Thinking ideology and design/practical based learning approach were the core of the Boot-camp.



MINDSET

Creative & Divergent mindset requires for an Innovation



TECHNOLOGICAL WORKSHOP

Tod-Fod-Jod, 3D Printing, AR/VR, Basic Electronics



DESIGN THINKING

Design Thinking ideology for solving complex problem



PROTOTYPE

Build-Test-Iterate: Repeat, Tinkering, Material Explorations



EXPERIENTIAL LEARNING

Various Games & Hands-on exercises to understand the very critical aspects of Innovation



PITCHING & AWARDS

Pitching tactics and methods



Enthusiastic kids of Bootcamp with Mentors and Dignitaries



ABOUT DESIGN BOOTCAMP

Gujarat Technological University (GTU) has organized two week long Design Bootcamp from 20th May to 31st May, 2019 on **Creativity and Innovation using Design Thinking approach**, with all fun filled hands-on exercises and games so that kids who were participated in this bootcamp can learn the very important aspects of such skills and mindset easily. This bootcamp was supported by Design Innovation Centre (DIC – Hub, a MHRD scheme) of GTU in association with Student Start-up & Innovation Policy (SSIP) – GoG, and exclusively designed for School Children from std. 8-12 of Gujarat State. Total 50 school students and 4 teachers of 17 different schools from Ahmedabad, Gandhinagar, Rajkot, Vadodara, Bhuj have participated during this two week bootcamp.

OBJECTIVES

Globally practiced Design Thinking ideology and design/practical based learning approach were the core at the bootcamp. During these two weeks, participants got the opportunity to explore Creative Thinking, Innovation Process, Sketching, Problem Solving, Tinkering and Material Exploration through various sessions conducted by Experts in Design, Innovation, and Technology – all with Fun Learning through games and Hand-on exercises. They have also learnt the emerging technologies like 3D printing, AR VR, Integration of Electronics parts like Arduino, Sensors, Drives etc., Reverse Engineering.

This bootcamp was the real combination of Intelligent Quotient (IQ), Emotional Quotient (EQ) and Spiritual Quotient (SQ) as everyday of the bootcamp was started with prayer and then fun filled activities to be creative and innovative.



"Creativity and Innovation don't rely on Language or Age"

- Prof. (Dr.) Navin Sheth, Hon'ble Vice Chacellor, GTU

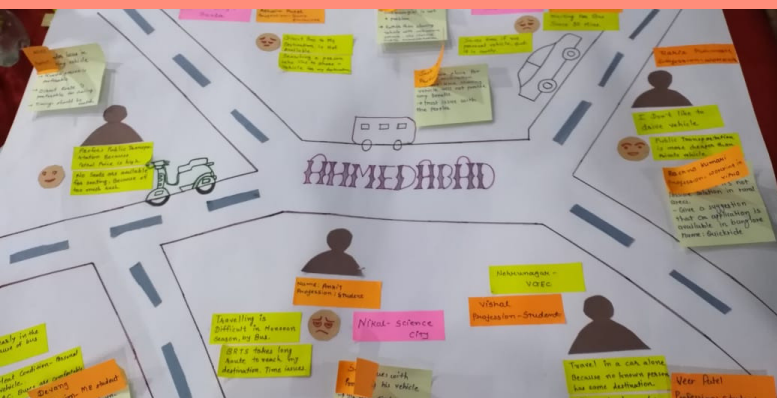
Shri J.C. Lilani, Registrar (I/C), GTU welcomed all the kids to the bootcamp at GTU and appreciated them for participating in the bootcamp even during vacation period. He encouraged the participants to think big – think different to innovate things differently.

Chief guest of inaugural, **Mr. Rohit Swarup, a serial Innovator & Entrepreneur** encouraged participants by sharing stories of Thomas Alva Edison and its approach to patent his innovations. He emphasized on persistence and hard work by saying that after thousands of failed experiments, how Edison innovated light bulb. Mr. Swarup encouraged participants to use and practice Design Thinking for solving routine problems around them.

Dr. Chandan Chatterjee, CEO, AIC – GTU motivated the participants by saying that the ecosystem of Innovation and Start-up created at GTU would always open to support their ideas but for the same this young minds should always be having preparedness to utilize this ecosystem availed for nurturing the innovation by GTU.

Prof. (Dr.) Navin Sheth, Hon. Vice Chancellor, GTU has motivated the students by saying that Design does not depend on language, ideas popping in young mind should be expressed and constantly worked upon to nurture. By sharing the stories of Tilak Mehta, 13 yrs old boy from Mumbai who started company called Papers and Parcels, Dr. Sheth motivated students that every individual is born genius hence his creativity can be nurtured with proper environment, processes and with the tools.





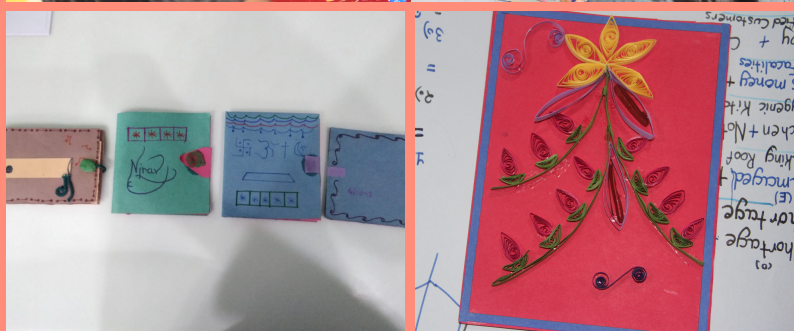
DAY 1: MINDSET-CREATIVITY & INNOVATION

Day 1 of bootcamp after inauguration started with much enthusiasm among participants to know various facets of Design, Creativity and the process to Innovate. In the first session on Creative Thinking & Innovation, **Mr. Karmjitsinh Bihola, Assistant Professor, Centre for Industrial Design and Coordinator of Design Innovation Centre at GTU** has explained the basics of Creativity & Innovation with various hands-on exercises like Creative Explorations of your self – A graphical representation of your life journey till date to introduce yourself; Lateral Thinking; Right and Left brain conflict, various creativity tests etc. All participants along with their teachers enjoyed the exercises and learned basic fundamental difference between linear/traditional thinking and creative/design thinking and ways of building creative confidence in them.

DAY 2: DESIGN THINKING

Day 2 of Bootcamp was started with shout out loud activity with kids to break their inertia and shyness. Then the Mentor, **Mr. Prabhuling Zunja, Design Thinking expert, AKS Igniters, Pune** has asked participants to sketch the face of their partner on paper. After sketching he again asked participants to make this face upside down to break mental barrier of looking the things in one perspective only.

Then for observation and empathy exercise, mentors has given task to design a wallet of their Teacher.





DAY 3: EMPATHY & DESIGN RESEARCH

Students were divided in six teams and decided their domain of interest and then they went on field to have observation, talked to people to understand their unmet needs using various tools and techniques of Design Thinking provided to them.

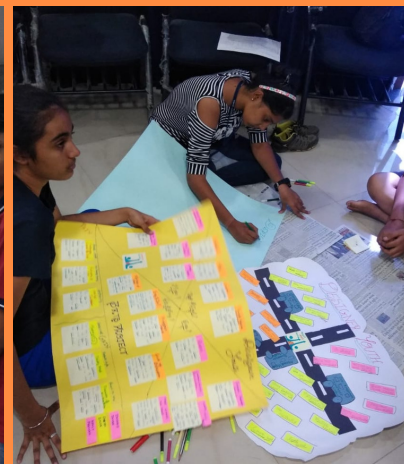
After field work, kids have analyzed and synthesized their data on chart paper and presented to class and explained what they have seen, heard, experienced and learned as well as what user in particular domain wants. **Students are surprised by their own findings from domain and realized that without observation and understanding the needs of user, Design/Innovation is a useless activity.**

DAY 4: DEFINE - SYNTHESIS AND ANALYSIS

Kids were guided by Mr. Karmjitsinh to prepare the empathy map for the user in context. Kids have learned very crucial and important aspects of design research, i.e. Observation and Empathy which are at the heart of any design/innovation project.

Then they defined their design statement in a given format as it is difference in saying the design statement and innovation would depend on how well the problem/design statement is defined with impose constraints.

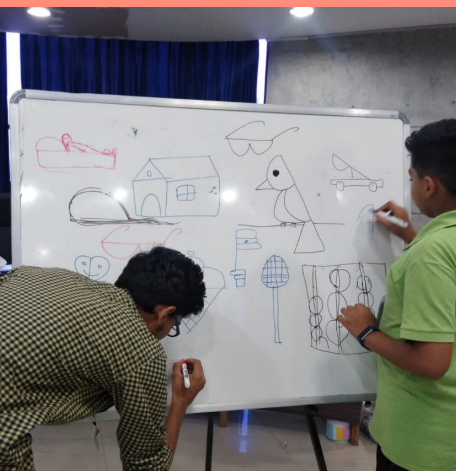
The day ends with the imagination project - "Ahmedabad City in 2050" to which students created amazing solutions and presented to the mentors and class.





DAY 5: IDEATION & SKETCHING

Day 5 at GTU Design Bootcamp started with sketching exercise, kids learned different techniques and principles of sketching. **Mr. Quadri, Xplora Design Skool** has explained sketching technique very easily and quickly using alphabates and simple forms and amazing sketches have prepared by kids while practice sessions.

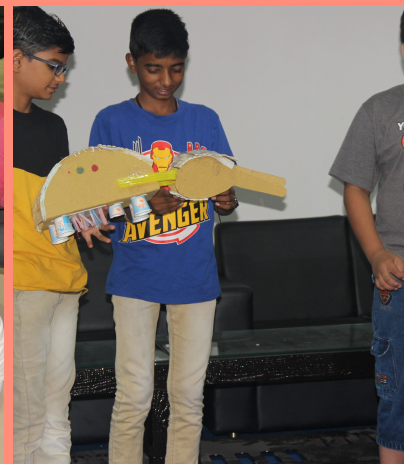


After lunch, kids were dived into Ideation phase guided by **Ms. Romita Swarup, Xplora Design Skool**. Ideation is most amazing and creative phase of design thinking project. Various tools were given to kids for generating lots and lots of crazy ideas which were then flowing from their minds and we can see no boundaries like elders to stop them

DAY 6: PROTOTYPING

Before prototyping, kids were introduced more tools for ideation and they came out with lot more ideas. Then they were conceptualized their final concept with various tools and techniques.

After conceptualization, they were guided for prototyping techniques by **Mr. Lalon** and having various material explorations, they prepared their dirty mock-ups and presented to class.





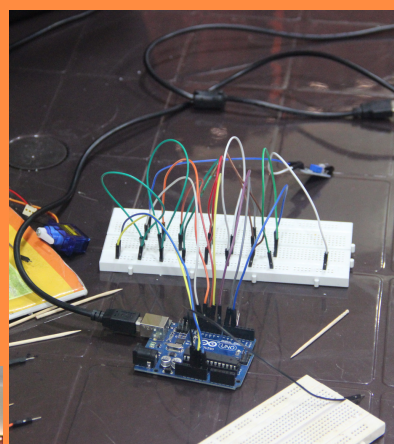
DAY 7: TOD-FOD-JOD

TOD-FOD-JOD activities were to introduce tinkering and modifying the existing artefacts, kids have learnt some basic principles of engineering and explored the technological products by knowing about products, functionality, assembly of parts and sub-parts, principle behind it, usability by dismantling and assembling it again. **Tod-Fod-Jod team lead by Mr. Ashish Bhavsar, Vadodara Innovation Council** guided the session.

Kids were amazed by engineering principles & technology used to build the products. They were motivated to learn more about the technology & engineering behind products. Also they were confident to repair things at home by themselves after this session.

DAY 8: BASIC ELECTRONICS

Kids learnt the Basic Electronics concepts and electrical connections with integrating Arduino, Sensors, Bluetooth, LED etc. for their projects and came up with multiple variants for their ideas with hands-on exercises throughout the day. **Mr. Dhruv Saidava** has guided the participants with various hands-on exercises.



DAY 9:

3D PRINTING & AR-VR TECHNOLOGY

Kids were explored the 3D Printing and AR-VR Technologies on Day 9 by the team from **Engineering Technique, Vadodara** and **Khodiyar Cad Centre, Ahmedabad** respectively. Topics like how these technologies work, various applications, materials used in 3D printing, programming behind AR-VR etc. were discussed and kids have made parts on their own in 3D printing and experienced AR-VR tech. Using 3D pen, they have printed their names and other images by their own. These hands-on session on above technologies were enjoyed by kids a lot.



DAY 10 & 11: MENTORING, BUILDING & ITERATIONS

Last modules of Bootcamp were planned for mentoring, building prototypes and iteration sessions through feedback from experts and the users to all concepts that kids have came up during this Bootcamp for their identified problems. **Mr. Bhavin Kothari, Sr. Faculty in Strategic Management, NID** were invited to guide these kids for refinement of their ideas. The energy in making their prototype better, using various craft materials and electronic components as per feedback received from experts, was amazing and kids tried so many new ways to convert their ideas into working model.



DAY 12: VALEDICTORY

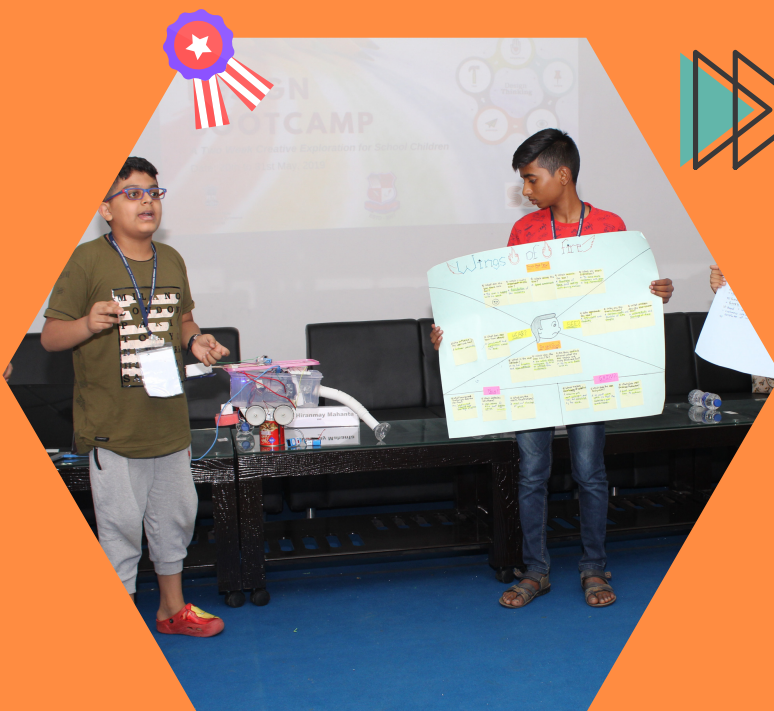
Two week long Design Bootcamp which was started on 20th May came to end with six amazing ideas on 31st May after fun-filled and rigorous training on Creativity and Innovation using Design Thinking approach. All the six ideas were presented by kids to expert panel and other participants, their parents, teachers and invited guests.

Ku. Bhargavi Dave, Additional Commissioner, Rural Development, GoG was the Chief Guest during valedictory function of this bootcamp. Along with Ms. Dave, Mr. Rohit Swarup, Founder of Xplora Design Skool, Dr. Chandan Chatterjee, CEO, Atal Incubation Centre, GTU and Mr. Hiranmay Mahanta, Hon. Director, GTU Innovation Council were graced the valedictory and motivated participants by giving awards and certificates. GTU has extended supports such as mentoring, FabLab, product design and development, funding, IPR support etc. to bootcamp participants to take their concept forward and convert them into useful products.



SIX IDEAS THAT EMERGED DURING BOOTCAMP

During this two week bootcamp, kids were empowered with Design Thinking process, tools, knowledge and mentoring to solve real life issues around us and these kids were identified six problems in their respective teams. All teams have presented their ideas and prototypes to experts during valedictory and received feedback to further improve upon it. Top two ideas were selected to motivate kids which are Team Wings of Fire and Team Delta Designers as shown below.



Team Wings of Fire:

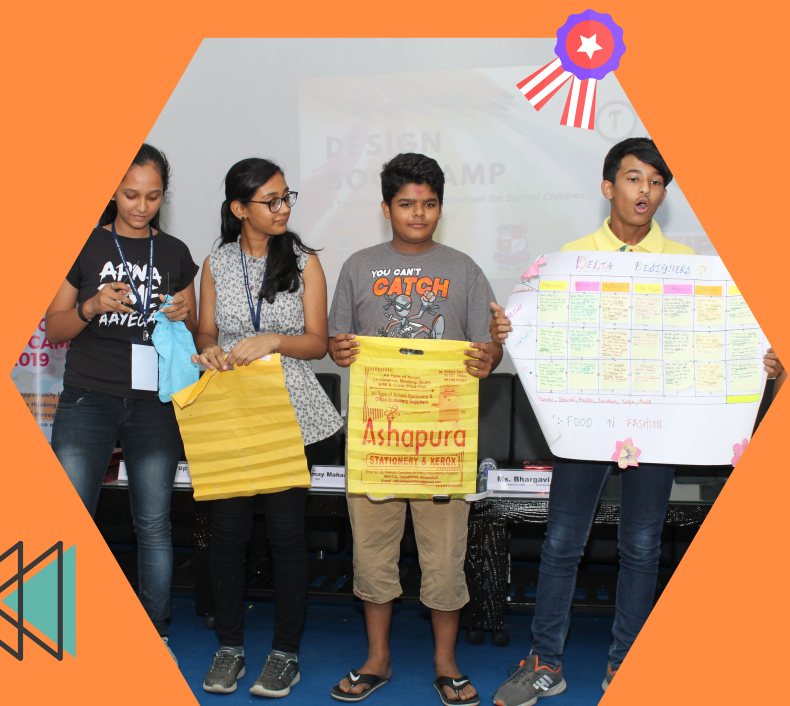
Problem: Team have identified that in canteen and similar congested areas due to furniture and less space - cleaning is bigger and tiresome issue.

Solution: Mouse/Rat shaped vacuum cleaner to clean underneath the furniture.

Team Delta Designers:

Problem: Due to banned on plastic bags - shopkeepers and public both are facing issues that were identified by Team during their observation. Unavailability of cheaper and convenient alternate bags, people have to use plastic bags.

Solution: Natural Material, Biodegradable, Foldable bag integrated into Fashion Accessories.





Team Rocking Friends:

Problem: During their observation nearby slum areas, team met various slum people and labors and they found out that the addiction of liquor and other tobacco products are very abysmal.

Solution: Alcohol Detection Drone to help Police/Govt. to detect alcohol making/selling places.

Team Designer Youth:

Problem: Team have identified that in BRTS lane other vehicles than the BRTS buses enter frequently which affects the BRTS schedule, cause accidents many a times.

Solution: Sensor based automatic barrier to avoid other vehicles in BRTS Lane.



Team Alpha:

Problem: Team have identified problem in parking lot area where people are struggling to find vacant spot for car parking.

Solution: Vacant parking alert system using Arduino and Sensors at the entrance of parking lot.

Team Pentagon Designers:

Problem: Team have seen labours and poor people suffering from intense heat and they do not have any means to protect themselves from heat and rain in monsoon season.

Solution: Backpack with Detachable and Foldable Umbrella for worker to protect them from intense heat and rain.



MEDIA COVERAGE OF GTU - BOOTCAMP



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