Introduction

The idea for this Children’s Creativity and Innovation Workshop emanated from the six years’ experience of our national IGNITE programme. Since 2008, we have been organising an annual national competition, the culmination of which is awards to children aged 12 to 17, for their innovative ideas presented by Dr Abdul Kallam, former President of India.¹

We wanted to do more than just recognising the awardees. We thought we need to imbibe in them certain values. Hence we thought of conducting a two and a half day workshop in that direction. We brought together the 28 Ignite awardees and about 40 other children from rural and urban areas, mostly from schools for under privileged children, and a few from slum areas and therefore unschooled.

The focus of the workshop was to support all the children in developing innovative ideas to solve basic problems faced by people living in under privileged areas like slums. The IGNITE children from different parts of the country, who already have developed patentable ideas from their own experiences, would be asked to apply their skills to finding solutions for slum dwellers, alongside children whose lives are close to the experiences of slum dwellers.

This report describes the two and a half day event with a focus on the children themselves and their insights.

First (day 1) we oriented the thoughts and expectations of the two groups of children of the outcomes of the workshop, and gave them some practice in reviewing their experiences and observations and develop innovative solutions. Then we took them on visits to slum areas and asked them again (day 2) to review their experiences and observations and develop innovative solutions. During the afternoon of day 2, the workshop attendees took part in the IGNITE Award Ceremony presided by Dr Abdul Kamal. Finally (day 3) we asked them to present their ideas for discussion and critique. They were also advised on the support available through websites and contact with the National Innovation Foundation (NIF) to continue their work on solutions.

Throughout this process, the 7th batch of IGNITE awardees, the children with formal experience of developing innovative solutions, worked alongside the neophytes, the children from under privileged backgrounds. In the conclusion to this report we review the outcomes of this experiment, the quality of the ideas generated, and the learning from our experience of this workshop.

The workshop organisers (NIF and SRISTI) operate their children’s innovation programmes on the principles of a pyramid, at the bottom of which are the ideas generated by children

¹ This year 28 children were chosen from more than 27,000 entries of children from 35 states and union territories in India submitted by August 2014. The Award is for original technological ideas and innovations of children in or out of school. The invitation to participate in this scheme is open to all children in India aged between 12 and 17 years, and it is run by the National Innovation Foundation based in Ahmedabad together with the Central Board of Secondary Education (CBSE), Society for Research and Initiatives in Sustainable Technologies and Institutions (SRISTI), and other partners.
which are patented, prototyped and fabricated by intermediaries in the middle of the pyramid, and then brought to market by commercial enterprises at the apex. The objective is to support and enable children to generate ideas that will make a qualitative difference to the quality of their own and others’ lives. These ideas need to be affordable, robust and entirely relevant solutions.

**Day 1: Orientation and Slum Visits**

After the initial orientation, the morning was essentially an opportunity to have each of the 28 children responsible for the 22 IGNITE awards explain their innovations and respond to questions. This enabled all attendees to understand the scope of the challenges and how they were responded to by the young innovators. The IGNITE Awardees had the opportunity to showcase and defend their innovations, and the neophytes to learn about the inputs and outputs of an innovator. Previous awards that have been developed into marketable products were also showcased.

In the afternoon session, the children were asked to give their inputs regarding problems they face or observe in their schools or in their social lives. This exercise gave all the children practice in reflecting on their experiences and observations and in proposing solutions. They were told that children of any age have the capacity to solve their own problems, and it is important not to live with unsolved problems indefinitely. Adults such as management people, engineers, educators may not necessarily have the best solutions to children’s problems. The next generation should not encounter the problems which have been tolerated for years. Given this context, the children produced the following problems and solutions:

- In several government schools, there are very few teachers, perhaps 2 among 5 or 6 classes. A solution given by one young girl was that children good at a subject can teach other children. She said if teachers are not enough, there are always certain children who are good at certain subjects. Such children can be taught once by the teachers and then these children can teach the other children. We don’t want this to be a solution but it can temporarily solve the problem of insufficient teachers until more teachers are hired.
- Parents have to migrate from one place to another in search of work, so their children do not get regular education.
- The caste system still haunts children in the rural areas. Children of lower castes are not treated well by teachers and other children, so they stop going to school.
- English language should not be made compulsory for job interviews. People knowing regional languages can be intelligent and have knowledge too.
- There should be no discrimination in grading and evaluation.
- Education should not be based on rote learning.
- Points should be given in the current grading system for students who come up with new scientific ideas, etc. just like sports people get points.
- Parents who make children work for an income should not be allowed to do so.
- Poor quality and insufficient mid-day meals are given in certain schools.
- Skill based learning should be made more important. They should get employment opportunities based on skills instead of grades.
- Children who miss classes should be given revised classes, not punishments.
- Skills should be included in grading points even in competitive exams.
- The design of microscopes is not convenient for children wearing spectacles.
- There should be no pressure on children to take up only professional courses like engineering, CA, medicine, etc. Children should be allowed to take up subjects that inspire them.
- There is a lack of good teachers in far off and remote locations.
- Parents of girls do not allow them to stay in hostels (live outside the home) if they want to pursue higher education.

Having completed this exercise in problem identification and solution generation, the visit to the slum areas of Ahmedabad would give the children a new experience on which to practice these skills. They were divided into 7 groups, each with about 4 IGNITE awardees, and accompanied by volunteers from a local college and led by a teacher and member of Sristi personnel. The un-schooled children were also distributed among the groups. They were asked to find solutions to problems in the lives of the less-privileged children they were about to visit, and use their potential to bring about a solution to such problems where elders have failed to either recognise certain problems or have done nothing about it.

Each group visited slums in areas like Pirana garbage yard, Hollywood-Gulbai Tekra, Sabarmati, Juna Vadaj, Nava Vadaj and Juhapura. Children visited these slums, recognised the problems plaguing these areas and came back with their observations. They put forward their ideas in presentations on the next day which included drawings and diagrams that contained innovative ideas to solve basic problems faced by people living in underprivileged areas like these slums. See the Appendix for photographs of the visits to the slums and the children interacting with the residents.

**Day 2: Review of Visit to the Slums and Ignite Awards Ceremony and Exhibition**

Day 2 had two main events. The morning session was devoted to a review of the visits to the slums and the identification of problems and innovative solutions to be prepared on chart paper for presentations on Day 3. Here are a selection of images of the children at work in small groups developing their ideas:
The afternoon session was spent at the Ignite Awards ceremony with an opportunity to see the exhibition of the prototypes of the ideas developed by the awardees, several of whom have patent applications in their names.

Day 3: Presentations of solutions.

The children were advised that the presentations of their solutions should not be the end of their endeavours. It was important that they continue to design and develop their ideas so that a prototype can be made with the support of the National Innovation Foundation. They should also enter them for the Ignite Awards in 2015. Information about how to achieve this was given to them.

The confidence shown by children as young as aged 12 in presenting their ideas and responding to questions was impressive. They also demonstrated a clear understanding of the social issues and the importance to the slum dwellers of recognition of their problems.

Here are a selection of images of the young innovators presenting their ideas.
A selection of solutions from each of the groups is shown here to present an indication of the scope and quality of the creativity of the children. The details of all the output from the children is in the Appendix.

**Group 1 Gulbai Tekra – Hollywood Gali**

Many of the slum dwellers earn an income from making plaster of Paris idols that are painted and sold for religious festivals. A couple of young boys discussed the problems faced in the production of these idols with the idol makers. Solutions were proposed to two problems, first to reduce the cost of electricity (Rs5,00 per month) of operating the compressor used in paint spraying by developing a manually operated model, and second how to reduce the cost of coconut fibre, a key raw material in the construction of the idols. Mukul, an Ignite awardee from Rajasthan, discovered that the idol maker sourced his coconut husk from southern India at some considerable cost. He proposed that the husks thrown away at the front of temples in Ahmedabad can be re-cycled using a rolling machine which separates the thick and fine fibres. The fine fibres can then be used in the making of the plaster of Paris statues. The ideas were summarised in the drawings shown below alongside a photograph of the compressor and of the children discussing the problems with the idol makers.
Groups 2 and 3: Pirana rubbish dump, and slums near Chandola Lake

The size of the rubbish dump and the conditions of the people living and working on the dump clearly had a significant impact on the children. One of them, a boy, hugged a garbage picker at Pirana dumping yard. The underprivileged boy was moved to tears by this simple gesture and said that people generally stay away from people like us and that you have actually hugged me, which means a lot to us.

One of the group members observed during the presentation that when they visited Pirana, the people there were working in garbage dumps but were wearing the same clothes that we people wear. They were covered with filth and their bodies were black due to filth. The authorities should provide such workers with special clothes so that the garbage does not affect them adversely.

The group came up with several ideas of how the residents of Ahmedabad should be required to handle their waste to make it easier to be disposed of and managed by the dump workers. For example the idea of separating wet and dry waste by having dustbins in houses which have two compartments for collecting dry and wet waste separately. They also suggested that the bin with wet waste can have a compressor to remove dirty water before dumping the waste.

This group also visited Chandola Lake. A boy named Sanjay observed that there were many families making brooms there. He said the fibres and dust that emanated when these brooms are being made adversely affects these people’s health, so they should wear a mask to cover their nose and mouth.

Group 4 Old Vadaj

The living conditions and lack of infrastructure to meet basic needs had an impact on members of this group. Vidit Laad from Indore, Madhya Pradesh (Ignite Awardee) had several ideas:
Plastic waste can be used to build and repair roads, proper electricity supplies to the houses are needed to avoid electric shocks and motors getting burned out, street lights should be powered by solar panels, slum animals should be provided shelter at a particular place so that their dung can be collected and used to generate biogas, and organic fertilizer which can be sold to generate an income. Another Ignite awardee drew a diagram to illustrate various environmental protection measures: chimney to take out the smoke from slum homes, garbage boxes, water purifying mechanism

Group 5 Juhapura, Sarkhej, including Muscan Garden, a playground constructed of re-cycled materials for the benefit of the slum children

The workshop children had several discussions with the slum children about their experiences, including violence and poor quality meals in the schools, and the problem of child labour.

D. Keerthivasan, an Ignite awardee, observed that children have to work to help support their family, finance future studies, for example he met Aman whose father drinks alcohol, his parents are separated, and he has to work in the market selling vegetables, and earns Rs 150 per day. Aman has studied until 6th standard and wants to continue. Keerthivasan wants the government to help children like Aman by stopping child labour and providing continued support for schooling. Sarthak Shukla proposed that to prevent violence by teachers, they should be required to wear wrist bands which have a motion sensor and raise an alarm in the Principal’s office when a certain velocity is registered during the action of beating.

Group 6 Nava Vadaj, Ahmedabad

This group also identified problems with schooling, the living environment and health and safety issues with the plaster of Paris model making.

Rajat from Rajasthan, an Ignite awardee identified that garbage separation can be accomplished by a simple machine, the ration system does not ensure regular supply of foods, so residents go hungry or have to depend on another source of food, fuel for cooking is a problem that can be solved by alternative fuel sources such as solar energy, biogas, an idol maker told him that when he is painting with more than 2 colours, it is time consuming to change the bowls. A simple machine can be devised for this. The carrying of bags of plaster of Paris causes back pain – a hydraulic machine needs to be devised for this.

Group 7 Kalupur Railway Station and Jamalpur

This group had several suggestions about how to deal with traffic and people congestion at the main railway station. One boy gave a suggestion that to ease burden of people carrying heavy loads, they should have some sort of belt so that the weight can be transferred to the waist rather than the back.

The perennial problem of managing rubbish collection effectively was tackled by one girl who observed that many places though there are dustbins to collect the garbage, most of the garbage is lying outside, around the bins. For this purpose she suggested that there should be a cone like fan like structure to be placed on the bin which can be operated
by a lever. This fan can pick up the filth around the bin and put it in the bin.

**Workshop Outcomes:**

The objective of the organising the workshop was to ‘train’ young children in how to approach the generation of innovative ideas systematically, building on their innate capacity to identify problems and relevant solutions. They learnt the importance of presenting and critiquing ideas to stimulate production of better quality solutions and to define problems more accurately. In order to understand problems better, they learnt of the importance of getting experience of the situations in which the problems occur, and not to tolerate the existing status quo. The following benefits of organising the workshop were also apparent:

- Ignite awardees acquired new identities as inventors, many of them with a Patent application, to encourage them to continue to work on their inventions with support from the NIF.
- The other children, the neophytes from under privileged backgrounds, attending the workshop acquired insights into how to become an inventor and the motivation to submit ideas for the 2015 round of Ignite Awards.
- The organisers gained an understanding of how children are able to think of simple solutions within the heuristics of frugality.
- Some of the solutions emerging from the workshop may deserve to be diffused.
- The possibility of similar workshops worldwide will be explored.

Some of the children demonstrated keen insights into the social and structural issues faced by slum dwellers. A boy from Jammu & Kashmir suggested that further work needed to be done to understand the issues the slum dwellers face by inviting some people belonging to areas visited by the groups so that they can voice their problems and see how children have attempted to solve some of their difficulties. In this way the slum dwellers are co-opted into solving their own problems with the help of child innovators.

They also showed an impressive degree of empathy with the slum dwellers which enhanced the quality of their solutions by making them affordable and relevant to the objective of improving their livelihoods and quality of life.

Kush Kumar Patel who was part of the group that visited old Vadaj area, shared that he had been living in Ahmedabad city for many years but never visited these areas. Even if he saw the people of the slums, he never gave a second thought to the living conditions of these slum-dwellers. He described his visit as an eye opener. When asked what he wanted to become in future and what will be his contribution for changing lives of such under privileged children, Kush answered that he wants to be an entrepreneur in computer technology. He also said that he will ensure that poor children get access to computer education.

The value of the workshop was clearly stated by another boy who declared that he had not learnt so much in 13 years as much as he learnt in 3 days of this workshop.
APPENDIX

Visits to slum areas of Ahmedabad
4.30pm to 6.30pm 18th November 2014

The children were divided into 7 groups of around 10 children, and taken to slum areas with volunteers from a college and SRISTI personnel to guide them. Each group had a few Ignite awardees and children from disadvantaged backgrounds.

Group 1: Gulbai Tekra, Hollywood Gali
Group 1  Gulbai Tekra Hollywood Gali, Ahmedabad
Leaders: Poonam Singh, Judith Hollows
Volunteers: Vidhi Parikh, Rohan Bhavsar

Observations during visit

Profiles of some children they met:

Pinki (16 year old girl):
She does not go to school as she needs to take care of her three younger brothers. She has studied up to 4th standard. She told us they belong to the Nat community (one of several nomadic tribes in Gujarat) which does not like to send their daughters to school after 4th class and they are supposed to do household chores. Girls are not allowed to work in offices, and if a man is sick and they have to take care of the family, then they work as maids. But boys can study as much as they want.

Hetal (12 year old girl):
She discontinued her study because of her mother’s sickness. She is the only child and her father is no more. She said she would like to continue school after her mother gets better.

Jammaben (11 years old):
She studied up to 3rd class. She dropped school because she does not want to go to municipal school and cannot afford a private school. She said government school toilets are not cleaned properly. Girls who want to study are not treated well in society, people question their character. Her mother is a housewife and her father is a contract worker.

Hemant (7 years old):
He was admitted to 1st standard in a municipal school. The teachers promoted him to 2nd and later to 3rd standard even though he knew nothing. Teachers forced the parents to sign the report mentioning they are happy with their child’s progress.

PROBLEMS and SOLUTIONS discussed in session

1. Priyansh- IGNITE award winner, Baroda Gujarat
This community uses plaster of Paris in the making of Hindu deity models; it’s use causes health problems as it contains powdered silica and sometimes asbestos. Using clay even with some impurities would be a better alternative.

The paint sprayer they use consumes a lot of electricity (Rs 5,000 per month). A manually operated compressor for paint spraying would be economically advantageous (see image in worksheet document).

2. Vishnu- unschooled, helps with construction work nearby SRISTI, from Madhya Pradesh
   It was very difficult for him to cope as he has not been schooled, he did not identify any problems.

3. Jaisukh- Lokmitra, Gujarat:
   Scarcity of water and the difficulty in fetching it from far off places can be resolved by constructing a tank connected to the river Narmada, and piping the water through taps to homes.
   Expensive electricity: use a solar plate on the top of the house.

4. Naina – Lokmitra, Gujarat
   Congested streets and houses. All household items are scattered here and there. No toilets near to the house.
   Solution: Cupboards can be provided and portable and low budget toilets should be provided.

5. Pooja- Arzoo, Gujarat
   She identified the problem of water supply but could not think of a solution for it.

6. Anjali- Arzoo, Gujarat
   Garbage scattered in front of the houses
   Solution: Put dustbins in front of every house.

7. Divya- Lokmitra, Gujarat
   Residents have to bring water from faraway places.
   Solution: Underground water storage system can be provided.

8. Abid- IGNITE awardee, Jammu & Kashmir
   Poor education system
   Solution: Provide CD’s of course material to every single child in their local language which they watch in their homes and learn hassle free.

9. Mukul- IGNITE awardee, Rajasthan
   Coconut husk is used with plaster of Paris to make the deity models, which is sourced from south India and is expensive
   Solution: Husks thrown away at the front of temples can be re-cycled using a rolling machine which separates the thick and fine fibres. The fine fibres are used in the making of the plaster of Paris statues.

10. Rohit-IGNITE awardee, Bokaro
    Disproportionate mixing of the colours with plaster of Paris
    Solution: Transparent boxes with measurement marks should be used into which the paint mixture can be poured in the required ratio reducing wastage and time. It would give an even texture too.

NB: The children in this group from Lokmitra Dhedhuki, Rajkot in Gujarat are attending a development centre run by this NGO which has a non-formal school, Killol. The school
is held daily, prior to and after the government school. The school is run with the help of the children, and works towards rectifying several shortcomings in their education. Their studies are based on project work; they go and live with different people such as pot maker, weavers, craftsman, sculptor and statue makers. They learn their techniques and according to their interest they choose to study topics related to history, traditions, economics, languages of the country, after learning the basic English, Hindi, mathematics, science and social studies. At the age of 16 years they appear for 10th boards and other further exams.
Selected worksheets from Group 1
Groups 2 and 3: Pirana rubbish dump, and slums near Chandola Lake
**Groups 2 and 3  Pirana rubbish dump, and slums near Chandola Lake**  
Leaders: Keyur Panara and Riddhi Doshi  
Volunteers: Sonali Yadav, Jay Takkar

**Observations during visit**

- No basic facilities such as hospitals, electricity, sanitation, employment opportunities.
- Adults and children are not educated.
- Dustbins are not available for every house.
- Proper medical facilities are not available
- Municipal schools are not functioning properly as children are not being taught and hygienic meals are not served.
- Municipal schools teachers force slum children to do their personal work, such as cutting vegetables.
- Sanitation problems and the extremely foul odour from the dump are so severe that people can’t breathe properly
- Disposal of garbage is not done properly, in a proper place and in a proper way at both the household and city levels
- One of the major problems faced at the dumping yard is the lack of protection of the health and safety of the workers. Workers have to climb up and down the dump
repeatedly, on foot and in heavy vehicles, so there are chances of accidents. 3 people died due to the toppling of a heavy vehicle over them.

PROBLEMS and SOLUTIONS discussed in session

Aadarsh, Swapnil, Karan, Rishit
Garbage should be divided into wet and dry - for this a special dustbin is invented called dried garbaginator.

Aakansha
- The lack of education facilities for local people and improper functioning of existing facilities needs to be addressed.
- Closer monitoring of the Government (municipal) schools is required and camera (CCTV) installed to support this.
- Government should open evening classes for children and adults.
- Monthly medical camps should be held for the dump workers.
- Weekly distribution of nutritious food is needed to avoid hunger.
- Chandola Lake may flood during the monsoon, town planning measures need to be taken to protect the slum dwellers from the possibility of flooding.

Sanjay, Deepak
Shops and markets are not close by, town planning needs to address this. Making of broom sticks is dusty work - face masks need to be provided.

Samrin
Filtered tapped water supplies are needed as the drinking water is polluted.

Varis, Mohini
Toilets and washing facilities need to be provided

Sejal, Bharti
Gloves and masks and protective helmets need to be provided for the people working on the garbage dump

Bharat, Pooja
Communication and transport facilities need to be provided

==================================================
Group 4  Old Vadaj

Leader: Ankit Doshi
Volunteers: Vinay Thadhani, Vedanti Panchal

Observations during Visit

- Road conditions are poor and there is no signage
- Common telephone facility with switch buttons to individual homes is needed
- The students are not supported by their physical environment to study
- Many students do not want to study because there is no practical applications
- Residents need to be made aware of how to stay healthy, nature of diseases, and reduce waste
- The students should study whatever they want to
- The verbal abusing of the girls by older boys should be stopped
- The streets and their houses should be cleaned
- There should be compulsory study till age of 16 yrs
- Each and every house should have a proper toilet
PROBLEMS and SOLUTIONS discussed in session

Vidit Laad from Indore, Madhya Pradesh (Ignite Awardee)
- Plastic waste can be used to build and repair roads
- Proper electricity supplies to the houses to avoid electric shock and motors getting burned out. Also direct water supplies
- Street lights should be powered by solar panels
- Slum animals should be provided shelter at a particular place so that their dung can be collected and used to generate biogas, and organic fertilizer which can be sold to generate an income (see worksheet).

Rinku Rajpal from Ahmedabad
- To prevent polluted water supplies, filters and detectors need to be provided
- The importance of education needs to be explained to parents and children and made compulsory to the age to 16.
- Liquor detector at the entrance to homes to prevent drunken family members from entering – see diagram on worksheet

Sharwari Tambat from Nasik Maharastra (Ignite Awardee)
- Superstitious beliefs are harmful
- Abuse of girls needs to be addressed

Kaushar Aajveri from Gandinagar
- Loud music in and in front of the school needs to be banned to help the students concentrate
- Parents and children need to be made aware of the importance of keeping the roads clean and how to do it.

Manisha Patni from Ahmedabad
- Gutters, toilets and water filters need to be put in separate places to avoid water contamination.
- Teachers need to specialise in particular subjects so that they can teach well

Aarti Nayak from Ahmedabad
- Communication skills need to be taught to parents and children so that they learn how to express and discuss their problems
- Dangerous stoves should be banned because they harm eyes and lungs

Dhruv Prajapti from Ghandhinagar
- Rivers should not made a rubbish dump
- Child labour should be done away with, and education made compulsory

Sunil Sankaliya from Dhudhunki
- The value of healthy living and clean households need to be taught to families
- Garbage should not be thrown on the road

Naina Rathod from Ahmedabad
- Dustbins should be provided in the streets
• Value of peaceful co-existence should be taught

Shaik Musfera Pasha
• Drew a diagram to illustrate various environmental protection measures: chimney to take out the smoke from slum homes, garbage boxes, water purifying mechanism

Selected worksheets from Group 4
Group 5 Juhapura, Sarkhej, including Muscan Garden, a playground constructed of re-cycled materials for the benefit of the slum children
Leader: Maruf U. Momin
Volunteers: Khushboo Bhagat, Jay Patel

Observations during Visit

• Students have problems in studying
• Police make false arrests of their parents thinking they are thieves
• Parents cease their schooling because of their financial problems
• Teachers are not frank with the students
• Their fathers consume alcohol and do nothing
• No proper meal is provided by the school
• Their teachers make demands for money
• Children do not disclose the problems they are facing in the schools – this is a crucial matter.

PROBLEMS AND SOLUTIONS discussed in session

Hasanen Bharti
Dustbins need to be provided to households and AMC should resolve the sewage problem. A chemical needs to be sprayed over the clogged water to prevent it from smelling.
Muzammil Pasha – IGNITE awardee
Teachers should not be allowed to punish children who are playing truant by threatening to make them clean the whole school for one week

Sarthak Shukla – IGNITE awardee
To prevent violence by teachers, they should be required to wear wrist bands which have a motion sensor and raise an alarm in the Principal’s office when a certain velocity is registered during the action of beating. See worksheet diagram.

Jenish Shah – IGNITE awardee
The quality of mid-day school meals need to be improved, for example handvo mixed with poor quality sabji, the food is rotten and has insects in it.
Bullying by teachers in schools is a problem.
Short children should not be made to sit at the back of the classroom as they can’t see the board

D. Keerthivasan – IGNITE awardee
Children who have to work to help support their family, finance future studies, for example group member met Aman whose father drinks alcohol, his parents are separated, and he has to work in the market selling vegetables, and earns Rs 150 per day. He studied until 6th standard and wants to continue.

SOLUTIONS – The government help children like Aman by stopping child labour and providing continued support for schooling.

Mutalliq and Md.Farook
Both propose garbage collection devices and training to residents in managing garbage disposal

Suresh Rameshbhai Manavadia
Identified the differences in the living conditions of a city and the countryside – see worksheet image.

Jayesh Mohanbhai, Ahmedabad
Situation in a municipal school – see worksheet image: teachers come late to class, food served has insects in it, children are asked to clean the water tank.

Kiran Patel
On his worksheet he has depicted three situations: on the left people throwing garbage into the road, in the centre the school food distribution system which is unhygienic, leading to insects getting into the food, and on the right the overcrowding on school buses.
Selections of worksheets from Group 5
Group 6 Nava Vadaj, Ahmedabad
Volunteers: Dhruvi Contractor, Aakash Patel
Leader???
Number of children/profile: 9 (5 from Ahmedabad, 2 from Tamil Nadu, 1 from Uttarakhand and Rajasthan)
Observations during Visit
- Lack of education
- Partiality between girls’ and boys’ education
- No playground for children
- Teachers administer corporal punishment for not doing homework
- Mid-day meal is not given at the school
- People are living in an unhygienic place
- Adults force their children to work in alcoholic places
- Small girls were doing labor work instead of studying
- Waste management problems

PROBLEMS AND SOLUTIONS Discussed in session

Maizbin from Ahmedabad (Aarzoo)
Many women working in the rubbish dump areas suffer from infections, and work with no protective wear such as gum boots, coats. Medical facilities should be provided for them.

Gulnaaz from Ahmedabad (Aarzoo)
She lives near a dump – it should not be located near housing areas.

Rammikash from Tamil Nadu
Two wheeler drivers should wear helmets and not use phones while driving.
Sahil from Ahmedabad
Government should have a policy to help slum dwellers gain employment to enable them to fulfil their basic needs.

Khushkumar Patel from Ahmedabad (Aarzoo) IGNITE awardee
- Many people have to share a gas cylinder – should be made available at a subsidised price to the poor.
- Smoke cleaning system – see worksheet diagram - smoke from the fireplace is absorbed by a sponge, then passed through water before passing out into the air.
- Gas cylinder has warning when close to empty – see worksheet diagram

Vasanth from Tamil Nadu – IGNITE awardee
- Regular water supply to be provided to slum areas for bathing, cooking and other house hold work.
- Manually operating a choppido is difficult, a small motor run by solar energy and with a speed regulator would help the slum dweller.

Samraddh from Uttarakhand – IGNITE awardee
No playground for children – they have an equal right to play as children in high society.

Rajat from Rajasthan (see image of worksheet for his ideas) – IGNITE awardee
- Lack of education - Government school only available till 8th standard. So only primary education is given to children.
- Garbage separation can be accomplished by a simple machine
- Ration system does not ensure regular supply of foods, so residents go hungry or have to depend on another source of food.
- Fuel for cooking is a problem that can be solved by alternative fuel sources such as solar energy, biogas.
- An idol maker told him that when he is painting with more than 2 colours, it is time consuming to change the bowls. A simple machine can be devised for this.
- The carrying of bags of plaster of Paris causes back pain – a hydraulic machine needs to be devised for this.

Darshrath from Ahmedabad
Fuel for cooking - pollution is created by burning of wood for preparing food, cooking gas should be provided.

Aayan, form 5
His family home is in danger of falling down. His father sells vegetables in the market. The government should help them get a new house.

Sarray, form 7
School vans are overcrowded – 21 students in one van. This should not be permitted, 2 vans are needed.
Rohit Manavadia, Gram Bharti, Amrapur, Gujarat
Rubbish bins need to have lids, and have segregated sections for different kinds of waste
Bicycle powered broom and rubbish collector – see worksheet.

Selected worksheets from Group 6
Group 7  Kalupur Railway Station and Jamalpur  
Leader Arihant Singh  
Volunteers:  L.J Commerce College Mr Rushil and Ms Rutvi,  
Teachers: Ms Bharti (from Aarzoo) and Mrs Pragna (from Gandhinagar School)  
14 children

Observations during the visits

- Firstly, we headed towards Kalupur Railway Station via ST bus stand with two vans. At and before boarding our vans, we introduced each other and discussed issues such as the definition of problems, how we detect problems, how we feel about them, how to talk with the people, what kind of situation they are facing, how to observe and record them, etc.
- Meanwhile students became familiar with each other. While travelling towards our first destination we discussed many things about our working and daily life problems which all we faced commonly.
- We reach Kalupur Railway station at 4:50 pm. Before we reached there, we faced a small traffic jam during which we got some ideas for solving them by discussing the use of an over-bridge, signal establishment, etc. After reaching our destination we found one clean and safe place on front of the main railway station.
• From that place, we all started our ideation by seeing and observing the activities in front of the railway station. There these small children started thinking and the volunteers helped them by questioning each student about what they are seeing.
• After dealing with some doubts and problems every student started discussing the problems and automatically the solutions emerged from the children which were then modified by the volunteers.
• Because of the security risks, we left and headed towards our next destination which was Jamalpur area near Sabarmati Bridge.
• We reached there about 5:54 pm and we all discussed what we are going to see in this area. We were lucky that the teacher from Aarzoo and one of the students live there and were able to guide us.
• In that area we watched and met with the people who are making the broomsticks, kites and ice-creams. Students were excited to see and ask various questions about what materials they are using, how much time they were taking to make a one product, and problems they are facing, etc.
• By that time darkness began to fall and lights were being switched on in the houses. After that hardly we took leave from the shops and made our way to the vans.
• Some people from Jamalpur started asking from where we were coming and for what purpose. One shopkeeper distributed chocolates to every student and invited them for another visit.
• Now the students were fully loaded with questions and problems in their minds. After returning to IIM the students were assigned with homework to research and rethink what they had seen and the problems observed.
• On the next day, the 19th, all gathered in the same KLMDC Conference room and started to draw and ideate their observations and problems they wanted to resolve.

PROBLEMS AND SOLUTIONS Discussed in session

1. Sukesh KBS- Andhra Pradesh (Ignite Awarded)
   Issues at the Railway Station:
   • Waiting rooms are needed
   • More seating at the front of the railway station is needed
   • Vehicles should not be allowed to park in front of the railway station
   • Underground parking is needed
   • A zebra crossing and footpath are needed
   • Security guards are needed for checking bags

2. Ketan Gupta- Aarzoo, Jamalpur
   In the vegetable market, the vendors carry kilos of vegetables which affects their backs and shoulders. A specially designed bag which supports their back is needed. An over-bridge for the traffic is needed to separate vehicles from pedestrians in the streets.

3. Gopal- Prayas, Vastrapur
   Multi-storey parking should be available to reduce congestion on the streets.
4, 5 & 6. Kalpesh, Ghanshyam & Vishal- Prayas, Vastrapur
Dustbins should be placed before each and every house and proper cleanliness should be maintained to reduce the waste and dirt in the streets.

7. Sarfaraj- Behrampura
It is very dangerous and unsafe for train passengers to stand at the open doors of the train; so there should be a helicopter above each and every train.

8. Shubh- Chennai (Ignite Awardee)
A modification to the project to have spikes in the road when a signal turns red – the police are to have a remote sensor to control the spikes and allow emergency vans, ambulances to pass through.

9. Yatharth- Uttarakhand (Ignite Awardee)
When a sole comes off a shoe, a screw device will be a temporary repair solution.

10. Yash Varadhan- Kolkata
New renewable energy device as an alternative to solar panel

11. Diptanshu- Rajasthan
A modified walker with a seat and a carry bag, and a bell for handicapped people.

12. Nikita Thakor- Bone Primary school, Gandhinagar
A horn sensor should sound every time people throw garbage outside their homes and elsewhere, instead of using a dustbin.

13. Chaaya Thakor- Boru Primary School, Gandhinagar (Ignite Awardee)
Noise pollution can be mitigated by having a gadget which absorbs noise. Dustbins connected with a rope should be placed everywhere in towns and villages to reduce the levels of garbage on the streets.

14. Meshwa Prajapati- Boru Primary School, Gandhinagar
The rickshaw congestion at the railway station can be resolved by having sensor locks which stop the rickshaw if it is there without any reason.
Problem

I faced the problem that the shape of our stadium showed down at some typical places, where we are
inclined to reduce that what is built on our favourable to replace it, then I became very uncomfortable to
with one of our inanimate, yesterday),
have observed that there was some two minutes
away station is at other public places because of
it found present long residence often goes like

1. We travelled to the area, we had found a building
shape (for drinking water) of those fell down due to
water and a lot of tones, then I was a major
figure due to fragile base of it and makes
2. I observed that there is a severe parking
a railway station & they cannot create a
safety due to fragile base as it make unsafe
passengers so that in any other problem.

- We can make safe, a safe
- There is more railway station near our station more
- And there is a heavy pollution like noise
- In traffic caused no some accident occur

1. To solve this people for nothing they is no foot path
- Road, it is no enough walking path to walk
- To solve this people may not come out of it
- People moving on the road
- Adjacent building to seriously the railway station
- People can suffer from this
- People will not allow to keep before station

- Solution to this
- Parking system, for a traffic signal so we cannot
- But the walk and cross the
- For people walking, if we consider the
- They should be some people will do
- For parking

Title: Final Sherin
Group: Group 7

Diptanshu Makwana

Sizohi