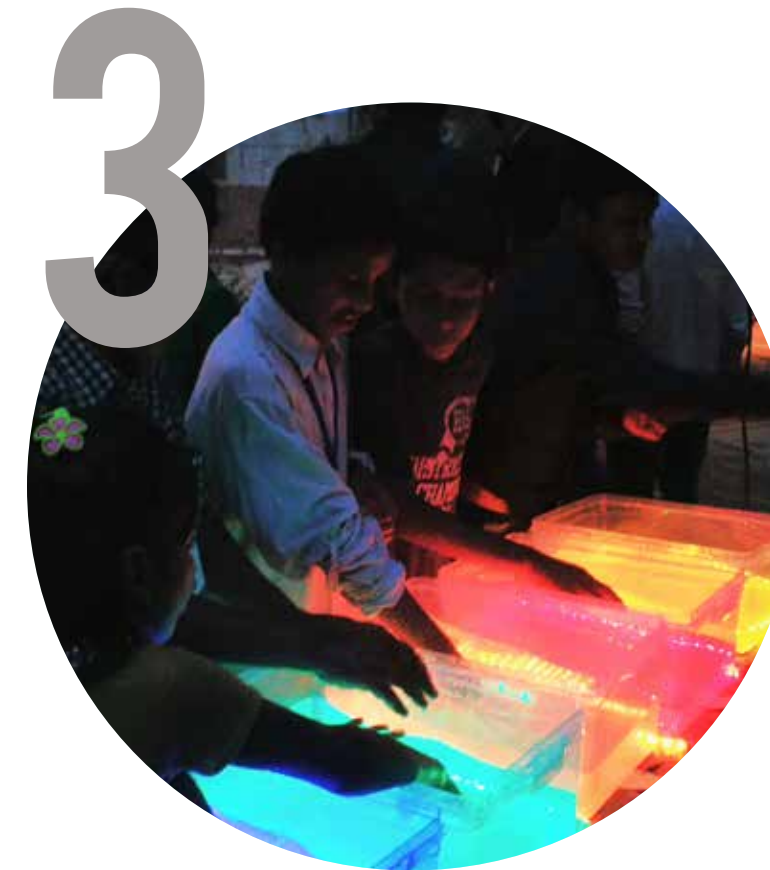*Mykhailo Pylka*
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THE RESOUND PROJECT
Interaction Design

Client: Music Basti
2015

A light and sound interactive installation for Music Basti's annual concert, ReSound

ABOUT THE CLIENT

Music Basti is a grassroots level NGO that connects at-risk children with musicians, aiming to nurture confidence through a creative and joyful music-learning experience. The program teaches a mixture of musical training, songwriting and performing.

All of the program's students live either in slum accommodation or in residential homes that give them shelter from a life out on the street. None of them have access to quality education, arts or music training. Since 2013, ReSound has trained over 100 teachers, worked directly with over 900 students, and created 28 original songs.

THE BRIEF

For their annual music concert, Music Basti requested us to create an experience for the students that-

• embodied the spirit of Music Basti

• went beyond their stereotypical understanding of music

• tested their creativity

• aroused curiosity and wonder

• brought joy

THE CHALLENGE

To create a portable interactive installation with a budget of under ₹2,500 ($35) in 2 days.

THE OBJECTIVE

Designing an interactive installation catering primarily to children between the ages of 6-16 years with no prior experience interacting with technology, we had to fulfill a number of criteria to ensure a successful user experience, with a key focus on intuitive play.

HOW DO WE BUILD AN ENGAGING EXPERIENCE FOR CHILDREN THROUGH MUSIC?

MUSIC

APPROACHABLE

CURIOSITY

INTUITIVE

PLAY

SIMPLE

TACTILE

THE CHALLENGES

The installation had to be set up in the middle of a park with no direct power source, and had to function non-stop between 5 - 10 PM, Therefore, the following factors had to be taken into consideration when tackling these challenges.

CRITERIA FOR INSTALLATION SETUP

APPROACHABLE

INEXPENSIVE

PORTABLE

CHILD-FRIENDLY

QUICK ASSEMBLY

TECHNOLOGY + RESOURCES

To save cost, we decided to work with resources readily available in our lab. To save time we had to rely on a turnkey model versus building and coding interactions from scratch. So we rummaged through our boxes (and kitchen!), and found the following-
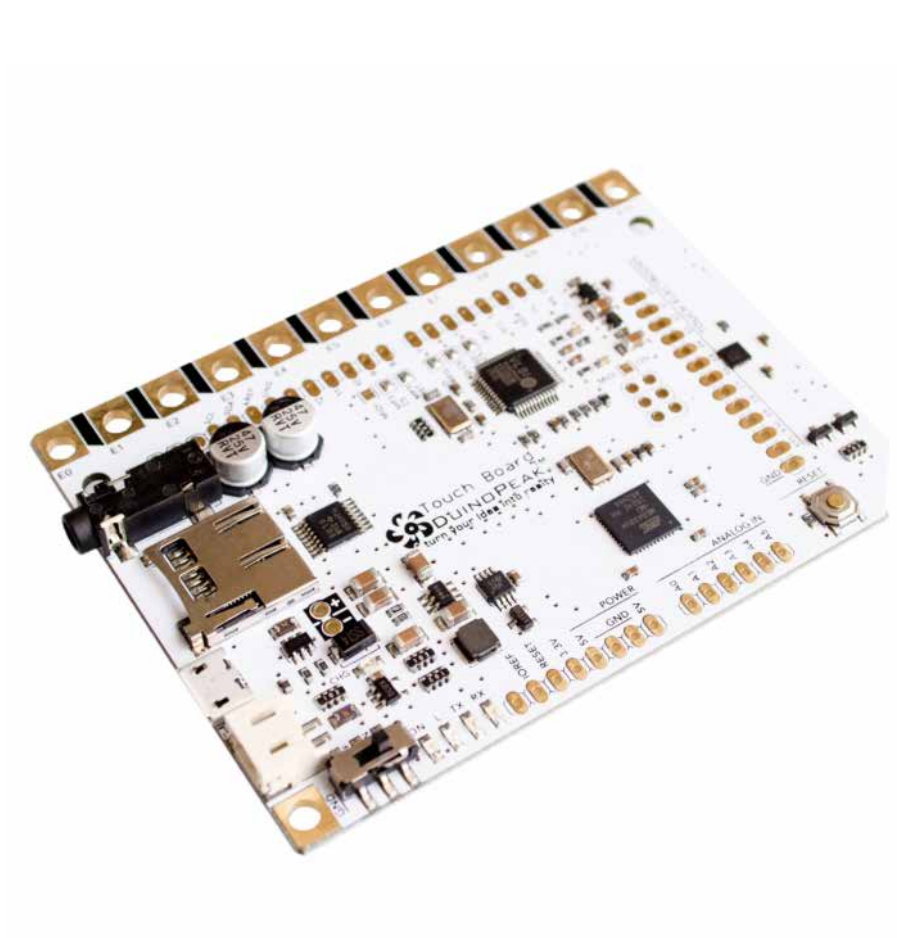
Bare Conductive Touchboard

A powerful prototyping tool which combines Arduino compatibility with robust capacitive touch, distance sensing, an MP3 Player, MIDI functionality and a LiPo battery charger, enabled with 12 touchpoints.

PROS:

• portable
• easy assembly
• 12 touchpoints for all musical notes

Water

PROS:

• Good conductor of electricity
• Well spread capacitive touch surface
• Flexible, creative interactive element due to the properties of depth along with surface area
• Familiar element known to children
• When exposed to a light source, increase surface area of the light

RGB LED Strips

PROS:

• Lightweight
• Emit strong light
• Sticky surface allows easy application
• Several RGB modes, can be programmed by Arduino to produce multiple hues of same colour

Aluminium Tape

PROS:

• Good conductor of electricity
• Tape form allows easy application
• Stronger than copper tape
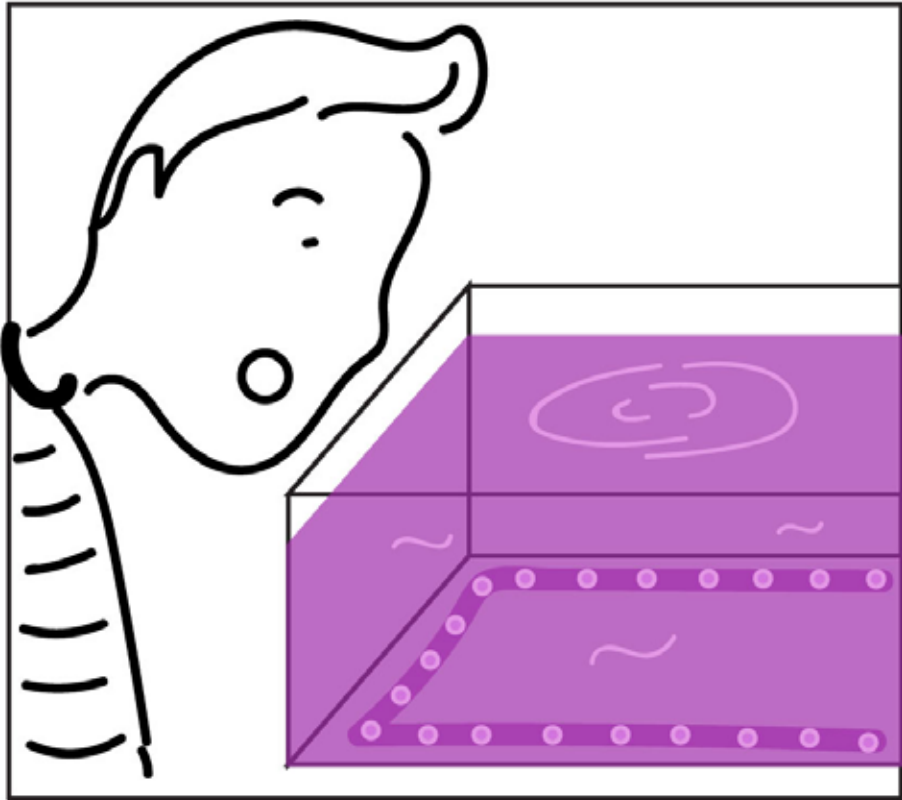
Music Basti | Concept

Creating a storyboard in the context of the event and environment of the installation helped us to envision the possible user journey of the child's interaction with it
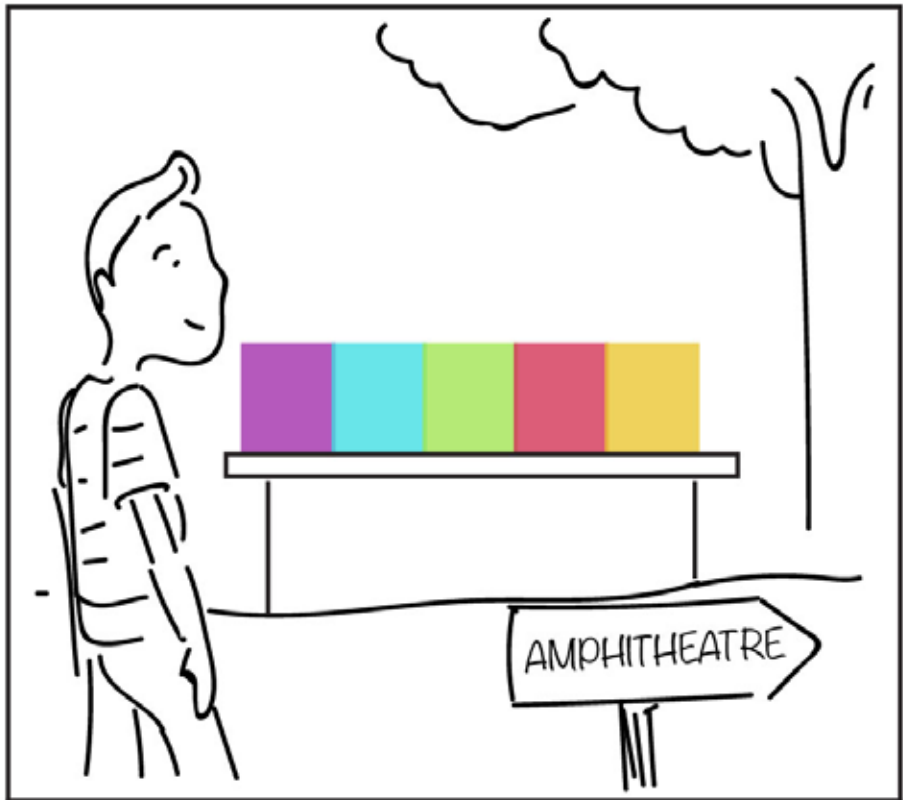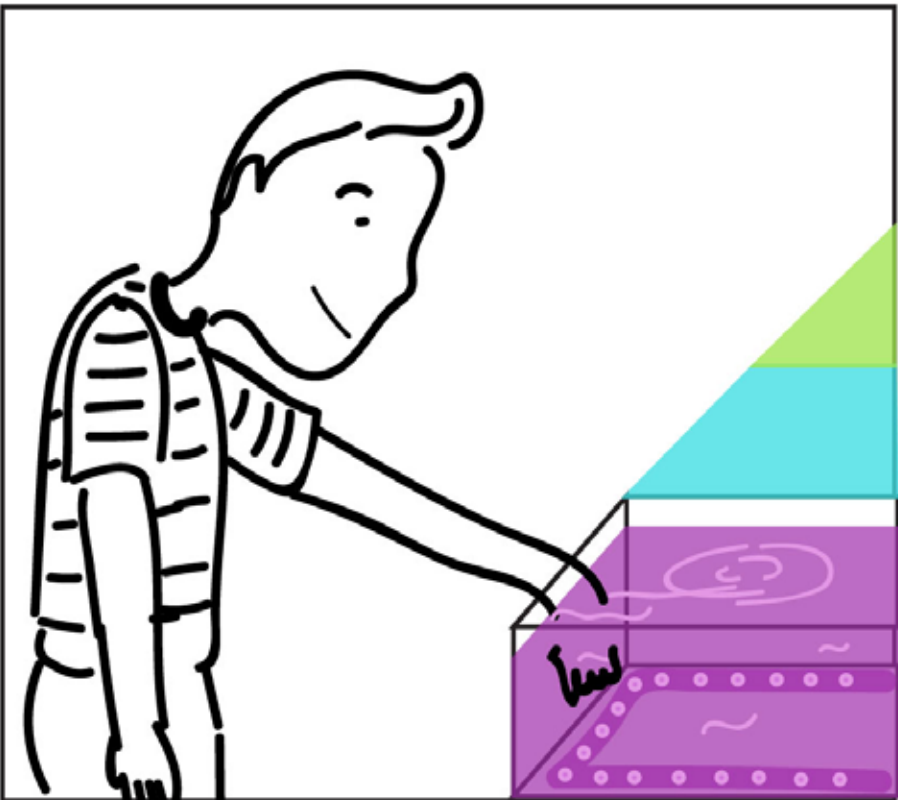
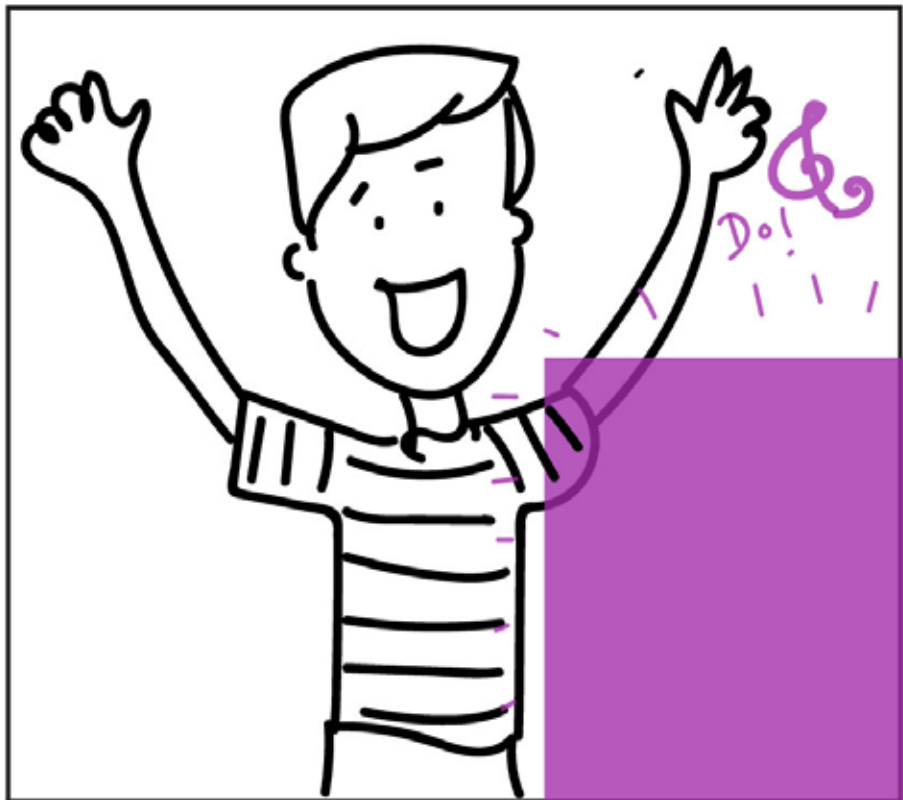1. Rahul approaches the installation while on his way to the amphitheatre.

2. The glowing neon colours of the boxes grab his attention.

3. He comes close to inspect the rainbow-hued boxes and notices they are filled with water.

4. Out of curiosity, he reaches out for one of the containers and wades the water contained in it.

5. Touching the water plays a musical note!

6. Excited by the sound, he touches the other water containers one after the other, and notices he can play multiple notes when using both his hands.
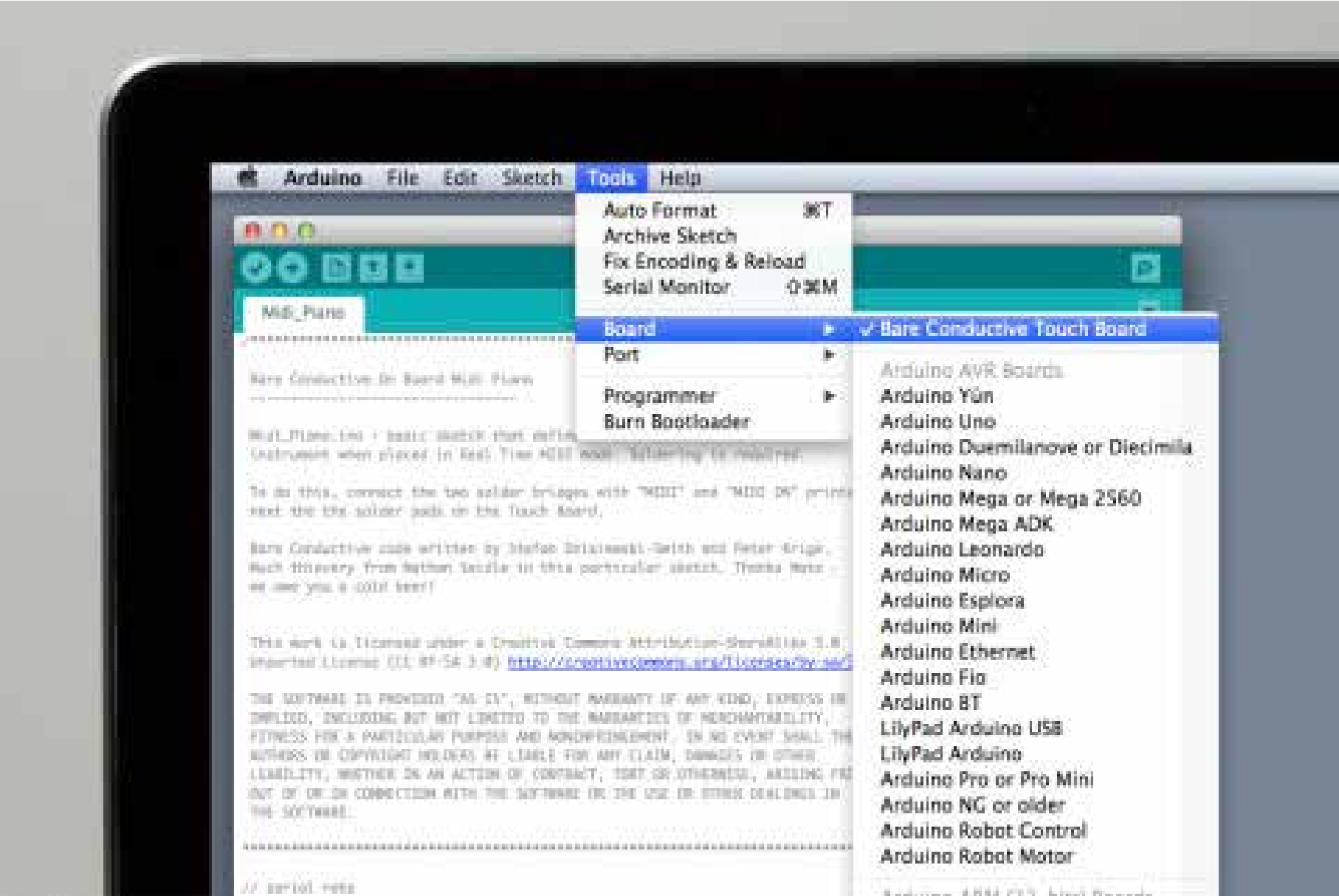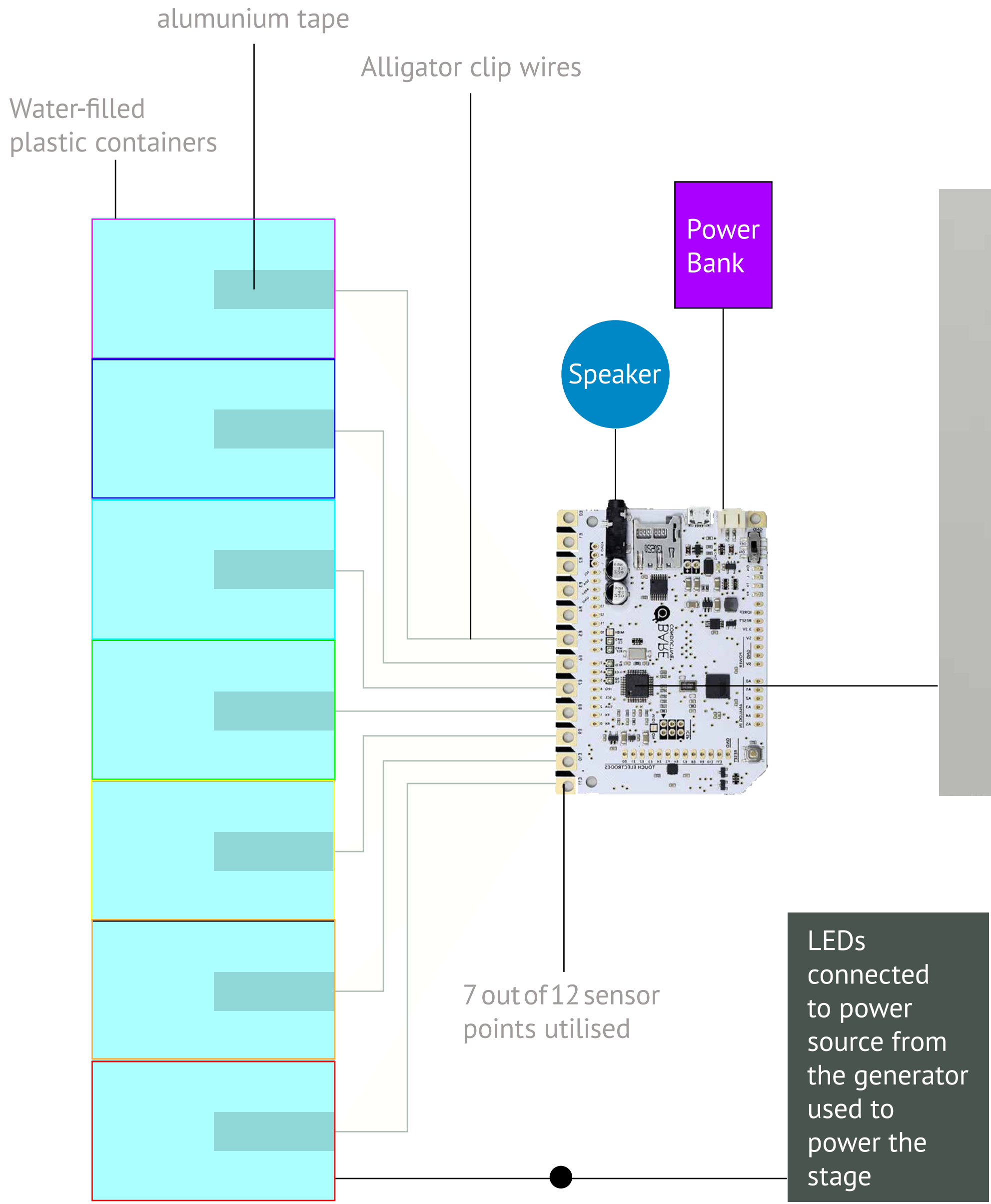
7. Priya, while heading to the amphitheatre, notices Rahul and starts interacting with the installation by imitating him. They try to coordinate their movements to create a tune.

8. Soon, the installation is surrounded by curious kids eager to participate in playing with the installation and make music together.

SYSTEM ARCHITECTURE

- Each container is lit in seven distinct colours to denote the seven musical notes

- The user touches the water in a particular container which, through the aluminium tape underneath and via the alligator clip wires, activates the sensor on the corresponding touchpoint

- The touchpoints have been assigned the midi notes through Arduino's Touch Board library

- The sound of the Midi note is produced from the speaker

- A single user can play up to two notes with their hands, while multiple users can interact with the containers to play chords

alumunium tape

Alligator clip wires

Water-filled plastic containers

Power Bank

Speaker

7 out of 12 sensor points utilised

LEDs connected to power source from the generator used to power the stage

PROOF OF CONCEPT

Image 1
To test the functionality of the installation, we made a rapid prototype using two water-filled plastic cups with aluminium tape underneath, attached to the sensors points via two alligator clip wires

Image 2
We then employed the same process to a bigger plastic container filled with water to test the effectiveness of the capacitive touch reaction over a larger surface area

Image 3
Proceeding to test the same with all seven boxes to employ all seven notes of the octave
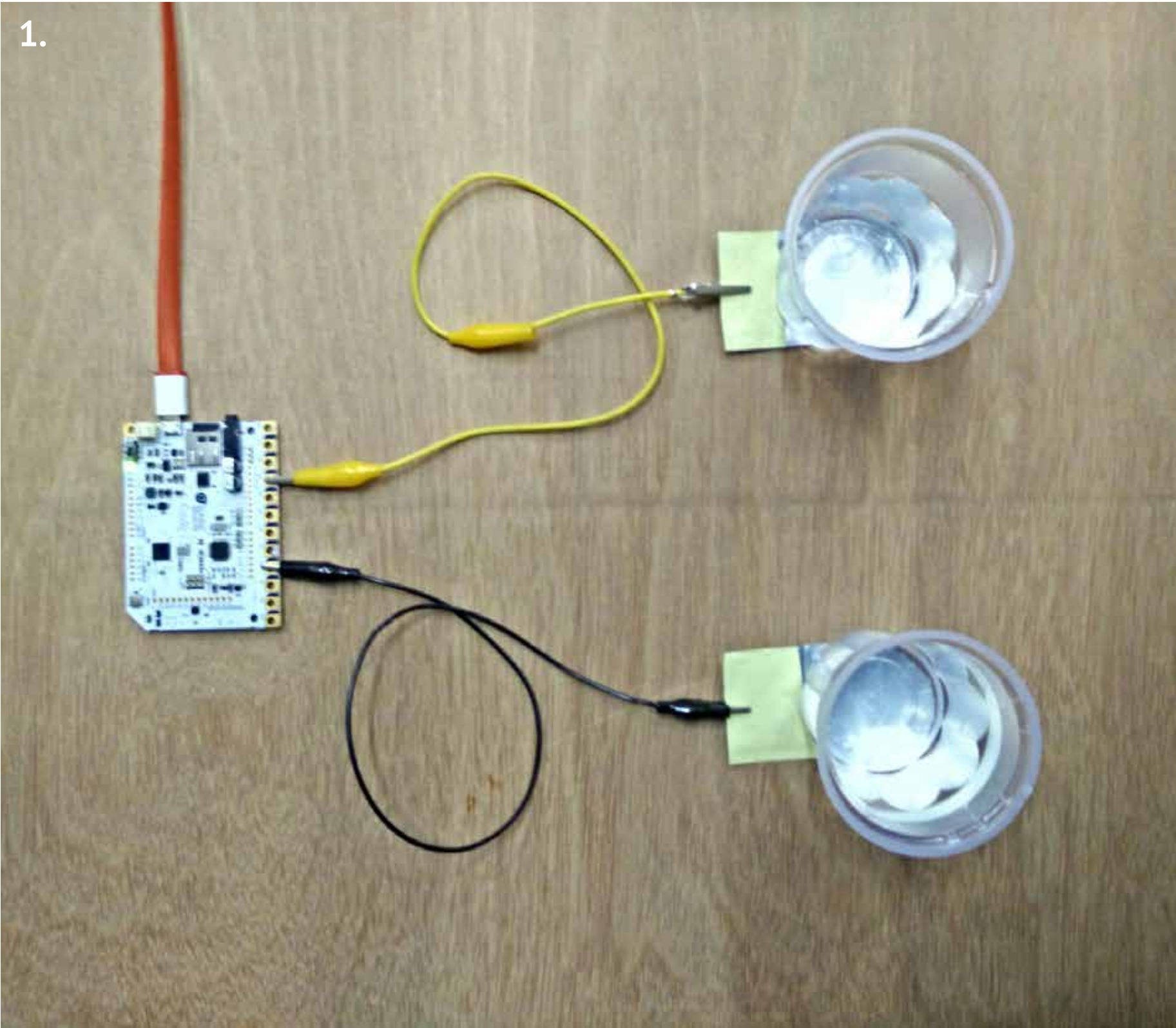
SETUP

Due to all the materials being lightweight and portable, and the water readily available from the park watering pipe, assembling the installation on-site took only one hour.

The challenge lay in connecting the LEDs to the generator power. An electrician was brought in to extend the wires from the hanging bulbs to the installation.

FINAL INSTALLATION

OBSERVATIONS

• The installation placed right outside the amphitheatre so that everybody who came to attend the concert got the chance to interact with the installation.

• The RGB LEDs proved bright enough to be visible in the evening, but came into full effect once the sun had set by 7 PM.

• While the children were initially hesitant to touch the installation in the presence of adults, once a visiting group was encouraged to play with the water, they invited their friends to show them their discovery, and after some time all children began taking the initiative to come and interact with the installation.

• The installation also grabbed the curiosity of many adults and everyone from the parents to grandparents, after initial inhibitions, were observed interacting with the installation.

REFLECTION

It was interesting to note during the course of running the installation that some people wearing thick rubber slippers could not interact with the installation as standing on the ground in the park created a sort of earthing that disabled the capacitive touch for them. Once they removed their slippers, the capacitive touch started working for them again.