SBSI 2021 FINAL PROJECT REPORT
GU425

SWACHH BHARAT STUDENT INTERNSHIP

Submitted by

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Under guidance of

Dr. Marlon Sequeira

Assistant Professor of Electronics

School of Physical and Applied Sciences

Goa University

2021-22

DECLARATION

We have carried out the SBSI 2021 Internship under the guidance of –
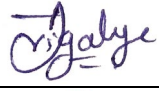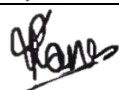
Dr. Marlon Sequeira,

Assistant Professor of Electronics,

School of Physical and Applied Sciences

Goa University.

The contents of this report are original and are reporting the 132 hours of work carried out by us during this internship.

Roll No.	Name of the Interns	Signature
20P0360001	Satyam Asolkar	
20P0360004	Shawn D'Souza	
20P0360005	Nigel Fernandes	
20P0360008	Vivek Jadhav	
20P0360012	Shubham Otavnekar	
20P0360015	Shriraj Prabhudesai	
21P036005	Ankita Nigalye	
21P036006	Shailesh Nishad	
21P036009	Tukaram Rane	
21P036014	Ruthik Shanbhag	

CERTIFICATE

This is to certify that the following SBSI 2021 Interns –
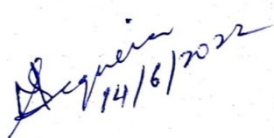
1. *Satyam Asolkar*   *Roll No. 20P0360001*
2. *Shawn D'Souza*   *Roll No. 20P0360004*
3. *Nigel Fernandes*   *Roll No. 20P0360005*
4. *Vivek Jadhav*   *Roll No. 20P0360008*
5. *Shubham Otavnekar*   *Roll No. 20P0360012*
6. *Shriraj Prabhudesai*   *Roll No. 20P0360015*
7. *Ankita Nigalye*   *Roll No. 21P036005*
8. *Shailesh Nishad*   *Roll No. 21P036006*
9. *Tukaram Rane*   *Roll No. 21P036009*
10. *Ruthik Shanbhag*   *Roll No. 21P036014*

have satisfactorily completed 132 hours of activities related to Swachhata.

During this internship period, it was noticed that the interns acquired and enhanced the following skills –

1. *Waste Management*
2. *Energy Management*
3. *Time Management*
4. *Sanitation & Hygiene*
5. *Creativity*
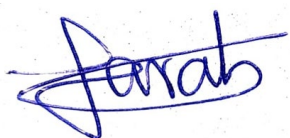
This report is being submitted to SBSI 2021 University Nodal Officer, in partial fulfilment for the completion of the SBSI Course during the academic year 2021-2022.

Dr. Marlon Sequeira
(SBSI Mentor)

Dr. Pranav Naik
(SBSI Co-ordinator)
(SBSI–Nodal Officer)

(Programme Director)

ACKNOWLEDGEMENT

Expressing gratitude is a tough undertaking, and it is hard to do honour to everyone who contributed to the project. We would like to offer our heartfelt appreciation to everyone who gave us direction, support, and inspiration during the course of this project; we are profoundly grateful to everyone.

We wish to express our sincere gratitude to our SBSI mentor Dr. Marlon Sequeira for his valuable guidance.

We would like to thank our Programme Director Dr. Jivan Parab to allow us to make full use of the available facilities.

INTRODUCTION

The government has launched an initiative to keep the country clean and hygienic, and this internship programme is part of that effort. This internship programme aims to involve youngsters across the country in sanitation-related activity, raise general awareness about cleanliness, and solidify the people's movement part of the Swachh Bharat Mission.

Mahatma Gandhi envisioned an India that was not only free, but also clean and advanced. Mahatma Gandhi achieved independence for Mother India. It is now our responsibility to serve Mother India by keeping the country tidy and clean.

This is related with Prime Minister Narendra Modi's demand on October 2, 2014 for each citizen to contribute 100 hours to Swachhata through the year.

The initiative is designed to not only give students with an excellent learning experience, but also to further the government's ongoing efforts to ensure a clean and healthy India.

This Internship Program Aims to –

- ➢ Develop their skills and orientation for sanitation related work.
- ➢ Bring youth across the country an opportunity to make a significant contribution to the Swachhata revolution.
- ➢ Integrate youth in the community service in rural areas in the sun up to the 150th birth anniversary of Mahatma Gandhi.

Students from Goa University's School of Physical and Applied Sciences, with guidance from our SBSI mentor, Dr. Marlon Sequeira, and Nodal Officer, Dr. Pranav Naik. We have accomplished at least 132 hours of service toward making India a cleaner country, putting into practise the mantra "when there is both inner and outer cleanliness, it approaches divinity." We completed the internship completely dedicated and enthusiastically. There have been many challenges along the road, but we can proudly claim that we gave it our all to make Goa even more beautiful by employing numerous new ways.

ACTIVITIES DONE

THEME	ACTIVITY	PLACE	HOURS
Waste Management	1) Encouraging paperless work through digital posters 2) Campus/Dept. Waste Segregation 3) Making paper bags 4) Distribution of paper bags 5) Making of posters 6) Banning use of plastic through posters	Goa University	15 12 4 6 10 4
Energy Management	1) Literature Survey 2) Audit of building wise monthly use of electricity on the university campus	Goa University	20
Sanitation & Hygiene	1) Clean surroundings 2) Making of posters 3) Conveyed the importance of cleanliness with the help of posters	Goa University	5 10 4
Education Outreach	1) Hands on training on creating scientific exhibits/experiments and showcasing their significance in daily life.	Goa University & Dnyanprassarak Mandal's College and Research Centre, Assagao, Bardez – Goa	20
Greenery	1) Vermicomposting/Composting 2) Seed collection, raising and maintaining a nursery	Goa University	10 12
	TOTAL		**132**

WASTE MANAGEMENT

Waste management is an important aspect of environmental conservation. Its goal is to offer sanitary, efficient, and cost-effective solid waste storage, transportation, and waste treatment or disposal without contaminating the atmosphere, land, or water system.

Use of email, WhatsApp for communication, going paperless by utilizing electronic document management systems, helps cut down on deforestation and pollution leaving more trees to do the work of absorbing carbon dioxide and slowing down global climate change.

Planning and Execution:

To assure waste management at our level, we attempted the following solutions:

1. Encouraging paperless work through digital posters.
2. Campus or Department Waste Segregation.
3. Making of paper bags.
4. Distribution of paper bags.
5. Making of posters.
6. Banning use of plastic through posters.

1) Encouraging paperless work through digital posters

What are the benefits of
going paperless?

Make documents and files easily accessible.
File sharing with clients and employees is easy.

Increase security of your business data.
Digital documents are stored on secure off-site servers.

Improve your customer service.
Provide timely service with quick electronic document search.

Increase productivity of your employees.
Employees spend less time handling documents.

Enable employee flexibility.
Virtual work becomes a possibility within the office.

Save storage space.
Store regulatory records and documents virtually.

Protect your company from disasters.
Documents are safe from fire, theft and any other disasters.

Save on printing and equipment costs.
Spend less on mailing, printer equipment, pens and paper.

Become a sustainable business.
Attract customers who value eco-friendly approaches.

Outcome:

➢ There are many benefits to going paperless, from saving resources to boosting security.

➢ With global warming and excessive CO_2 polluting the environment, the world has begun to see the value in going "green" and reducing our carbon footprint.

➢ Choosing a paperless office, schools, and colleges not only decreases the number of trees and reduces carbon footprint in terms of producing paper products, but it's significant for contributing to a sustainable society.

2) Campus or department Waste Segregation

Waste segregation is the sorting and separation of waste types to facilitate recycling and correct onward disposal. When waste is sorted correctly, it can save our money.

Outcome:

- ➢ Waste segregation is required by law since recycling is significantly easier. Waste segregation effectively means that less waste goes to landfill, which is less expensive and better for people and the environment. Separation is also vital for public health.
- ➢ Allow us to recycle all waste products that might assist conserve energy and keep pricing under control.

3) Making of Paper Bags

Making and Distribution of Paper Bags in Villages as Part of Waste Management Extension Activities

Outcome:

➤ We made around 130 paper bags.

➤ Paper bags may be handled and reused repeatedly. They are recyclable as well as reusable. Waste papers are also biodegradable, so they degrade effectively and do not accumulate on disposal sites.

➤ Because of the amount of time and effort that marketers spend preparing an appealing paper bag for their products, paper bags have evolved into something of a style and grown-up toy in the current market.

➤ Stores may cut prices by removing plastic bags, allowing customers to save thousands of rupees each year. Plastic bags are not biodegradable, and when they litter, they contaminate the seas, rivers, farmlands, cities, and neighbourhoods. Bans eliminate bags, resulting in fewer trash and pollution.

4) Distribution of Paper Bags

Distribution of Paper Bags in Villages of Saligao and Anjuna

Mardol

Mardol

Goa University Canteen

Mardol

Outcome:

➢ We made several paper bags out of newspaper and delivered them to sellers at stores.

➢ These paper bags were distributed in various locations and businesses.

➢ The goal of this distribution concept was to make use of less plastic bags as possible, which are not biodegradable, and instead utilise paper bags, which are recyclable and biodegradable.

5) Making of posters

Outcome:

➢ All of the posters above communicate a message to everyone about waste management.

6) Banning use of Plastic through Posters

Outcome:

➢ We had designed some posters out of papers and placed these posters at places where there was a need to capture a moving audience with a message.

➢ The motive behind this idea was to engage the target audience, clearly convey the right information and appeal to the aesthetic interests of that audience.

ENERGY MANAGEMENT

Energy management is the process of measuring and optimising energy consumption in order to reduce energy consumption in a workplace. There are a few steps to the energy management process: Continuous data collection and analysis, finding ways to enhance energy efficiency by optimising equipment schedules, set points, and flow rates.

Cycling is one of the most straightforward methods to minimise one's carbon impact. Reducing or eliminating your automotive trips is a wonderful strategy to minimise your carbon footprint, and studies suggest that it does have an effect.

We prepared some posters on energy management and set them in areas where there was a need to grab a moving audience with a message.
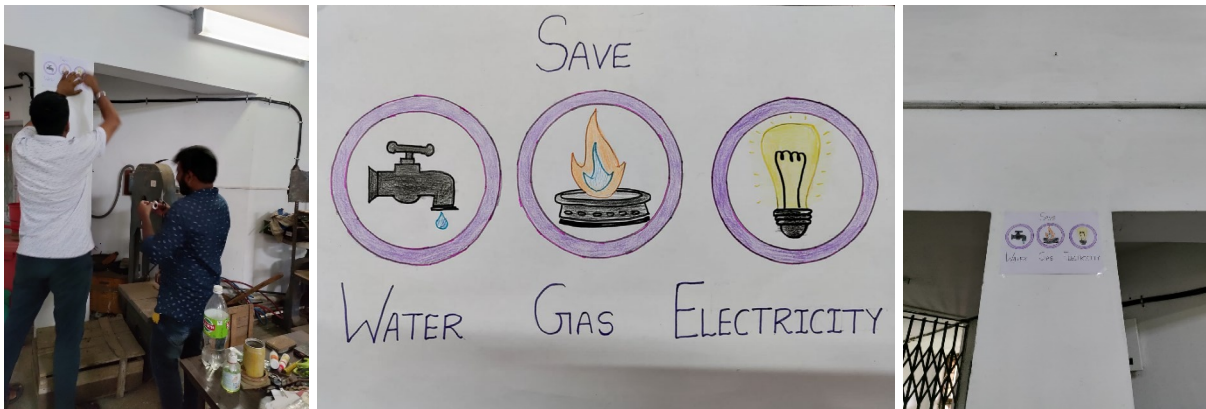
Outcome:

➢ Lowering the amount of usage of bikes/cars will lower the usage of petrol/diesel and in reverse, it can help to reduce carbon footprint.

➢ The Bicycle is a good alternative to driving cars or bikes. It will not only help us reduce pollution but also will help to improve health.

➢ When possible start using cycling in order to avoid carbon emission completely. It can be drastically reduced if we start group cycling. We must also remember to ride our bikes carefully, as this is how we can reduce our carbon footprint for a brighter future.

➢ When you consume less power, you reduce the amount of toxic fumes released by power plants, conserve the earth's natural resources and protect

ecosystems from destruction. By taking steps to reduce your energy intake, you'll contribute to a healthier and happier world.

➢ The posters above communicate a message to everyone about energy management.

We have done a literature survey on energy management and energy audit from top 100 universities in India. We have carefully studied the public domains documents of these universities and formed procedure to be implemented in our university on the same.

We were not able to do the energy audit of building wise monthly use of electricity on the university campus but we successfully completed the literature survey.

The link to the literature survey that we conducted is provided below:
https://docs.google.com/document/d/1UK_JTR2c3FjMUvIy-NxeAsjmEde5yCnQ/edit?usp=sharing&ouid=116363913376576902325&rtpof=true&sd=true

SANITATION AND HYGIENE

Sanitation includes more than simply toilets; it also includes the facilities, habits, and services that help to avoid illnesses caused by contact with human waste. Hygiene refers to actions that promote cleanliness and good health.

Health and cleanliness are essential components of a healthy lifestyle. Being healthy should be an integral component of our entire way of life. A healthy lifestyle can help avoid chronic diseases, which are long-term ailments. Feeling good about yourself and caring for your health are essential for your self-esteem and self-image.

We evaluated our possibilities and decided that we should use artworks to educate people about the significance of health and hygiene.

Planning and Execution:

To assure sanitation and hygiene at our level, we attempted the following solutions:

1. Cleanliness drive in Goa University.
2. Conveyed the importance of cleanliness with the help of posters.

1) Cleanliness drive in Goa University

Before

After

Before

After

Outcome:

> ➤ It contributes to the cleanliness of our environment.

> ➤ Keep us safe from diseases, infections, water-borne illnesses, and pollution.

> ➤ Improves our health and way of life.

> ➤ It makes our streets, highways, villages, and cities cleaner.

> ➤ Contribute to the reduction of pollutants in the soil, air, and water.

> ➤ Enhances the attractiveness of the region and surroundings while creating a feeling of elegance in the residents.

2) Making of posters
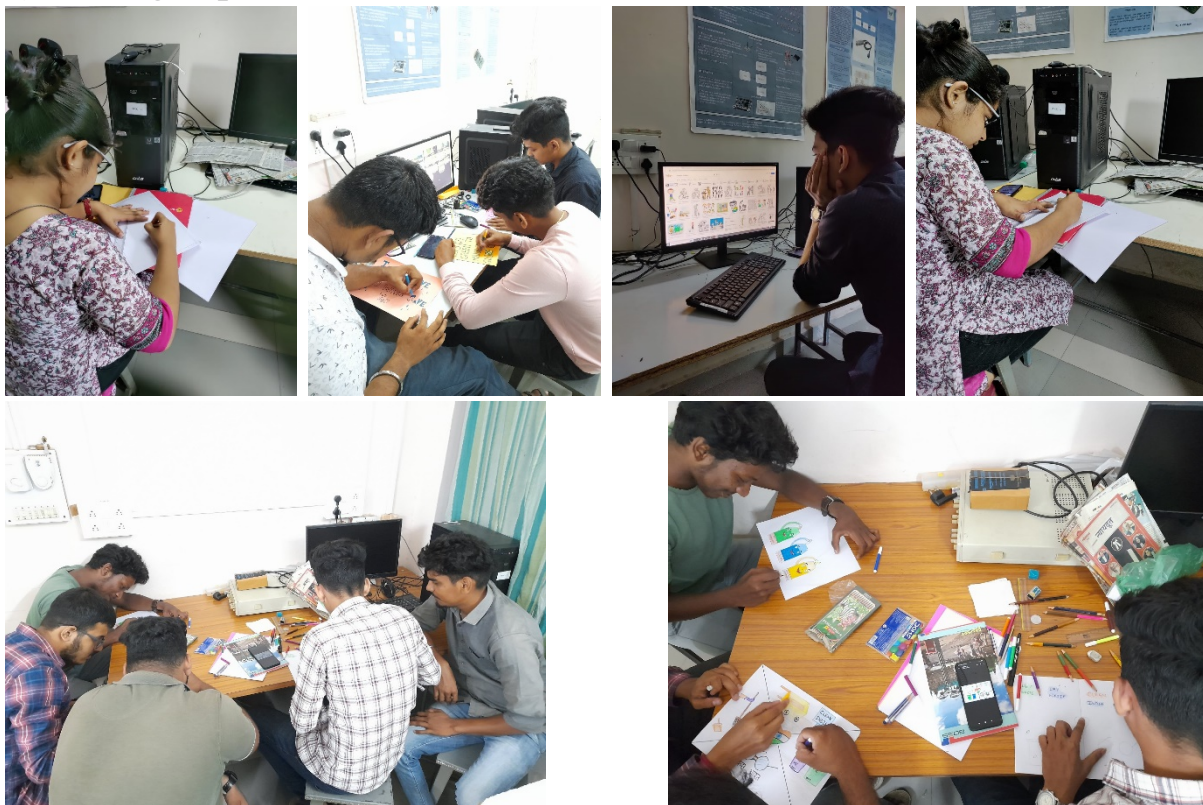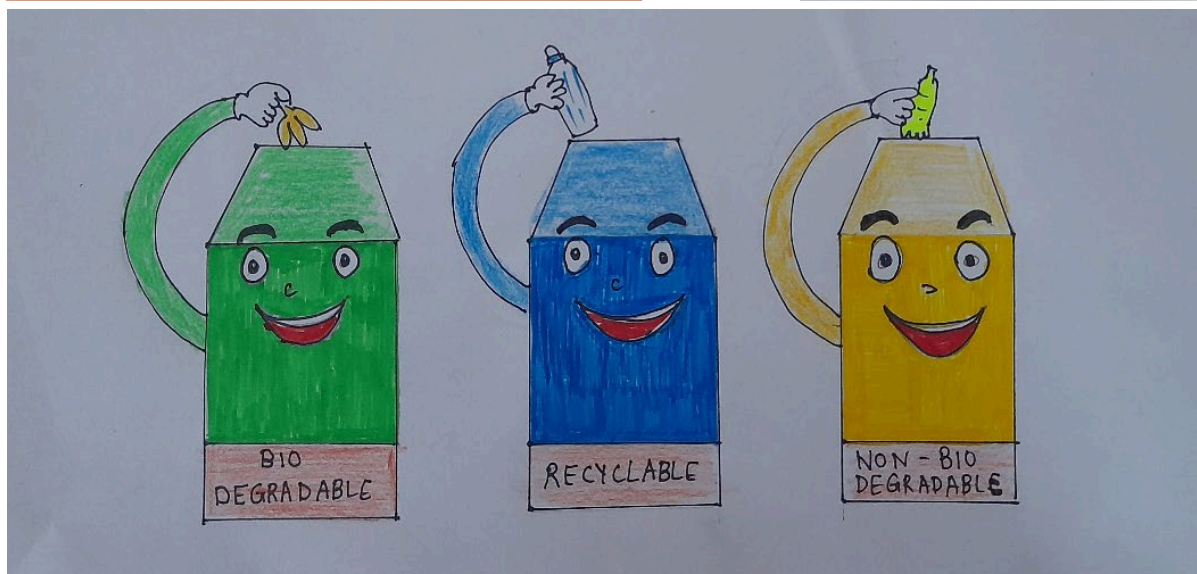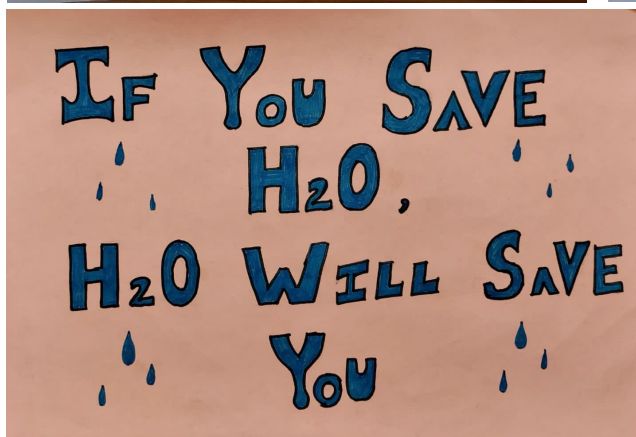
Outcome:

➤ All of the posters above communicate a message to everyone about hygiene and cleanliness.

3) Conveyed the Importance of Cleanliness with the help of Posters

Outcome:

➢ Maintaining the cleanliness and order of our building and surroundings.

➢ It aids in pollution reduction.

➢ Cleanliness is related to hygiene and illness prevention in several ways.

➢ Cleanliness is necessary for a healthy and disease-free lifestyle.

➢ Cleanliness is also important for our social standing and reputation.

➢ People should be educated on the significance of cleanliness and hygiene.

EDUCATION OUTREACH

Education Outreach Program is a live technical and non-technical courses to increase your brilliance and conduct engaging and enlightening sessions for individuals who may strike us with their desire to attain the top.

Planning and Execution:

To assure education outreach at our level, we attempted the following solutions:

1. Hands on Training on creating Scientific Exhibits or Experiments and showcasing their significance in daily life

We exhibited some of the scientific experiments as listed below:

1. Electronic Soil Moisture Sensor to Conserve Water

Water is a precious resource, and water scarcity is a major issue in many regions of the world. People who waste water, such as watering a garden or using sprinklers on their lawn when it has recently rained or the soil is already damp, might worsen the situation. How can you contribute to water conservation and waste reduction? One method is to construct an electronic soil moisture sensor. This project will show you how to construct a circuit that detects whether the soil is moist or dry.
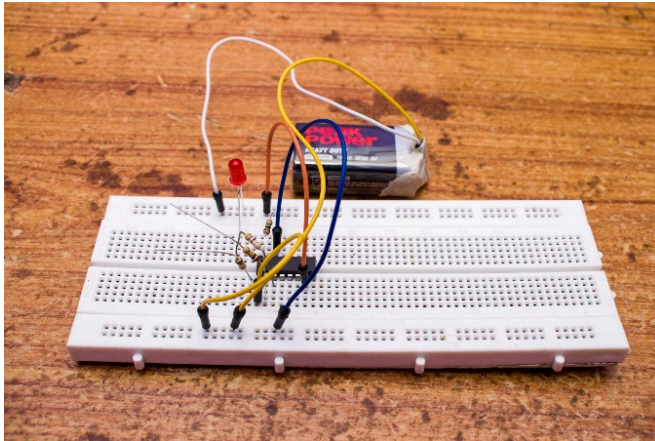
2. Water Level Indicator

The water level indicator circuit is made up of a transistors, resistors, LED's and a buzzer that detects overflow or excess water in the container. When the water reaches the maximum limit, the LED flashes with a buzzer sound to indicate that it is time to stop pouring or filling water.


3. Amplify a Smartphone

This simple DIY phone amplifier and stand can ensure that everyone could hear the music. It was also a fab way to learn about sound waves, so yes we explored the science of sound too. It is turning a fairly omnidirectional speaker (on the bottom of the phone) into a directional antenna. It is "directing" the sound towards the listener rather than the table's bottom.

4. Circuit to Detect Ripe Produce

Consider inspecting hundreds of apples growing in a field or strawberries going down a conveyor line ready for packing. It suddenly becomes much more difficult to do it manually! What if a device could choose and sort your produce? To detect Ripe Produce by building a circuit that can differentiate between two colours.
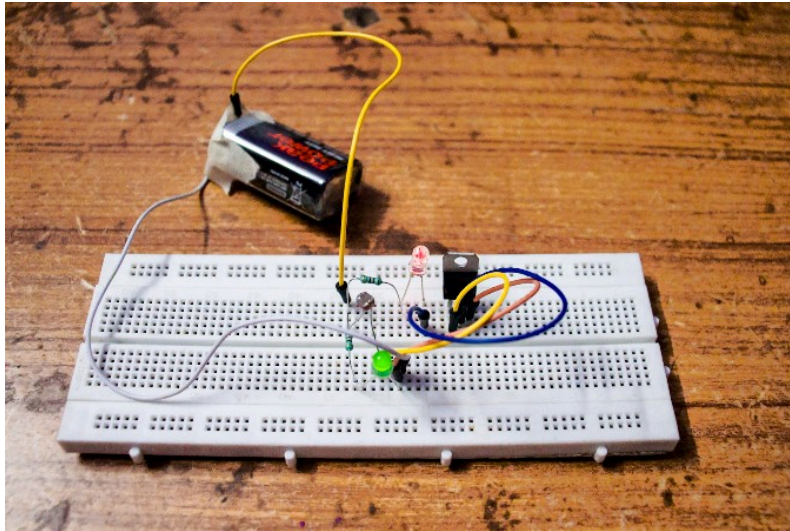
5. Infinity mirror

An infinity mirror, with built-in lights that make the mirror look like a deep tunnel with no end. Some light escapes through the front mirror and into your eye when an LED is sandwiched between the two mirrors. The rest is reflected back off the rear mirror, then into the front mirror, and so on infinitely - hence the name. However, because a small amount of light escapes each time, each consecutive illusionary LED you see will appear a little dimmer, until they eventually disappear - you can't genuinely see an infinite number of LEDs.

We also showed them the LED driver circuit. It is an electrical circuit used to power a LED. The circuit must provide sufficient current to light the LED at the required brightness, but must limit the current to prevent damaging the LED.
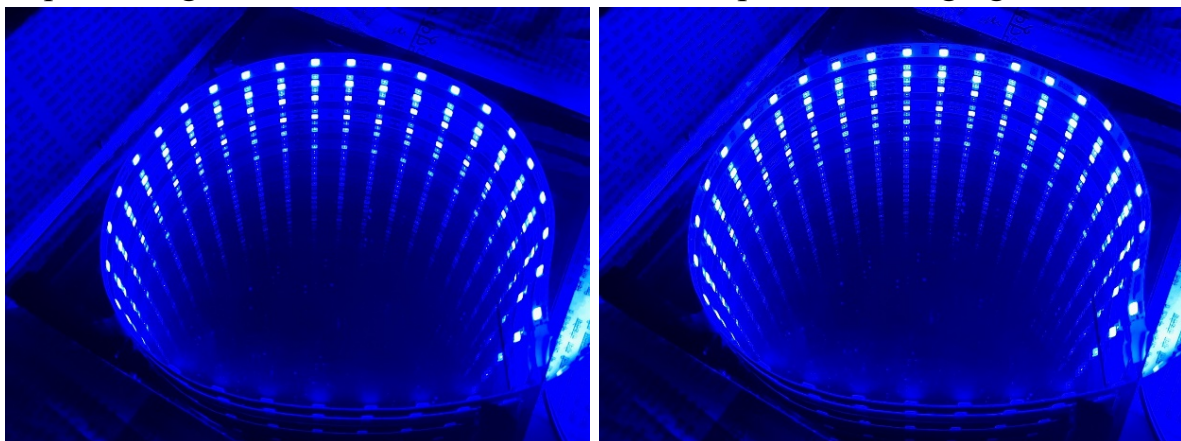
GREENERY

In this project, we used vermicompost as organic plant manure. Vermicompost is the end result of a decomposition process in which various species of worms, typically red wigglers, white worms, and other earthworms, decompose vegetable or food wastes, bedding materials, and vermicast. Vermiculture is the process of raising worms for this purpose.

Kitchen gardening is something that everyone can do to help the environment. Fruits and vegetables produced in your own garden are beneficial to your health since they are high in nutrients, including phytochemicals, antioxidants, vitamin C, vitamin A, and folate, and are free of adulteration and pesticides.

Planning and Execution:

To assure greenery at our level, we attempted the following solutions:
1. Vermicomposting/Composting.
2. Seed collection, raising and maintaining a nursery.

1) Vermicomposting/Composting

In this project, we have used vermicompost as an organic manure for plants. Basically vermicompost is the product of the decomposition process using various species worms, usually red wigglers, white worms and other earthworms, to create a mixture of decomposing vegetable or food wastes, bedding materials, and vermicast. The rearing of worms of this purpose is called vermiculture.

❖ **Cleaning and Digging up a hole for composting**

❖ **Our compost pit with dried leaves, food waste, fruit and vegetable remains**

❖ **Includes falling leaves and tree blossoms**

❖ **Adding Manure that we prepared for the plants**

Outcome:

➢ Organic manures increase the organic matter in the soil. Organic matter in turn releases the plant food in available form for the use of crops.

➢ These manures also enable a soil to hold more water and also help to improve the drainage soils. They provide organic acids that help to dissolve soil nutrients and make them available for the plants.

- Manure supply plant nutrients including micronutrients. They increase the availability of nutrients.
- Vermicompost improves soil structure, texture, breathability, water retention capacity, drainage, and aeration, as well as reducing erosion.
- It promotes plant development by allowing the formation of new shoots and leaves, resulting in increased output.
- It helps in soil pH neutralisation.
- Vermicompost boosts soil microbial activity and introduces beneficial bacteria, lowering insect and disease occurrence.
- It has no germs or hazardous compounds.
- It comprises a variety of micro and macronutrients, vitamins, enzymes, and hormones like as auxins and gibberellins.

2) Seed collection, raising and maintaining a nursery.

❖ **Seed Collection**

Papaya Seeds
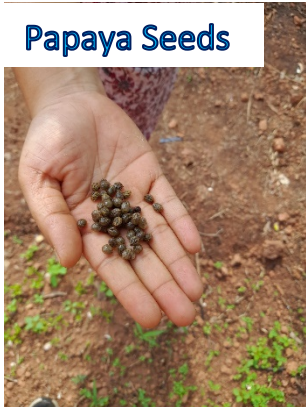
Green Peas

Pigeon Pea

Madras Beans

Dry Coriander Seeds

Black Peas

Chickpeas

Red Chickpeas

Green Pulses

Mustard Seeds

Fenugreek Seeds

Chilly Seeds

Mash Melon Seeds

Cucumber Seeds

Outcome:

> Collecting seed from many parent plants ensures that the seedlings planted are diverse. Whether the initiative is large or small, preserving variety is important to avoid pest invasions. Seed lots should be gathered from a variety of trees within a species' range to provide enough diversity.

❖ **Cleaning the site for planting**

❖ **Digging up the soil**

❖ **Sowing seeds in the soil**

❖ Placing the tree in the center of the hole

❖ Watering the plants

❖ **These are the plants we grew in our nursery garden**

Cucumber

Cucumber

Chilly plant

Ridge Gourd

Egg Plant

Moong Plants

Tulsi Plant

Basil Plant

Aloe Vera Plant

Spider Plant

Outcome:

➢ Since many people use pesticides and fertilisers to grow, and the chemicals used are very dangerous to humans.

➢ In our nursery/kitchen garden, we grow all plants using organic manure instead of fertilisers, and the results are good.

➢ So our main goal was to promote organic manure / fertilisers, rather than utilising toxic fertilisers.

TAKEAWAYS OF THE INTERNS FROM SBSI

Satyam Asolkar: It was a pleasure to lead and collaborate with my team. I had a fantastic experience that transformed my perception of cleanliness. It feels amazing to be a part of the SBSI program and to be able to contribute a few hours to keeping our nation clean. This engagement will undoubtedly benefit me in the future.

Shailesh Nishad: SBSI thought me how important the cleanliness and saving resources like electricity, water, etc is. We learnt about how we can make use our time to do some good things in our surroundings. It was nice experience to work with my team, and do some good things to make our environment clean and green.

Tukaram Rane: SBSI course taught me how to do team work and manage time. It was a great experience working as a team and contributing few hours of my life to make our country clean. Cleaning a place where I was new for was a good experience. This internship helped me to learn more about the Time Management.

Nigel Fernandes: I am glad to say that I am a Swachh Bharat student intern. It taught me to manage time, made me realise that we have creative minds, we just need to take forward and work on it. It was a great learning experience for us. It feels great that we were a part of this program, to contribute in making our country clean and healthy. Before starting our project, I used to think cleanliness is about cleaning our surroundings (where we live, work), but cleaning a place which I had never visited was a very new experience. I could see that each of my team members were working as if it was his/her home. Last I would like to say thanks to our entire team working hard even though we were busy with our projects great job by all of us, thank you mog asu♥.

Shriraj Prabhudesai: From SBSI course I learnt how to work together in a team and to manage time. By completing different tasks we encouraged many peoples to keep our environment clean and green. I will surely participate in more courses or tasks like SBSI in future.

Ankita Nigalye: Overall experience was great. The activity conducted by SBSI taught us about time management, how to work in group, importance of clean environment. Such programs help us to spread awareness about how to use resources in right way. I am thankful for the guidance and help provided by the mentor and the team members.

Vivek Jadhav: I am glad to be a part of the "Swachh Bharat Student Internship." It was a fantastic opportunity to work as part of the team for our country. Also, the satisfaction of supporting our country and inspiring others to do the same. And my engagement will definitely benefit me in the future.

Shawn D'Souza: I was very happy that I was given this opportunity to be part of the SBSI program. I had a wonderful overall experience working with the team and this program also helped me acquire various skills to make an impact in saving the environment. Also I would like to thank my mentor for the guidance and my teammates for their contribution in this SBSI mission.

Shubham Otavnekar: It was a nice experience working on Swatch Bharat Student Internship, I learned how a group work together to complete different tasks in an agreed time, with each member contributing to the team according to their skills, experience and personality.

Ruthik Shanbhag: SBSI course taught me how to be a team worker. It encouraged me to learn new things. It helped me understand the power of unity. We learned to manage our resources and time. It surely helped us to be a better person.

CONCLUSION

Taking the broom to sweep the streets, cleaning up the garbage, focussing on sanitation and maintaining a hygienic environment have become a practice after the launch of the Swachh Bharat Abhiyan.

It is important for India to display high standards of hygiene and cleanliness to change the overall global perception people have about our country.

No other force can stop our country from being a clean and beautiful nation if every person of our magnificent nation makes a vow to themselves that they will not litter or allow others to litter.

We can proudly say that this internship taught us lessons that no other book could teach us because we worked in a field where we gained practical knowledge not only about the topic that we chose to work on but also about how to work in a team and maintain team spirit.

It was not an easy task, but we can only conclude that it was worthwhile. We believe that our activities will result in positive change for those around us.