

Engineers for a Sustainable World

THE UNIVERSITY OF TEXAS AT EL PASO

Service Learning Catalyst

WHO WE ARE

Engineers for a Sustainable World (ESW) is a non-profit network dedicated to **creating solutions to local and global sustainability challenges**. ESW mobilizes students members through educational programs, **sustainability-oriented design projects**, and volunteer activities that foster practical and innovative solutions to address the world's most critical challenges, while helping to create the next generation of technical leaders.

HOW WE WORK

service learning 

Engineers for a Sustainable World (ESW) operates through service learning projects. Service learning is an educational approach that **combines objectives with community service** in order to provide a pragmatic, progressive learning experience while meeting societal needs.

OUR PROJECTS
















WATER
MATTERS

OBJECTIVES

- Design and install two rainwater harvesting systems at a minimum cost, leveraging donated materials and labor.
- Provide an educational value in the community and to students at UTEP.
- Establish community partnerships, and collaborations between UTEP colleges and departments.

RESULTS

- *Water Conservation:* The storage capacity of the systems was 2,220 gallons of water, or about 50% of the average annual rainfall. The residents will use the water for gardening, landscaping, and small livestock.
- *Health:* We estimated that the amount of hauled water was reduced by about half, or reducing the number of trips from 2-3 per week to one per week.
- *Economic:* The systems also save each household $15-20/month for two households with income <$15,000/yr.
- *Environment:* Reduction of roof runoff that contributes to localized flooding.
- *Innovation:* Low cost solution to communities' without water. The total "out of pocket" cost was about $1,000.

STATUS: COMPLETED


UTEP
MINERS




ESW
DESIGN • EDUCATE • BUILD
LED ZEPPELIN


PROJECT
JUAREZ

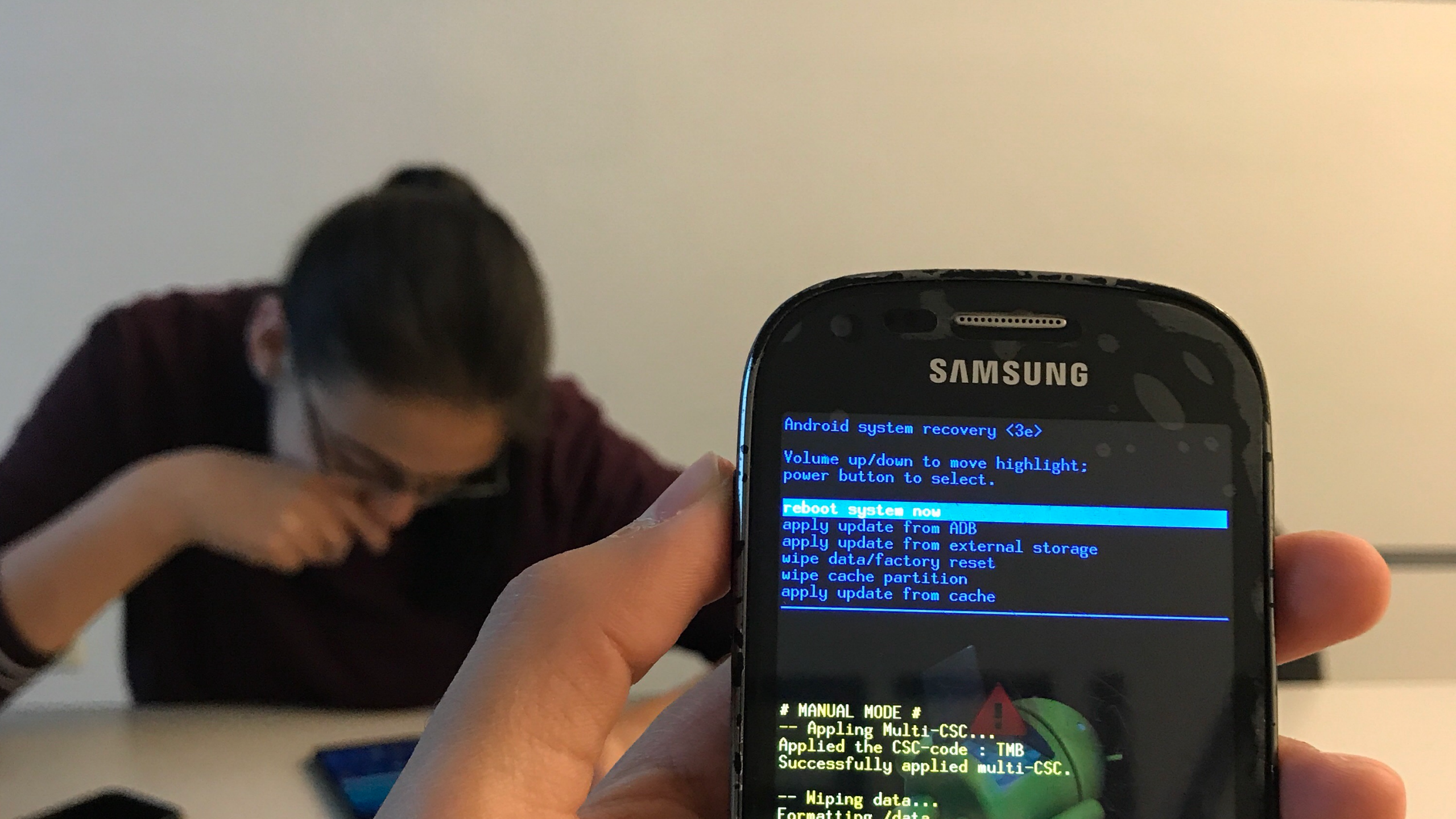
OBJECTIVE

- Host a website off of a server created from a repurposed android smartphone.

RESULTS

- *Phone Collection:* Collected 8 android phones ready to be formatted and repurposed.
- *Education:* Developed a series of technical workshops oriented towards the project. Workshop topics include: Beginners Programming, Object Oriented Programming, Web Development, and Web Application.
- *Social:* Developed a sense of community between participating members by encouraging social activities outside of class.
- *Environment:* Reduction of electronic waste.

STATUS: IN PROGRESS


SAMSUNG
Android system recovery <3e>
Volume up/down to move highlight;
power button to select.
reboot system now
apply update from ADB
apply update from external storage
wipe data/factory reset
wipe cache partition
apply update from cache
MANUAL MODE
-- Appling Multi-CSC...
Applied the CSC-code : TMB
Successfully applied multi-CSC.
-- Wiping data...


FIRE EXTINGUISHERS
JANSPORT





Project Delta



OBJECTIVES

- Address educational, logistical, and financial limitations to evaluate and enhance The University of Texas at El Paso's current recycling system.
- Implement a uniform recycling system to be used by 40% of the university's buildings by Fall 2018.

RESULTS

STATUS: IN PROGRESS

- *Project Assessment:* Members conducted surveys and met with university's building managers to extract statistical information from campus building's recycling systems.
- *Environment:* As of March 25th, 2018, members have successfully recycled 1,048 lbs. of paper by conducting weekly recycling shifts.
- *Marketing:* Collaboration with the American Marketing Association (AMA) student chapter to develop a marketing plan to educate students, faculty, and staff about the benefits of recycling.
- *Outreach:* Organized a "Eco-Hackathon" event where members created and developed pieces of software or applications that engage UTEP students in recycling practices around campus through the use of technology
- *Education:* Visited a metal recycling company and a general recycling company to understand industry practices on recycling.

Find the designated ESW recycling bins



Retrieve the recycling material from the bins



Properly relocate the recycling material



Weigh the recycling material



Register the amount of recycling material




PROSPECTOR
ENJOY the good READS life OFFERS
THE PROSPECTOR
Tuesday & Thursday
DOOR BLOCKED
119
SHARE THE VISION
OF GOOD HEALTH


UTEP Engineers
for a Sustainable World
Collecting clean paper and
cardboard for recycling
(no food containers or wrappers)


Plastic
Bottles
Paper only
HSSN
HSSN
PLASTIC
BOTTLES


MINE-RCY-CLER

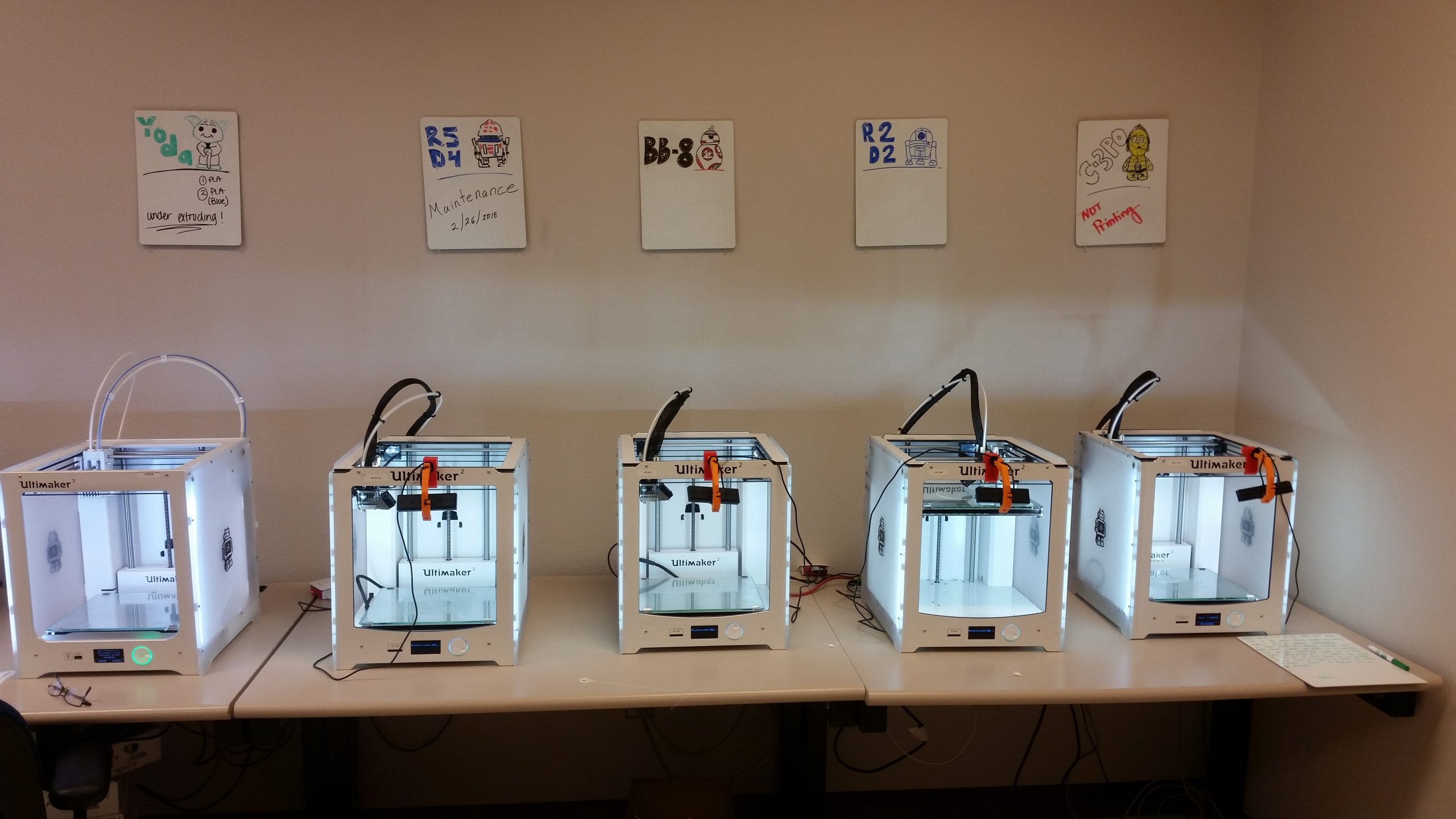
OBJECTIVE

- Establish a sustainable process to produce filament from the waste in form of failed 3D printings, PET and HDPE generated on campus.
- Produce 3D printed consumer goods and art from the recycled filament.
- Provide students with hands-on experience in polymers processing and material extrusion printing processes.

RESULTS

- *Collaboration:* Successfully created a collaboration with ESW-UTEP's Project Delta and UTEP's Facilities Services.
- *Education:* Initiated plans to organize a workshop series related to 3D printing and modeling as well as polymer recycling and its correct handling.
- *Plastic Collection:* Successfully collected 5 lbs. of recyclable polymers that includes plastic bottles and caps.
- *Research:* Compared different alternatives of polymer grinding and extruding such as "Precious Plastics" and commercially available machinery.

STATUS: IN PROGRESS


Yoda
1 PLA
2 PLA (Blue)
under extruding!
R5 D4
Maintenance
2/26/2018
BB-8
R2 D2
C-3PO
NOT Printing
Ultimaker 3
Ultimaker 2
Ultimaker 2
Ultimaker 2
Ultimaker 2


ural Ear
V3

ROUTE TO SAFETY

OBJECTIVE

- Design and build a low-cost, sustainable, fire escape ladder for an immigrant refugee center.

RESULTS

- *Design:* Successfully designed a wood fire escape ladder with given constraints under the supervision of an experienced carpenter.
- *Implementation:* Built a fire escape ladder in a period of 20 days by creating a budget, purchasing cost-effective materials in a timely manner. Utilized wood cutting machinery provided by an experienced carpenter.
- *Education:* Learned concepts of wood handling as well as fire escape criteria for residential use.

STATUS: COMPLETED








HIRST NAUGHT

OBJECTIVES

- Deliver point-of-use water filtration systems for relocated victims of 2011 tropical storm Sendong at Cagayan de Oro, Philippines.
- Conduct surveys to evaluate other needs for possible future projects in the area.

RESULTS

- *Filter Delivery:* Delivered in person 100 point-of-use water filtrations systems to several communities in need as well as educated them on their proper cleaning.
- *Project Assessment: Conducted 52 surveys to different homes in which it was discovered that waste and drainage were also alarming issues that need to be addressed.*
- *Economic:* Improved, through water sanitation, the progress towards self-sufficiency of a low income community.
- *Health:* Improved health conditions by reducing the risk of water-borne diseases by securing a secure sources of safe drinking water.

STATUS: COMPLETED




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RISE UP

OBJECTIVE

- Build a pedestrian suspension bridge to replace the previously destroyed by the flood water from hurricane Maria.
- Design and implement a system of solar panel for an isolated community with no access to electricity.

RESULTS

- *Collaboration: Initiated a long lasting relationship with the student organization "Aggies Without Limits" from the New Mexico State University to collaborate in this project*
- *Project Assessment:* Sent 3 ESW members in January to narrow down the project, list constraints, and survey the land where the proposed bridge will be built.
- *Education:* Organized design-based weekly meetings with licensed engineers to collaborate in designing the bridge and solar array.
- *Social:* Developed a sense of community between participating members by encouraging social activities outside of class.
- *Fundraising:* Fundraised through student initiatives over $7,000

STATUS: IN PROGRESS






UTEP
EGE OF ENGINEERING
UTEP



Engineers for a Sustainable World – UTEP aims to **empower** students to be effective change agents and drivers of sustainability innovation to ensure that our world's **future leaders** are motivated and equipped to solve sustainability challenges.

THANK YOU

