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DESIGN CHALLENGE

Providence teens were challenged to create and innovate using makerspace tools in their local libraries. This project was part of the PVD Young Makers Summer Workforce experience funded by the Mayor's Office of Economic Opportunity.



PVD Young Makers empowers our students to solve the problems of tomorrow by supporting a culture of making through student-centered teaching and learning. The program fosters a maker mindset by providing young people with access to cutting edge technologies and opportunities to practice essential skills.



Prompt: Prototype an original product or re-design a previously existing product to better serve humanity.

- Research Maslow's Hierarchy of Needs to help you define a problem.
- Create a product that is fair, ethical and sustainable.
- Teams must work together to incorporate an element from each of the following tools in their designs:



3D
PRINTER



LASER
CUTTER



SEWING
MACHINE



HEAT
PRESS



VINYL
CUTTER



CODING OR
ELECTRONICS

*This experience was
made possible by*



Turn to learn more
about the process





Research: What do all humans need to become truly fulfilled?

During the first stage of the design process, teens researched Maslow's Hierarchy of Needs. They started with a warm-up prompt: "Make something you couldn't live without."

An exercise in designing with empathy.



SELF-ACTUALIZATION

morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts

ESTEEM

self-esteem, confidence, achievement, respect of others, respect by others

LOVE / BELONGING

friendship, family, sexual intimacy

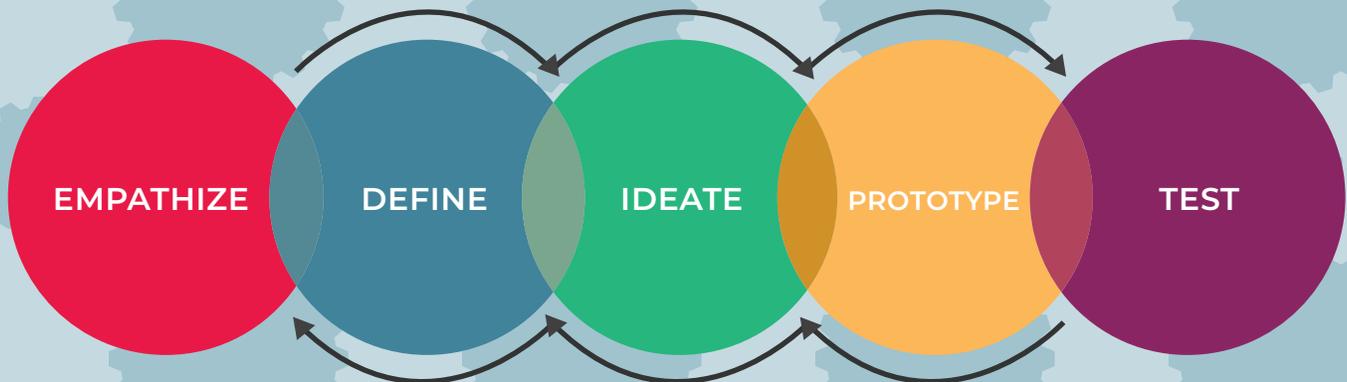
SAFETY

security of body, of employment, of resources, of morality, of the family, of health, of property

PHYSIOLOGICAL

breathing, food, water, sex, sleep, homeostasis, excretion

THE DESIGN PROCESS



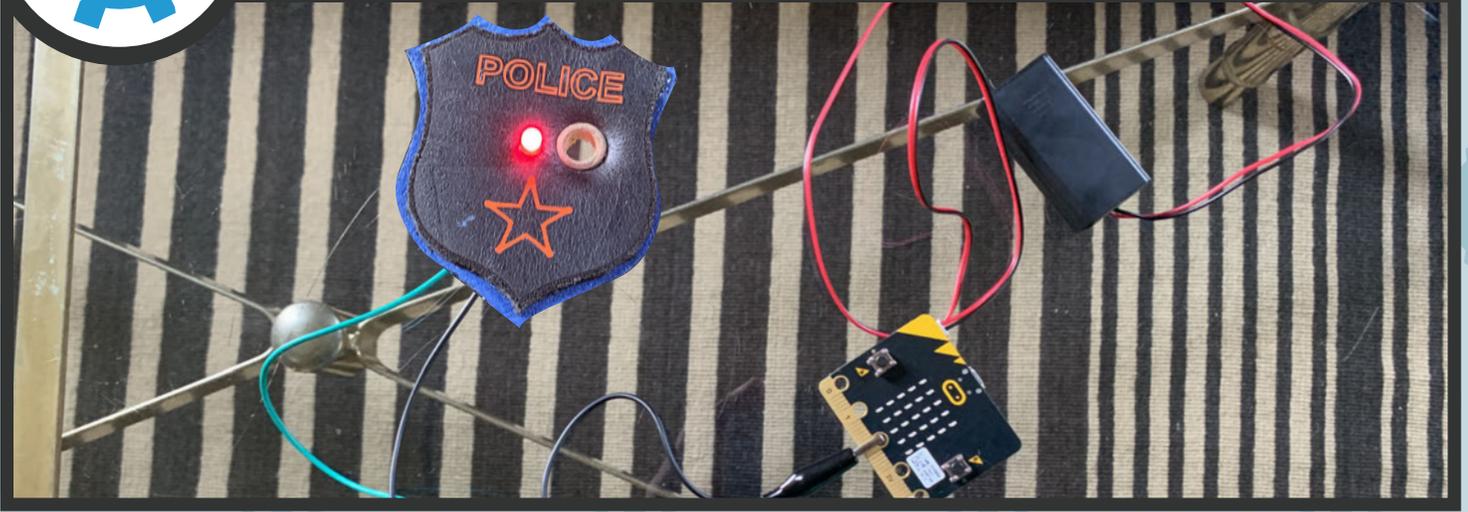
Teens worked in groups to complete the next 3 phases of the design process and delivered a presentation on their prototypes. The following pages showcase their hard work and efforts.

Turn to see what they created





Project: How can we protect our rights when interacting with law enforcers?



Our product is designed to honor civil rights during interactions between citizens and law enforcement agents. In this case, an individual's physiological needs and safety needs are not being met. Our aim is to serve justice to racial profilers, targets and police departments.

We redesigned a typical police badge, adding a camera that notifies local police stations when a particular individual turns their camera off. This new police badge holds police officers accountable and can also be used to educate the public on police practices. It is meant to distinguish corruption from true response.

The badge is laser cut from recycled leather, its labeling created using heat-press vinyl. The camera lens is 3D printed, and the camera's alert system is composed of an LED wired to a MicroBit. Project Manager Owen Herlihy coded the microbit to alert his cell-phone when the LED is disconnected to test functionality.

COLLABORATORS



Teens from this team were assigned to Smith Hill & South Providence Libraries and continued 4-weeks of makerspace assistance to library patrons and PVD Young Makers summer camps.

BADGES EARNED



Perseverance This team showed steadfastness in doing something despite difficulty or delay in achieving success.



Electronics & Coding The functional aspect of this team's project deserves a special mention.



Code Journeyer This project was a high-level, well-thought-out solution to a real-world problem.

Project Manager



Owen

Time Keeper



Jireh

Researcher



Brenda

Recorder



Yerolanny

Materials Manager



Isaiah

Presenter



Brandon



Project: How can we solve the pollution crises in cities?



We created the architecture of a new city in order to help solve pollution in cities. Over 4.2 million (m) deaths per year occur due to exposure to ambient air pollution, and 3.8m are due to household air pollution. Around 91% of our world's population lives in places where the air pollution exceeds the World Health Organization's proposed acceptable limits. We are all affected by this issue.

In this situation, our physiological and safety needs are not being met. Our product serves as a template for cities and towns to function sustainably, which will in turn decrease the amount of pollution.

Our prototype features small laser-cut homes powered by solar panels and 3D-printed wind turbines. We've switched from using cars to using bicycles (also laser-cut) as a form of transportation. These changes result in our fresh water pond, filled with a sustainable amount of fish.

COLLABORATORS



Teens from this team were assigned to Rochambeau & Fox Point Libraries. At Fox Point, teens assisted in the production of a community mural. At Rochambeau, teens hosted laser cutter trainings for both adults in the community and library staff.

BADGES EARNED



Critical Thinking This team demonstrated disciplined thinking that is clear, rational, open-minded, and informed by evidence.



Laser This team used the laser cutter to their advantage, lowering their production time and creating consistency and efficiency in their work flow.



3D Journeyer Using the design process, this team created a model with the ultimate aim of fabricating a 3D object that solves a problem.

Project Manager



Didier

Time Keeper



Jesse

Researcher



Alany

Recorder



Kieran

Materials Managers



Alany

Presenter



Mya



Project: How can we solve food deserts in the city of Providence?



Our product serves to educate and assist people who live in food deserts—areas with limited access to affordable and nutritious food. Low-income areas lacking public transportation with a high population of people of color are more likely to be affected. In this case, physiological needs of Maslow’s Hierarchy are not being met: an individual can develop diseases such as heart disease, diabetes, obesity, etc. Children who are living in the food deserts are affected the most nutritionally, behaviorally and also academically.

This recycled-mesh bag is insulated to keep food fresh. It includes a special laser cut bus pass for people traveling to healthy food resources such as community

gardens and food banks, shown in reflective vinyl. The LED feature is meant to accommodate people traveling at night. It also includes a 3D-printed clasp to keep all the goods safe during travel.

Our ultimate goal is to make our product free and accessible to the public.

COLLABORATORS



Teens from this team were assigned to Mt. Pleasant & Washington Park Libraries. Niku & Andrea contributed to Providence Community Library’s new “Everyplace Makerspace”, a mobile van providing maker activities to the city’s recreation centers.

BADGES EARNED



Engagement This team showed a degree of attention, curiosity, interest, optimism, and passion in designing this product for people in need.



Sewing This project was exemplary in use of sewing techniques. The pattern was hand drafted and executed thoughtfully.



Wearables Apprentice This team created an effective wearable that uses technology to enhance typical human capabilities.

Project Managers



Tytain & Niku

Time Keeper



Tytain

Researcher



Deborah

Recorder



John

Materials Managers



Niku & Morgan

Presenter



Andrea



Project: How can we reduce the amount of CO₂ present in our atmosphere?



Welcome to the Climate Greenhouse Company, a community-run greenhouse composed of 100% recycled materials. We strive to promote healthy & clear air. All living organisms on earth are affected by the amount of CO₂ in our atmosphere. In this case, an individual's physiological needs of Maslow's Hierarchy are being met- organisms are not safe because of this problem, and there will be serious problems if we do not reach a solution.

Our product is designed to reduce the amount of CO₂ in our atmosphere. It is intended to be a public space where all are invited to work and also enjoy the benefits of clean air.

The structure of our greenhouse is composed of recycled plastic (represented by plastic cups). The roof is made from recycled glass. The plants inside are laser cut from felt, and the LEDs represent the light created from solar panels located on the roof of the structure.

COLLABORATORS



Teens from this team were assigned to Olneyville & Wanskuck Libraries. These libraries hosted PVD Young Makers x PASA summer camps, which challenged youth to explore opportunities in their neighborhoods and create solutions through making.

BADGES EARNED



Reflection This team showed serious consideration and reflection upon their process of creating the plant elements for their greenhouse.



Laser This team used the laser cutter to their advantage, lowering their production time and creating consistency and efficiency in their work flow.



3D Journeyer Using the design process, this team created a model with the ultimate aim of fabricating a 3D object that solves a problem.

Project Manager



Ysauri

Time Keeper



Michelle

Researcher



Deborah

Recorder



Luscarly

Materials Managers



Jimmy & Devvin

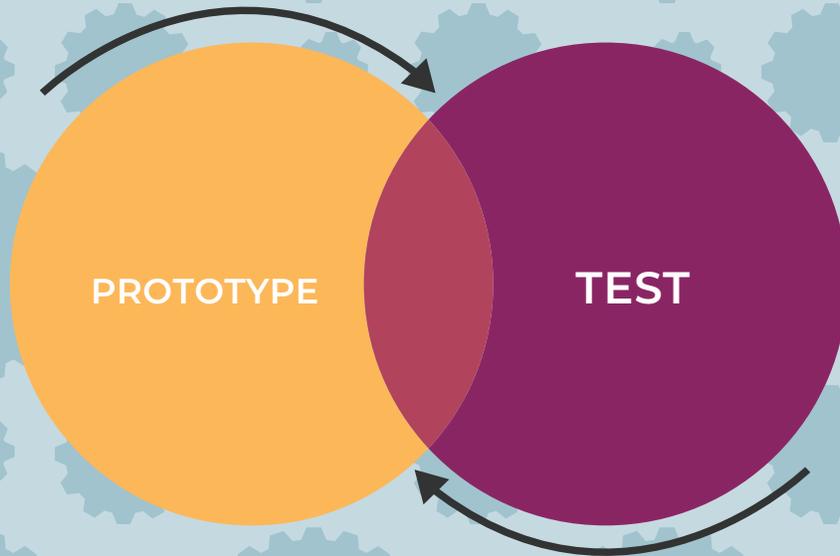
Presenter



Group Effort



Connection: How can you help PVD Young Makers teens test their prototypes?



COMMUNITY CALL TO ACTION

- Can your organization utilize our products?
- Can you connect us to a supportive resource?
- How can we improve our designs?
- How can you help us improve?



Reach us via e-mail: pvdyoungmakers@gmail.com



Teens designed and produced their work uniforms to represent their personal styles. They voted on fonts & colors, then produced the shirts using 2D-design software, vinyl-cutters and a heat press.

Turn to see a map of PVD Young Makers locations

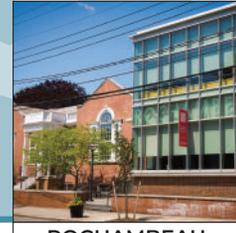




WANSKUCK
233 VEAZIE ST.
401-274-4145



SMITH HILL
31 CANDACE ST.
401-272-4140



ROCHAMBEAU
708 HOPE ST.
401-272-3780



MOUNT PLEASANT
315 ACADEMY AVE.
401-272-0106



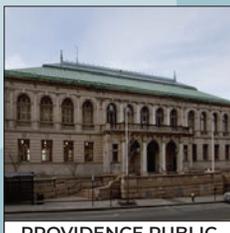
FOX POINT
90 IVES ST.
401-331-0390



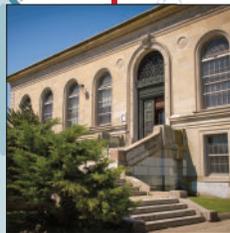
OLNEYVILLE
1 OLNEYVILLE SQ.
401-421-4084



SOUTH PROVIDENCE
441 PRAIRIE AVE.
401-467-2619



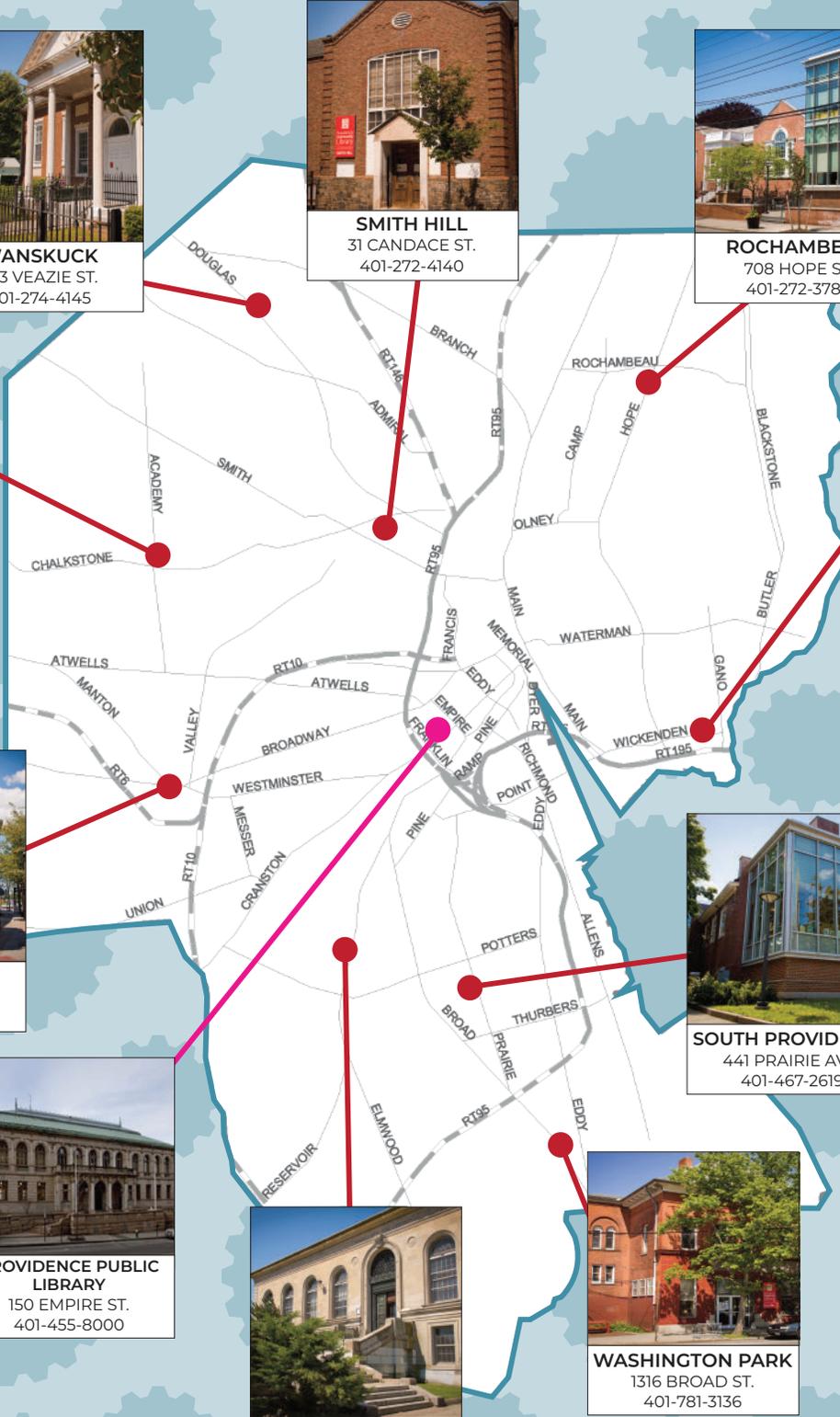
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