

Team 12C

Geared for Success

The Potomac School

Recycling Online Challenge Sponsored by FUTURE Foundation



From left to right: Ethan Lee, David Kiernan, Scott Trundle, Robert O'Brien, Amelia Mazloom, Charlotte Ellis, Julia Jackson.

In April, when this year's game, In the Zone, was released, the Potomac robotics teams spent time learning about the engineering design process (EDP) and how it could be utilized to solve any problem within robotics. Throughout the year our team has also learned that the EDP can be utilized as a framework for collaboration on all types of problems. This description will illustrate the implementation of the EDP process as we planned our online challenge recycling solution.

Identify and Investigate

All of the members on our team care deeply about serving others, so when we decided to do this challenge, we took the opportunity to help people.

Imagine /

Defining the Need Since we were focusing on helping the homeless, we knew that we would need to make the sleeping mat light, easy to carry, and durable.

Research

Thus, our solution needed to be light and with stand a variety of weather conditions. Looking at all the prior game pieces we felt that the solution was obvious.

Plan

We chose to use the Starstruck cube's cloth because it's inside was plastic and waterproof, making it easy to clean and hard to rip or damage. The floor tiles are a light material, but are soft and comfy to lie on, and would provide a buffer in between the body and the cold winter ground.



Create



We started by laying out the floor tiles to determine the best bed length so that it would fit most people, but not be too big and bulky. We took those boards and cut them into thirds, so that each piece was approximately five inches

The belt hole puncher was a good start, scissors were needed to make the holes slightly larger to pull the orange

threading through to attach the pieces together.



This is the process of creating the ribbon.

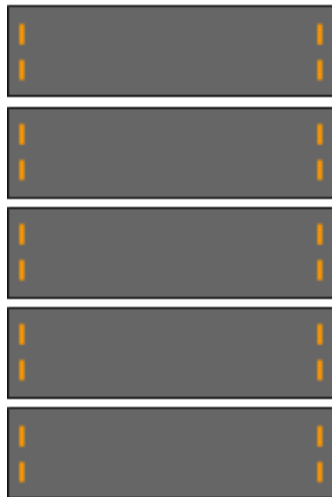


Iteration

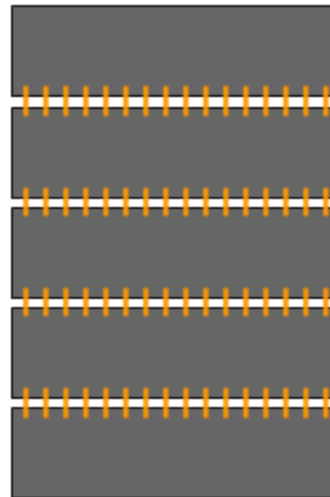


In the initial prototype, we attempted to use recycled material to connect the pieces of field mat together. We cut the plastic bags into one inch long strips and typed the strips together. Once tied into a long plastic strip, we crocheted a long chain of single crochet to hold the pieces of mat together.

After some attempts, much discussion and sketches on white boards we decided that threading the sleeping mat down both sides, rather than across the mat, would be better for it would create a smoother surface to sleep on.



Smooth



Bumpy

Our team dividing work between the robot and the online challenge



Communicate the Final Solution



This is the mat spread to the full length.

Final assembled mat tied for storage and carrying.



Here is the bag or holder that the individual can fold up the mat and carry as a backpack.



Julia demonstrating how easy and portable the mat is to within the VEX carrying case.