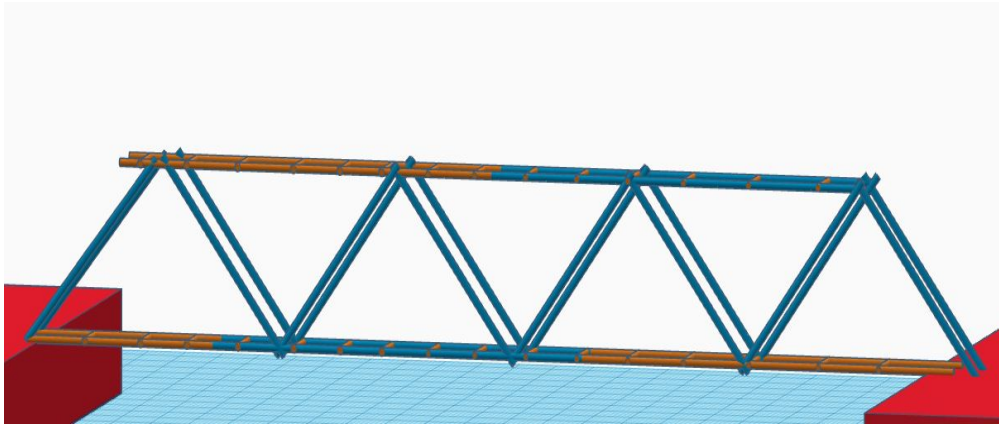
Spaghetti Bridge Report

Cristian Hudson

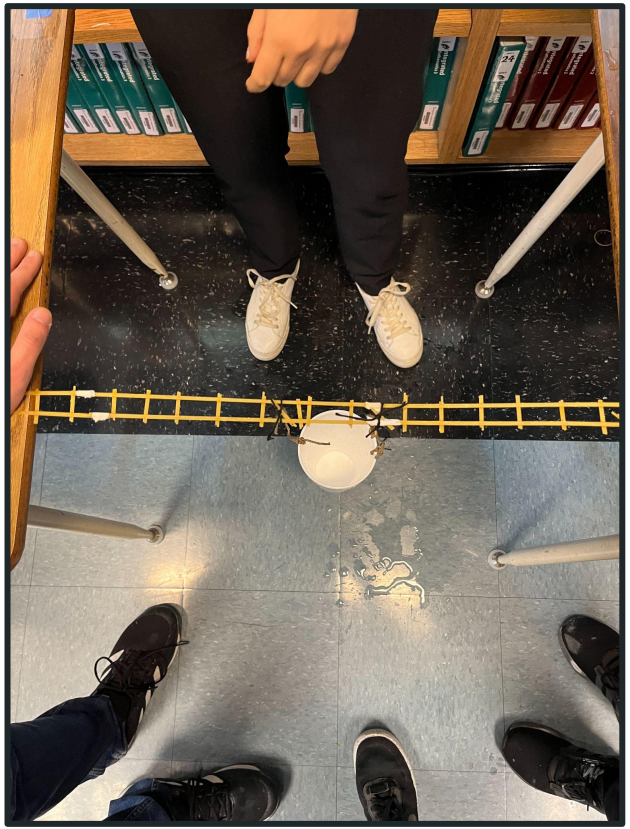
Approach

At first, we researched bridges that have been built in different parts of the world and are effective in carrying heavy loads. It was difficult to find bridge designs that could be made with 20 spaghetti pieces, and that didn't have supports in the middle of the bridge touching the ground. We found that truss bridges provide a lot of support, and could be built. Afterwards, we created a design for a truss bridge that we thought would potentially work in TinkerCad.



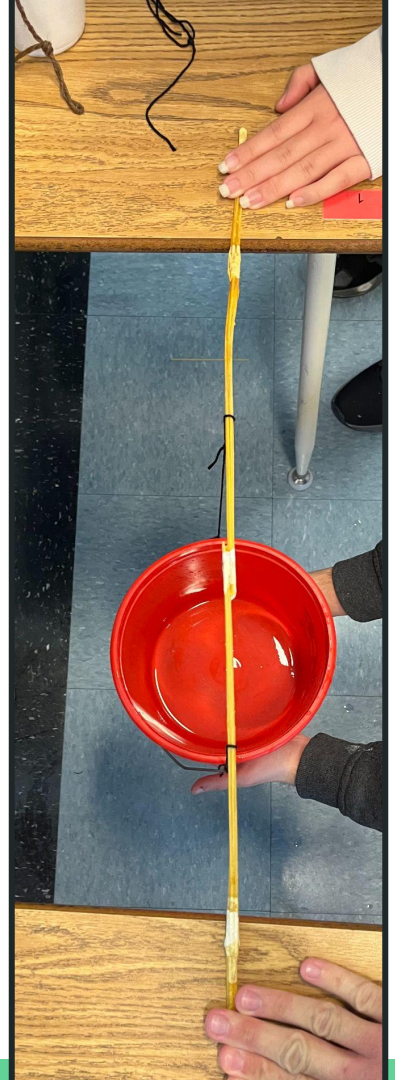
Design #1

For the first design, we built a bridge with two parallel lines which were two spaghetti thick, and 2 and a half long, with small pieces connecting them together. This bridge held half a cup of water but snapped in the middle where the cup was tied to the bridge. To make the design better, we probably should have made the part where the cup is tied thicker and more reinforced.



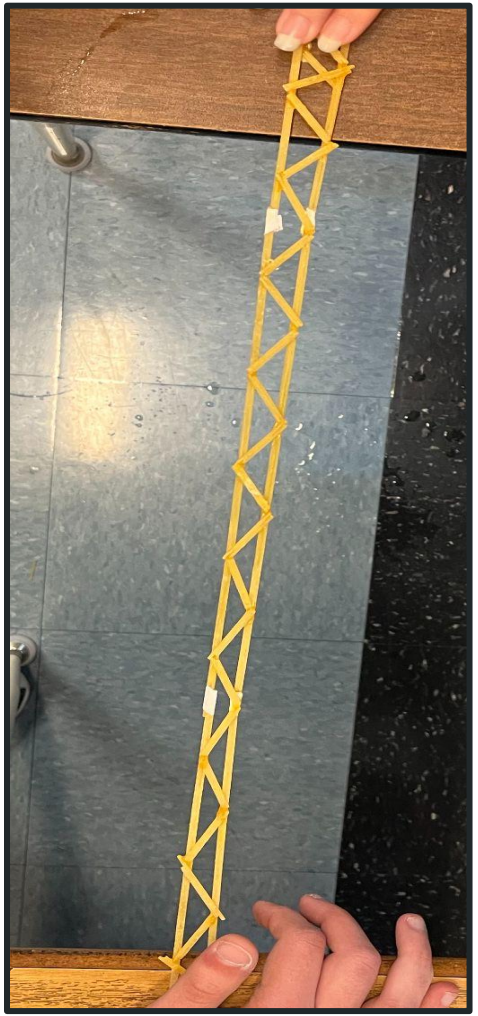
Design #2

For this bridge, we made a completely different design, one which was 2 and a half spaghetti long and 7 thick. We thought this was very strong and would hold a lot of water, but before testing, a piece of it snapped and we had to glue it on again at a different point. This made the bridge a lot weaker and could only hold one cup of water. It snapped at the point where we reconnected it. If it did not break, I think it would have held at least two cups of water.



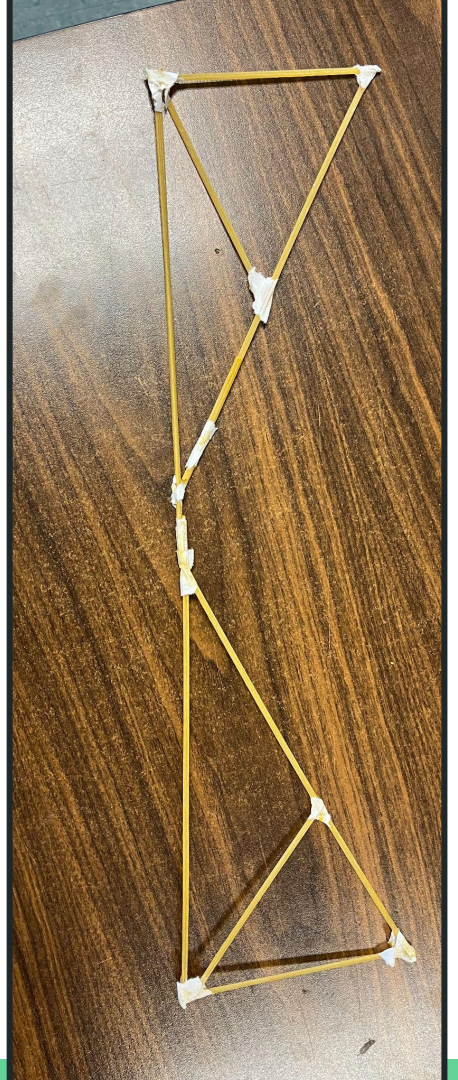
Design #3

The next bridge we built was similar to the first one, but we made the lateral parts connecting the two main pieces together diagonal instead. This one held ⅔ of a cup, which was more than the lateral design could hold. It broke from the ends of the bridge which means we should have put more connecting pieces at the ends. From this test, we can infer that triangles provide more stability and strength to a bridge than just straight lines.



Design #4

In the final prototype, we decided to make a vertical design with a three spaghetti thick base and triangles above it to add support. The bridge held one and a half cups of water which was the most out of all of the prototypes. Again, the triangles proved effective in providing a lot of structural support to the bridge. One of the sticks of spaghetti broke in the middle, so the base of the bridge should have been bigger, and less pieces could’ve been used on the vertical pieces.



Partner Evaluation

Name	Grade	Comments
Colin	4	Gave good ideas and insight, helped out a bit with building
Roman	5	Helped out building the bridges, and coming up with designs
Alice	3	Gave some ideas and ways to make the bridges better, didn't help in building