

# Written By: Jonas and Dylan

## What is a Rube Goldberg Machine?

A Rube Goldberg machine is a chain reaction that has the goal to complete a sort of easy task such. A example would be the Machine that Mr. Rub Goldberg designed. The machines purpose is to wipe a persons mouth after they finish eating.

## Students develop the design brief

For this DDC week we will create a Rube Goldberg machine that can connect with another groups work. Our machine will be unique because we will take lots of different sources and put them together. Our machine will be ideal and at the end of the week it should function without any problems.

## Design Specifications/Tests

<p>1. Our machine will include a zip line made out of string, a bull clip and a domino.</p> <p>Test: We will tie a string from the top of a tall black block all the way down to the floor. We will then attach a domino to the bull clip. After this we will attach the bull clip onto the string.</p>
<p>2. We will start and finish our machine with dominos.</p> <p>Test: We will cooperate with the group behind and in front of us to make sure they also use dominos and we have the same understanding of what we need to do.</p>
<p>3. We will use different sources including 1-2 videos, 1 interview, 1 book and 4-5 websites.</p> <p>Test: We will interview one of Jonas's relatives who is a engineer and teacher. We will also get a book from the schools library.</p>
<p>4. We will make sure that all the sources that we used to improve our machine will be cited.</p> <p>Test: We will use the website Easybib.com to cite our sources in MLA format. We will also make sure that at the end of our report our bibliography is in alphabetical order.</p>
<p>5. We will bring objects and useful material from home to modify and make our machine function better.</p> <p>Test: We will use the tracks from a marble run that Jonas has at home and the bottles that Dylan and Best have at home in our machine.</p>
<p>6. After each day of the design cycle challenge we will take pictures of our machine and reflect about what we have completed.</p> <p>Test: We will use Best's iPad to film and take pictures of ourselves working, collaborating and of our machine. After we finish the video reflection we will edit it using iMovie ( A Mac editing program).</p>
<p>7. Our machine shall function 100% of the time and be sustainable.</p> <p>Test: After each time we run the machine we will reflect on what happened and fix any problems that occurred during the test run.</p>
<p>8. We will use our machine to represent a image of water.</p> <p>Test: We will represent flow using the dominos and we will represent waves using decorations.</p>

## Our Research

Question	Research	Source
<p>What are some basic materials that we can use for our Rube Goldberg machine?</p>	<p><b>Hot Glue Gun:</b> Hot glue will be very useful because it can stick anywhere unlike tape but still doesn't way much. We will need the glue to stick things together and to stabilize parts of our machine.</p> <p><b>Dominos:</b> We will need dominos to start and end our machine. According to our third plan we will need dominos to go up books so that it activates a marble and a zip line.</p> <p><b>Chair/Box:</b> We will need a chair or a box to create our high point from which a marble would run down for each of our plans. According to our third plan we will be need a large box for dominos to go up and to activate a marble. For our second plan we would need a chair for the dominos to go up.</p> <p><b>Cutter:</b> Even though scissors would probably do the job of cutting future board, it would be much easier to use cutters especially because cutters can easily be used to cut circles.</p> <p><b>Future Board:</b> We will need future board to make our own tracks for the marbles to go through. Future board is a very good material because even though it can be very easily cut we can use it is hard at the same time. This would benefit us for when we need something hard but we want to shape it ourselves.</p> <p><b>Books/Baskets:</b> We will need books or baskets to build up onto our box or chair. According to our third plan, the dominos will run up the books and then release a marble and the zip line on top of the box.</p> <p><b>Marbles:</b> We will need marbles to run down our box. It would be best if we could get medium sized marbles because other ones might not fit through our special tracks.</p>	<p><a href="http://web.mit.edu/museum/rubegoldbergcontest/2006/materials.html">http://web.mit.edu/museum/rubegoldbergcontest/2006/materials.html</a></p> <p>Laveber, Lendert. "How to Create a Perfect Rube Goldberg Machine." Telephone interview. 12 Nov. 2013. The Interview was spoken fully in German</p>
<p>What are some of the most famous Rube Goldberg Machine and how do they work?</p>	<p>1. <b>Myth Busters:</b> The myth buster video shows coke and mentos creating energy. The energy will then move a bowling ball, which willnock down some bowling pins. The bowling pins will then activate some dominos which will release coke.</p>	<p><a href="http://www.youtube.com/watch?v=lCYg_gz4fDo">http://www.youtube.com/watch?v=lCYg_gz4fDo</a></p>

	<p>The coke will then turn into kinetic energy and release another motor. Eventually the goldberg machine will make a doll fall down.</p> <p>- <i>We can not really use anything from this video because we are not aloud to use electricity (Motors) or liquids (Coke)</i></p>	
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### 3 Different Designs

#### Design 1

**Description:** It starts with a dominoes. Dominoes swerve from side to side, hitting a marble at one end of a wooden track. The marble goes down the track and hits a stack of dominos. The dominos then go up a small stack of books. On top of the books there are is a track that leads down hitting another group of dominos. Those dominos then go and activate the next groups machine.

**Pros/Cons:** This design is not very sophisticated and very easy to create. This means that it is not a challenge for us to build in any way. Even though this design is very easy to create, the machine always worked out of the 5 times we tried it. In this design we also use a huge amount of dominoes that we might not get.

#### Design 2

**Description:** Design 2 was very similar to the start of our last design (Design 1). It utilized books to create a ramp that hit dominoes that were on top of a chair. While on the chair the dominoes hit a marble that fall onto more marbles that eventually lead to the other groups machine.

**Pros/Con:** This design is very easy to create and has almost zero issues. There is only two things that could lead to the machine not working and that's when the marble falls from the chair. The reason for this problem is the cushion wasn't really flat so the marble wouldn't always fall straight down and would variate. The second was that we had trouble making the dominoes stand since the chair was cushion was curved. The problem with this design was it was too simple, it wasn't very innovative so we decided to improve it.



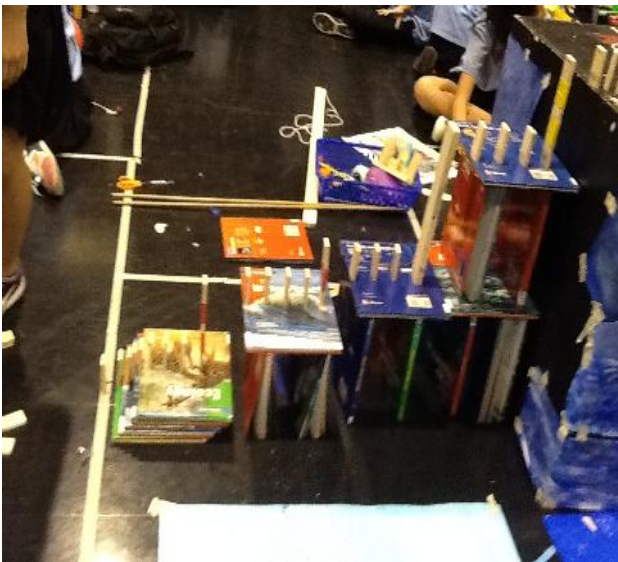
Our second design starts with dominos going up a stack of books.



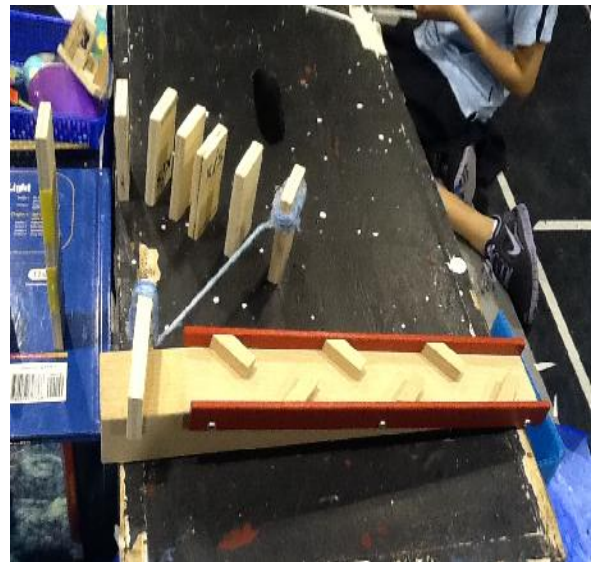
For our second design we used a chair as a platform. This created a few problems.

## Design 3 (Final Design)

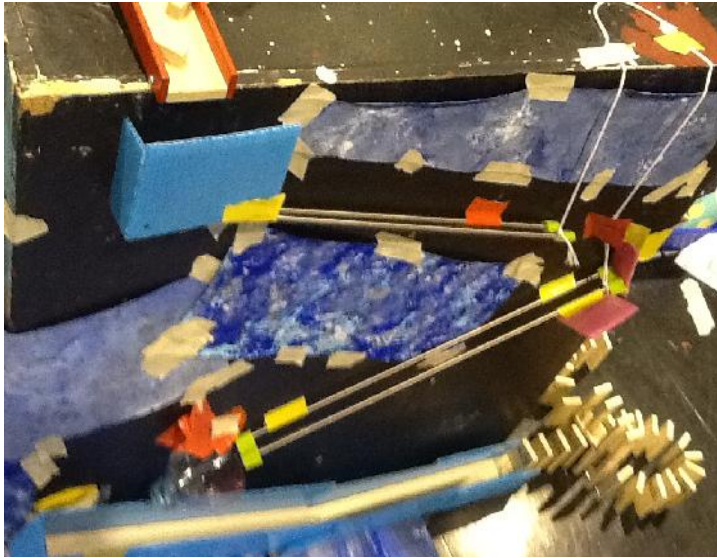
**Description:** With this new design we were able to improve the machine by adding several new parts and fixing old problems at the same time however we also added more problems to our machine. The new **features** are: 1. Removing chair and adding a black block, we chose this block because it was flatter and made it easier for us to use the ramp and make the dominoes stand. 2. Zip line, we added a zip line to the project for increased intricacy. The zip line is located on top of the black block. It uses a clip that is holding a domino and a string of yarn that holds the clip. The zip line hits another domino that triggers a giant pin that falls onto a balloon popping it! 3. We added a marble ramp, the marble now after being pushed instead of falling right onto dominos below it lands on a two part ramp that leads it onto a another ramp that then activates dominos. This reaction happens the same time the zip line is going. 4. The last thing we have is we created a cool domino bridge. That has the dominos going around in circles and over and under another set of dominos stacked like a bridge. Our machine now works 99% of the time. We also solved one of the main problems we had which was that we couldn't activate the marble. We solved this by using string and dominos as you see on the second picture below. Our last design represents a Rube Goldberg machine because it serves a easy purpose in a complicated way.



Like our second design our third design starts of with dominos going up a book. For the third design though we used more books and dominos then in the second desing,



We had problems setting the marbles of, and so Best had the idea of using string and dominos (See in picture above).

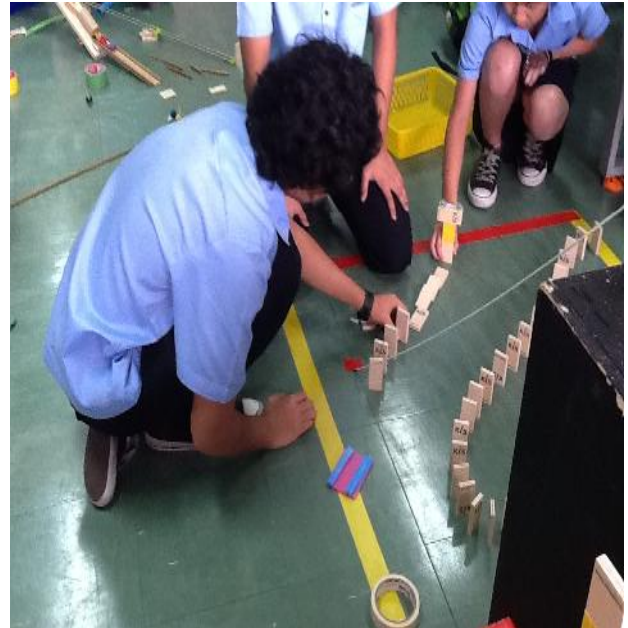


In our third design the marble goes down from a huge block using tracks. It starts of at a track that Jonas brought in from home. The last track connects with dominos. The dominos get knocked down by marble, hitting other dominos and then eventually connecting to another groups machine.

## Photo Gallery



Best is setting up the domino with the string, that will eventually activate the marble.



Dylan is setting up the dominos that will activate the pin which will pop the balloon.



Jonas is setting up the dominos after a small accident involving ling dominos.



Annete is using her steady hand tp buildone of the most complicated parts of the machine.



Annete and blink working together to fix a problem.



Jonas figuring out how to make a complicated part work.

## What could we have improved in our machine?

One of the main things that we could of improved was that we should have used more of the space that was given to us. There were lots of blank paces which looked rather weird and which we could have added other cool things on. We could also have improved of using more materials because we mostly used dominos and marbles. Lastly we could also have improved being a bit more creative because we could have represented our picture better (Image of Water).

## Bibliography

Laveber, Lendert. "How to Create a Perfect Rube Goldberg Machine." Telephone interview. 12 Nov. 2013. The Interview was spoken fully in German

"MythBusters Rube Goldberg Machine : Www.HumorKick.com." *YouTube*. YouTube, 13 Dec. 2006. Web. 14 Nov. 2013. <[http://www.youtube.com/watch?v=1CYg\\_gz4fDo](http://www.youtube.com/watch?v=1CYg_gz4fDo)>.

"Rube Goldberg Tools and Materials." *Rube Goldberg Contest Tools and Materials*. Mit Museum, n.d. Web. 14 Nov. 2013. <<http://web.mit.edu/museum/rubegoldbergcontest/2006/materials.html>>.

"Steve Price Shows Off His Complex Rube Goldberg Machine - America's Got Talent." *YouTube*. YouTube, 18 June 2013. Web. 14 Nov. 2013. <<http://www.youtube.com/watch?v=7UdzAaw-H0o>>.

"Ten Brilliant Rube Goldberg Machines." *Cool Material*. N.p., n.d. Web. 15 Nov. 2013. <<http://coolmaterial.com/roundup/rube-goldberg-machines/>>.

**Research from at least 5 different sources of information, include one non-Internet.**

**The range of design ideas (a minimum of 3) that the team developed.**

**Your team's final machine design choice with clear justification.**

**Photographic evidence of your collaboration and creativity.**

**A description of how your machine reflects the principles of the assigned visual stimulus.**